(12) STANDARD PATENT (11) Application No. **AU 2014212004 B2**
(19) AUSTRALIAN PATENT OFFICE

(54) Title
COMPOSITIONS FOR TREATING OR PREVENTING OR REDUCING THE SEVERITY OF CLOSTRIDIUM DIFFICILE RELATED DISEASES

(51) International Patent Classification(s)
A01N 63/00 (2006.01) ***A01N 65/00*** (2006.01)

(21) Application No: **2014212004** (22) Date of Filing: **2014.02.04**

(87) WIPO No: **WO14/121302**

(30) Priority Data

(31) Number	(32) Date	(33) Country
61/926,918	**2014.01.13**	**US**
61/760,606	**2013.02.04**	**US**
61/760,574	**2013.02.04**	**US**
61/760,585	**2013.02.04**	**US**
61/760,584	**2013.02.04**	**US**

(43) Publication Date: **2014.08.07**
(44) Accepted Journal Date: **2018.09.20**

(71) Applicant(s)
Seres Therapeutics, Inc.

(72) Inventor(s)
McKenzie, Gregory;McKenzie, Mary-Jane Lombardo;Cook, David;Vulic, Marin;Von Maltzahn, Geoffrey;Goodman, Brian;Aunins, John G.;Henn, Matthew R.;Berry, David A.;Winkler, Jonathan

(74) Agent / Attorney
Phillips Ormonde Fitzpatrick, PO Box 323, Collins Street West, VIC, 8007, AU

(56) Related Art
PETROF, E.O. et al., Stool Substitute Transplant Therapy for the Eradication of Clostridium difficile Infection: 'RePOOPulating' the Gut. Microbiome, 09 January 2013, Vol 1, No 3, pages 1-12
LODISH, H. et al., Viruses: Structure, Function, and Uses. Molecular Cell Biology. 4th edition, New York: W. H. Freeman, 2000, pages 1-12
KORANSKY, J. R. et al., Use of Ethanol for Selective Isolation of Sporeforming Microorganisms. Applied and Environmental Microbiology, 1978, pages 762-765
WO 2012122478 A1
BERSTAD, A et al., Fecal Fat Determination with a Modified Titration Method. Scandinavian Journal of Gastroenterology, 2010, vol 45, pages 603-607
US 3009861 A
HAYASHI, Y. et al. Western Blot (Immunoblot) Assay Of Small, Round-Structured Virus Associated With An Acute Gastroenteritis Outbreak In Tokyo. Journal of Clinical Microbiology, 1989, Vol 27, No. 8, pages 1728-1733
ACCOCEBERRY, I. et al. One-Step Purification of Enterocytozoon bieneusi Spores from Human Stools by Immunoaffinity Expanded-Bed Adsorption. Journal of Clinical Microbiology, 2001, Vol. 39, No. 5, pages 1947–1951
WO 2005110445 A2
EP 2338989 A1

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 August 2014 (07.08.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/121302 A3

(51) **International Patent Classification**:
A01N 63/00 (2006.01) *A01N 65/00* (2009.01)

(21) **International Application Number**:
PCT/US2014/014745

(22) **International Filing Date**:
4 February 2014 (04.02.2014)

(25) **Filing Language**: English

(26) **Publication Language**: English

(30) **Priority Data**:

61/760,584	4 February 2013 (04.02.2013)	US
61/760,585	4 February 2013 (04.02.2013)	US
61/760,574	4 February 2013 (04.02.2013)	US
61/760,606	4 February 2013 (04.02.2013)	US
61/926,918	13 January 2014 (13.01.2014)	US

(71) **Applicant**: **SERES HEALTH, INC.** [US/US]; 161 First Street, Suite 1A, Cambridge, MA 02142 (US).

(72) **Inventors**: **MCKENZIE, Gregory**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **MCKENZIE, Mary-Jane, Lombardo**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **COOK, David**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **VULIC, Marin**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **VON MALTZAHN, Geoffrey**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **GOODMAN, Brian**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **AUNINS, John, G.**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **HENN, Matthew, R.**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **BERRY, David, A.**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US). **WINKLER, Jonathan**; c/o Seres Health, Inc., 161 First Street, Suite 1A, Cambridge, MA 02142 (US).

(74) **Agents**: **HUBL, Susan, T.** et al.; Fenwick & West LLP, Silicon Valley Center, 801 California Street, Mountain View, CA 94041 (US).

(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

— *with sequence listing part of description (Rule 5.2(a))*

(88) **Date of publication of the international search report**:
9 October 2014

(54) **Title**: COMPOSITIONS AND METHODS

(57) **Abstract**: Disclosed herein are therapeutic compositions containing non-pathogenic, germination-competent bacterial spores, for the prevention, control, and treatment of gastrointestinal diseases, disorders and conditions and for general nutritional health.

WO 2014/121302 A3

15 Aug 2018 2014212004

COMPOSITIONS FOR TREATING OR PREVENTING OR REDUCING THE SEVERITY OF CLOSTRIDIUM DIFFICILE RELATED DISEASES

[001] The present invention relates to compositions for treating or preventing or reducing the severity of *Clostridium difficile* related diseases.

RELATED APPLICATIONS

[002] This application claims priority to U.S. Provisional Application No. 61/760,584, filed February 4, 2013 and U.S. Provisional Application No. 61/760,585, filed February 4, 2013 and U.S. Provisional Application No. 61/760,574, filed February 4, 2013 and U.S. Provisional Application No. 61/760,606, filed February 4, 2013 and U.S. Provisional Application No. 61/926,918, filed January 13, 2014. These applications are all incorporated by reference in their entirety for all purposes.

REFERENCE TO A SEQUENCE LISTING

[003] This application includes a Sequence Listing submitted electronically as a text file named 25970PCT_sequencelisting.txt, created on February 2, 2014, with a size of 4,100,000 bytes. The sequence listing is incorporated by reference.

BACKGROUND

[004] Mammals are colonized by microbes in the gastrointestinal (GI) tract, on the skin, and in other epithelial and tissue niches such as the oral cavity, eye surface and vagina. The gastrointestinal tract harbors an abundant and diverse microbial community. It is a complex system, providing an environment or niche for a community of many different species or organisms, including diverse strains of bacteria. Hundreds of different species may form a commensal community in the GI tract in a healthy person, and this complement of organisms evolves from the time of birth to ultimately form a functionally mature microbial population by about 3 years of age. Interactions between microbial strains in these populations and between microbes and the host, *e.g.* the host immune system, shape the community structure, with availability of and competition for resources affecting the distribution of microbes. Such resources may be food, location and the availability of space to grow or a physical structure to which the microbe may attach. For example, host diet is involved in shaping the GI tract flora.

[005] A healthy microbiota provides the host with multiple benefits, including colonization resistance to a broad spectrum of pathogens, essential nutrient

biosynthesis and absorption, and immune stimulation that maintains a healthy gut epithelium and an appropriately controlled systemic immunity. In settings of 'dysbiosis' or disrupted symbiosis, microbiota functions can be lost or deranged, resulting in increased susceptibility to pathogens, altered metabolic profiles, or induction of proinflammatory signals that can result in local or systemic inflammation or autoimmunity. Thus, the intestinal microbiota plays a significant role in the pathogenesis of many diseases and disorders, including a variety of pathogenic infections of the gut. For instance, subjects become more susceptible to pathogenic infections when the normal intestinal microbiota has been disturbed due to use of broad-spectrum antibiotics. Many of these diseases and disorders are chronic conditions that significantly decrease a subject's quality of life and can be ultimately fatal.

[006] Manufacturers of probiotics have asserted that their preparations of bacteria promote mammalian health by preserving the natural microflora in the GI tract and reinforcing the normal controls on aberrant immune responses. *See, e.g.,* U.S. Patent No. 8,034,601. Probiotics, however, have been limited to a very narrow group of genera and a correspondingly limited number of species; as such, they do not adequately replace the missing natural microflora of the GI tract in many situations.

[007] Thus practitioners have a need for a method of populating a subject's gastrointestinal tract with a diverse and useful selection of microbiota in order to alter a dysbiosis.

[008] Therefore, in response to the need for durable, efficient, and effective compositions and methods for treatment of GI diseases by way of restoring or enhancing microbiota functions, we address these and other shortcomings of the prior art by providing compositions and methods for treating subjects.

SUMMARY OF THE INVENTION

[009] Disclosed herein are therapeutic compositions containing non-pathogenic, germination-competent bacterial spores, for the prevention, control, and treatment of gastrointestinal diseases, disorders and conditions and for general nutritional health. These compositions are advantageous in being suitable for safe administration to humans and other mammalian subjects and are efficacious in

2014212004 15 Aug 2018

numerous gastrointestinal diseases, disorders and conditions and in general nutritional health.

[009a] The present invention relates to a therapeutic composition comprising a purified population of germination-competent bacterial spores when used in a method of treating or preventing or reducing the severity of at least one symptom of a dysbiosis associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis in a mammalian recipient subject, the germination-competent bacterial spores produced by the steps of a) providing a fecal material from a mammalian donor subject and b) subjecting the fecal material to a treatment step resulting in the purified population of germination-competent bacterial spores, wherein the therapeutic composition is given in an amount effective to i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least one type of bacteria present in the therapeutic composition but not present in the mammalian recipient subject prior to treatment.

[009b] The present invention further relates to a therapeutic composition comprising a purified population of germination-competent bacterial spores when used in a method of treating or preventing or reducing the severity of at least one symptom of a dysbiosis, associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis, wherein the therapeutic composition is given in an amount effective to i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least one type of bacteria present in the therapeutic composition but not present in a mammalian recipient subject prior to treatment.

[009c] The present invention further relates to a therapeutic composition comprising a purified population of germination-competent bacterial spores produced by the steps of a) providing a fecal material from a mammalian donor subject and b) subjecting the material to a treatment step resulting in the purified population of germination-competent bacterial spores, wherein the purified population is present in an amount effective to treat or prevent or reduce the severity of at least one symptom of a dysbiosis associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis in a mammalian

2014212004 15 Aug 2018

recipient subject, and i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least one type of bacteria present in the therapeutic composition but not present in the mammalian recipient subject prior to treatment.

[009d] The present invention further relates to a therapeutic composition comprising a purified population of germination-competent bacterial spores, in an amount effective to treat or prevent or reducing the severity of at least one symptom of a dysbiosis, associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis, and i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least one type of bacteria present in the therapeutic composition but not present in the mammalian recipient subject prior to treatment.

[009e] Where any or all of the terms "comprise", "comprises", "comprised" or "comprising" are used in this specification (including the claims) they are to be interpreted as specifying the presence of the stated features, integers, steps or components, but not precluding the presence of one or more other features, integers, steps or components.

[009f] A reference herein to a patent document or any other matter identified as prior art, is not to be taken as an admission that the document or other matter was known or that the information it contains was part of the common general knowledge as at the priority date of any of the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[010] Figure 1A provides a schematic of 16S rRNA gene and denotes the coordinates of hypervariable regions 1-9 (V1-V9). Coordinates of V1-V9 are 69-99, 137-242, 433-497, 576-682, 822-879, 986-1043, 1117-1173, 1243-1294, and 1435-1465 respectively, based on numbering using E. coli system of nomenclature defined by Brosius et al., Complete nucleotide sequence of a 16S ribosomal RNA gene (16S rRNA) from Escherichia coli, PNAS 75(10):4801-4805 (1978). Figure 1B highlights in bold the nucleotide sequences for each hypervariable region in the exemplary reference E. coli 16S sequence described by Brosius et al.

2014212004 15 Aug 2018

[011] Figure 2 shows a photograph of a CsCl gradient demonstrating the spore separation from other residual habitat material.

[012] Figure 3 shows three phase contrast image demonstrating the progressive enrichment of spores from a fecal suspension; ethanol treated, CsCl purified spore preparation; and an ethanol treated, CsCl purified, sucrose purified spore preparation.

[013] Figure 4 shows a set of survival curves demonstrating efficacy of the spore population in a mouse prophylaxis model of C. difficile.

[014] Figure 5 provides a set of survival curves demonstrating efficacy of the spore population in a hamster relapse prevention model of C. difficile.

[015] Figure 6 demonstrates the cell viability under a variety of ethanol and heat treatments for varying lengths of time.

[016] Figure 7 demonstrates cell survivability from four donor fecal samples after heat treatment at 60C for 5 minutes.

[017] Figure 8 demonstrates that ethanol reduces both anaerobic and aerobic bacterial species by several orders of magnitude in seconds.

[018] Figure 9 demonstrates the spore concentration of fecal donations from multiple donors over time.

[019] Figure 10 shows the strong correlation and linear correspondence between the measurement of DPA concentration by a coupled fluorescence assay and the viable spore colony forming units

[020] Figure 11 demonstrates the effect on various germination treatments on the ability to cultivate vegetative bacteria from a spore population.

[021] Figure 12 demonstrates the increase in bacterial diversity from using a germinant treatment to grow vegetative bacteria from spore populations.

[022] Figure 13 demonstrates the role of heat activation at various temperatures on spores from three different donor fecal samples.

[023] Figure 14 demonstrates a lysozyme treatment with heat activation improves germination at most temperatures.

[024] Figure 15 demonstrates spore concentrations present in a fecal sample grown on various medias.

[025] Figure 16 demonstrates similar spore production from incubating plates for 2 and 7 days after a spore population was germinated on plates with various medias.

[026] Figure 17 demonstrates the protective efficacy of the spore population in mice challenged with C. difficile as measured by the change in weight of mice over the course of the experiment. Each plot tracks the change in the individual mouse's weight relative to day -1 over the course of the experiment. The number of deaths over the course of the experiment is indicated at the top of the chart and demonstrated by a line termination prior to day 6. The top panels (from left to right) are the vehicle control arm, the fecal suspension arm, and the untreated naive control arm, while the bottom panels are the ethanol treated, gradient purified spore preparation; the ethanol treated, gradient purified, "germinable" spore preparation, and ethanol treated, gradient purified, "sporulatable" preparation.

[027] Figure 18 demonstrates the microbial diversity measured in the ethanol treated spore treatment sample and patient pre- and post-treatment samples. Total microbial diversity is defined using the Chao1 Alpha-Diversity Index and is measured at the same genomic sampling depths to confirm adequate sequence coverage to assay the microbiome in the target samples. The patient pretreatment (purple)

harbored a microbiome that was significantly reduced in total diversity as compared to the ethanol treated spore treatment (red) and patient post treatment at days 5 (blue), 14 (orange), and 25 (green).

[028] Figure 19 demonstrates how the patient microbial ecology is shifted by treatment with an ethanol treated spore treatment from a dysbiotic state to a state of health. Principle coordinates analysis based on the total diversity and structure of the microbiome (Bray Curtis Beta Diversity) of the patient pre- and post-treatment delineates that the combination of engraftment of the OTUs from the spore treatment and the augmentation of the patient microbial ecology leads to a microbial ecology that is distinct from both the pretreatment microbiome and the ecology of the ethanol treated spore treatment.

[029] Figure 20 demonstrates the augmentation of bacteroides species in patients treated with the spore population. Comparing the number of Bacteroides colonies from fecal suspensions pre-treatment and in week 4 post treatment reveals an increase of 4 logs or greater. Colonies were enumerated by serial dilution and plating on Bacteroides Bile Esculin agar which is highly selective for the B. fragilis group. Species were determined by 16S full-length sequence identification.

[030] Figure 21 demonstrates the increase in number of species engrafting and species augmenting in patient's microbiomes after treatment with an ethanol-treated spore population. Relative abundance of species that engrafted or augmented as described were determined based on the number of 16S sequence reads. Each plot is from a different patient treated with the ethanol-treated spore population for recurrent C. difficile.

[031] The figures depict various embodiments of the present invention for purposes of illustration only. One skilled in the art will readily recognize from the following discussion that alternative embodiments of the structures and methods illustrated herein may be employed without departing from the principles of the invention described herein.

DESCRIPTION OF THE TABLES

[032] **Table 1**. List of Operational Taxonomic Units (OTU) with taxonomic assignments made to Genus, Species, and Phylogenetic Clade. Clade membership of bacterial OTUs is based on 16S sequence data. Clades are defined based on the

topology of a phylogenetic tree that is constructed from full-length 16S sequences using maximum likelihood methods familiar to individuals with ordinary skill in the art of phylogenetics. Clades are constructed to ensure that all OTUs in a given clade are: (i) within a specified number of bootstrap supported nodes from one another, and (ii) within 5% genetic similarity. OTUs that are within the same clade can be distinguished as genetically and phylogenetically distinct from OTUs in a different clade based on 16S-V4 sequence data, while OTUs falling within the same clade are closely related. OTUs falling within the same clade are evolutionarily closely related and may or may not be distinguishable from one another using 16S-V4 sequence data. Members of the same clade, due to their evolutionary relatedness, play similar functional roles in a microbial ecology such as that found in the human gut. Compositions substituting one species with another from the same clade are likely to have conserved ecological function and therefore are useful in the present invention. All OTUs are denoted as to their putative capacity to form spores and whether they are a Pathogen or Pathobiont (see Definitions for description of "Pathobiont"). NIAID Priority Pathogens are denoted as 'Category-A', 'Category-B', or 'Category-C', and Opportunistic Pathogens are denoted as 'OP'. OTUs that are not pathogenic or for which their ability to exist as a pathogen is unknown are denoted as 'N'. The 'SEQ ID Number' denotes the identifier of the OTU in the Sequence Listing File and 'Public DB Accession' denotes the identifier of the OTU in a public sequence repository.

[033]

[034] Table 2 contains bacterial OTUs identified from the 16s analysis of the ethanol treated spore population before and after a CsCl gradient purification.

[035] Table 3 contains the mortality and weight change of mice treated with a donor fecal suspension and an ethanol and/or heat-treated spore preparation at various dilutions,

[036] Table 4 contains OTUs identified from spore forming species generated by picking colonies from a spore preparation involving various heat treatments

[037] Table 5 contains OTUs not identified in untreated fecal slurries, but identified in ethanol treated or heat treated spore populations.

[038] Table 6 contains OTUs identified from an ethanol treated spore population isolated from a microbiome sample from donor A.

[039] Table 7 contains OTUs identified from an ethanol treated spore population isolated from a microbiome sample from donor B.

[040] Table 8 contains OTUs identified from an ethanol treated spore population isolated from a microbiome sample from donor C.

[041] Table 9 contains OTUs identified from an ethanol treated spore population isolated from a microbiome sample from donor D.

[042] Table 10 contains OTUs identified from an ethanol treated spore population isolated from a microbiome sample from donor E.

[043] Table 11 contains OTUs identified from an ethanol treated spore population isolated from a microbiome sample from donor F.

[044] Table 12 contains OTUs identified from growing ethanol treated spore populations on various media types.

[045] Table 13. Species identified as "germinable" and "sporulatable" by colony picking approach

[046] Table YYY. Species identified as "germinable" using 16S-V4 NGS approach.

[047] Table ZZZ. Species identified as "sporulatable" using 16s-V4 NGS approach.

[048] Table AC shows spore content data from 3 different ethanol treated spore preparations used to successfully treat 3 patients suffering from recurrent C. difficile infection.

[049] Table AD. DPA doses in Table AC when normalized to 4 x 10^5 SCFU per dose

[050] Table GB. OTUs detected by a minimum of ten 16S-V4 sequence reads in at least a one ethanol treated spore preparation (pan-microbiome). OTUs that engraft in a treated patients and the percentage of patients in which they engraft are denoted, as are the clades, spore forming status, and Keystone OTU status. Starred

OTUs occur in ≥80% of the ethanol preps and engraft in ≥50% of the treated patients.

[051] Table GC ranks the top 20 OTUs by CES with the further requirement that an OTU must be shown to engraft to be a considered an element of a core ecology.

[052] Table GD: Subsets of the Core Ecology tested in the C. difficile mouse model

[053] Table GE: Results of bacterial compositions tested in a C. difficile mouse model.

[054] Table GF. OTUs and their clade assignments tested in ternary combinations with results in the in vitro inhibition assay

[055] Table ZA. Microbial compositions administered via oral gavage on Day -1

[056] Table TAB. Population of OTUs on Days 2, 3 and 4 following dosing with Microbial Compositions

[057] Table TAC. Population of Clades on Days 2, 3 and 4 following dosing with Microbial Compositions

[058] Table TAD. Mortality by experimental group in mice challenged with 104.5 C. difficile spores on Day 0

DETAILED DESCRIPTION

OVERVIEW

[059] Disclosed herein are therapeutic compositions containing non-pathogenic, germination-competent bacterial spores, for the prevention, control, and treatment of gastrointestinal diseases, disorders and conditions and for general nutritional health. These compositions are advantageous in being suitable for safe administration to humans and other mammalian subjects and are efficacious in numerous gastrointestinal diseases, disorders and conditions and in general nutritional health. While spore-based compositions are known, these are generally prepared according to various techniques such as lyophilization or spray-drying of liquid bacterial cultures, resulting in poor efficacy, instability, substantial variability and lack of adequate safety and efficacy.

[060] It has now been found that populations of bacterial spores can be obtained from biological materials obtained from mammalian subjects, including humans. These populations are formulated into compositions as provided herein, and administered to mammalian subjects using the methods as provided herein.

DEFINITIONS

[061] "Microbiota" refers to the community of microorganisms that occur (sustainably or transiently) in and on an animal subject, typically a mammal such as a human, including eukaryotes, archaea, bacteria, and viruses (including bacterial viruses i.e., phage).

[062] "Microbiome" refers to the genetic content of the communities of microbes that live in and on the human body, both sustainably and transiently, including eukaryotes, archaea, bacteria, and viruses (including bacterial viruses (i.e., phage)), wherein "genetic content" includes genomic DNA, RNA such as ribosomal RNA, the epigenome, plasmids, and all other types of genetic information.

[063] "Microbial Carriage" or simply "Carriage" refers to the population of microbes inhabiting a niche within or on humans. Carriage is often defined in terms of relative abundance. For example, OTU1 comprises 60% of the total microbial carriage, meaning that OTU1 has a relative abundance of 60% compared to the other OTUs in the sample from which the measurement was made. Carriage is most often based on genomic sequencing data where the relative abundance or carriage of a single OTU or group of OTUs is defined by the number of sequencing reads that are assigned to that OTU/s relative to the total number of sequencing reads for the sample.

[064] "Microbial Augmentation" or simply "augmentation" refers to the establishment or significant increase of a population of microbes that are (i) absent or undetectable (as determined by the use of standard genomic and microbiological techniques) from the administered therapeutic microbial composition, (ii) absent, undetectable, or present at low frequencies in the host niche (as example: gastrointestinal tract, skin, anterior-nares, or vagina) before the delivery of the microbial composition, and (iii) are found after the administration of the microbial composition or significantly increase, for instance 2-fold, 5-fold, $1x10^2$, $1x10^3$, $1x10^4$, $1x10^5$, $1x10^6$, $1x10^7$, or greater than $1x10^8$, in cases where they were present at low

frequencies. The microbes that comprise an augmented ecology can be derived from exogenous sources such as food and the environment, or grow out from micro-niches within the host where they reside at low frequency.

[065] The administration of the therapeutic microbial composition induces an environmental shift in the target niche that promotes favorable conditions for the growth of these commensal microbes. In the absence of treatment with a therapeutic microbial composition, the host can be constantly exposed to these microbes; however, sustained growth and the positive health effects associated with the stable population of increased levels of the microbes comprising the augmented ecology are not observed.

[066] "Microbial Engraftment" or simply "engraftment" refers to the establishment of OTUs comprising a therapeutic microbial composition in a target niche that are absent in the treated host prior to treatment. The microbes that comprise the engrafted ecology are found in the therapeutic microbial composition and establish as constituents of the host microbial ecology upon treatment. Engrafted OTUs can establish for a transient period of time, or demonstrate long-term stability in the microbial ecology that populates the host post treatment with a therapeutic microbial composition. The engrafted ecology can induce an environmental shift in the target niche that promotes favorable conditions for the growth of commensal microbes capable of catalyzing a shift from a dysbiotic ecology to one representative of a health state.

[067] "Ecological Niche" or simply "Niche" refers to the ecological space in which a an organism or group of organisms occupies. Niche describes how an organism or population or organisms responds to the distribution of resources, physical parameters (e.g., host tissue space) and competitors (e.g., by growing when resources are abundant, and when predators, parasites and pathogens are scarce) and how it in turn alters those same factors (e.g., limiting access to resources by other organisms, acting as a food source for predators and a consumer of prey).

[068] "Dysbiosis" refers to a state of the microbiota of the gut or other body area in a subject, including mucosal or skin surfaces in which the normal diversity and/or function of the ecological network is disrupted. This unhealthy state can be

due to a decrease in diversity, the overgrowth of one or more pathogens or pathobionts, symbiotic organisms able to cause disease only when certain genetic and/or environmental conditions are present in a subject, or the shift to an ecological microbial network that no longer provides an essential function to the host subject, and therefore no longer promotes health.

[069] "Pathobionts" or "Opportunistic Pathogens" refers to symbiotic organisms able to cause disease only when certain genetic and/or environmental conditions are present in a subject.

[070] "Phylogenetic tree" refers to a graphical representation of the evolutionary relationships of one genetic sequence to another that is generated using a defined set of phylogenetic reconstruction algorithms (e.g. parsimony, maximum likelihood, or Bayesian). Nodes in the tree represent distinct ancestral sequences and the confidence of any node is provided by a bootstrap or Bayesian posterior probability, which measures branch uncertainty.

[071] "Operational taxonomic units," "OTU" (or plural, "OTUs") refer to a terminal leaf in a phylogenetic tree and is defined by a nucleic acid sequence, e.g., the entire genome, or a specific genetic sequence, and all sequences that share sequence identity to this nucleic acid sequence at the level of species. In some embodiments the specific genetic sequence may be the 16S sequence or a portion of the 16S sequence. In other embodiments, the entire genomes of two entities are sequenced and compared. In another embodiment, select regions such as multilocus sequence tags (MLST), specific genes, or sets of genes may be genetically compared. In 16S embodiments, OTUs that share ≥97% average nucleotide identity across the entire 16S or some variable region of the 16S are considered the same OTU (see e.g. Claesson MJ, Wang Q, O'Sullivan O, Greene-Diniz R, Cole JR, Ros RP, and O'Toole PW. 2010. Comparison of two next-generation sequencing technologies for resolving highly complex microbiota composition using tandem variable 16S rRNA gene regions. *Nucleic Acids Res* **38**: e200. Konstantinidis KT, Ramette A, and Tiedje JM. 2006. The bacterial species definition in the genomic era. *Philos Trans R Soc Lond B Biol Sci* **361**: 1929–1940.). In embodiments involving the complete genome, MLSTs, specific genes, or sets of genes OTUs that share ≥95% average nucleotide identity are considered the same OTU (see e.g. Achtman M, and Wagner M. 2008. Microbial diversity and the genetic

nature of microbial species. *Nat. Rev. Microbiol.* **6**: 431–440. Konstantinidis KT, Ramette A, and Tiedje JM. 2006. The bacterial species definition in the genomic era. *Philos Trans R Soc Lond B Biol Sci* **361**: 1929–1940.). OTUs are frequently defined by comparing sequences between organisms. Generally, sequences with less than 95% sequence identity are not considered to form part of the same OTU. OTUs may also be characterized by any combination of nucleotide markers or genes, in particular highly conserved genes (e.g., "house-keeping" genes), or a combination thereof. Such characterization employs, e.g., WGS data or a whole genome sequence.

[072] "Residual habitat products" refers to material derived from the habitat for microbiota within or on a human or animal. For example, microbiota live in feces in the gastrointestinal tract, on the skin itself, in saliva, mucus of the respiratory tract, or secretions of the genitourinary tract (i.e., biological matter associated with the microbial community). Substantially free of residual habitat products means that the bacterial composition no longer contains the biological matter associated with the microbial environment on or in the human or animal subject and is 100% free, 99% free, 98% free, 97% free, 96% free, or 95% free of any contaminating biological matter associated with the microbial community. Residual habitat products can include abiotic materials (including undigested food) or it can include unwanted microorganisms. Substantially free of residual habitat products may also mean that the bacterial composition contains no detectable cells from a human or animal and that only microbial cells are detectable. In one embodiment, substantially free of residual habitat products may also mean that the bacterial composition contains no detectable viral (including bacterial viruses (i.e., phage)), fungal, mycoplasmal contaminants. In another embodiment, it means that fewer than $1x10^{-2}$%, $1x10^{-3}$%, $1x10^{-4}$%, $1x10^{-5}$%, $1x10^{-6}$%, $1x10^{-7}$%, $1x10^{-8}$ of the viable cells in the bacterial composition are human or animal, as compared to microbial cells. There are multiple ways to accomplish this degree of purity, none of which are limiting. Thus, contamination may be reduced by isolating desired constituents through multiple steps of streaking to single colonies on solid media until replicate (such as, but not limited to, two) streaks from serial single colonies have shown only a single colony morphology. Alternatively, reduction of contamination can be accomplished by multiple rounds of serial dilutions to single desired cells (e.g., a dilution of 10^{-8} or 10^{-}

^{9}), such as through multiple 10-fold serial dilutions. This can further be confirmed by showing that multiple isolated colonies have similar cell shapes and Gram staining behavior. Other methods for confirming adequate purity include genetic analysis (e.g. PCR, DNA sequencing), serology and antigen analysis, enzymatic and metabolic analysis, and methods using instrumentation such as flow cytometry with reagents that distinguish desired constituents from contaminants.

[073] "Clade" refers to the OTUs or members of a phylogenetic tree that are downstream of a statistically valid node in a phylogenetic tree. The clade comprises a set of terminal leaves in the phylogenetic tree that is a distinct monophyletic evolutionary unit and that share some extent of sequence similarity.

[074] In microbiology, "16S sequencing" or "16S-rRNA" or "16S" refers to sequence derived by characterizing the nucleotides that comprise the 16S ribosomal RNA gene(s). The bacterial 16S rDNA is approximately 1500 nucleotides in length and is used in reconstructing the evolutionary relationships and sequence similarity of one bacterial isolate to another using phylogenetic approaches. 16S sequences are used for phylogenetic reconstruction as they are in general highly conserved, but contain specific hypervariable regions that harbor sufficient nucleotide diversity to differentiate genera and species of most bacteria.

[075] The "V1-V9 regions" of the 16S rRNA refers to the first through ninth hypervariable regions of the 16S rRNA gene that are used for genetic typing of bacterial samples. These regions in bacteria are defined by nucleotides 69-99, 137-242, 433-497, 576-682, 822-879, 986-1043, 1117-1173, 1243-1294 and 1435-1465 respectively using numbering based on the *E. coli* system of nomenclature. Brosius et al., Complete nucleotide sequence of a 16S ribosomal RNA gene from Escherichia coli, PNAS 75(10):4801-4805 (1978). In some embodiments, at least one of the V1, V2, V3, V4, V5, V6, V7, V8, and V9 regions are used to characterize an OTU. In one embodiment, the V1, V2, and V3 regions are used to characterize an OTU. In another embodiment, the V3, V4, and V5 regions are used to characterize an OTU. In another embodiment, the V4 region is used to characterize an OTU. A person of ordinary skill in the art can identify the specific hypervariable regions of a candidate 16S rRNA by comparing the candidate sequence in question to a reference sequence and identifying the hypervariable regions based on similarity to the reference hypervariable regions, or alternatively, one can employ Whole

Genome Shotgun (WGS) sequence characterization of microbes or a microbial community.

[076] The term "subject" refers to any animal subject including humans, laboratory animals (e.g., primates, rats, mice), livestock (e.g., cows, sheep, goats, pigs, turkeys, and chickens), and household pets (e.g., dogs, cats, and rodents). The subject may be suffering from a dysbiosis, including, but not limited to, an infection due to a gastrointestinal pathogen or may be at risk of developing or transmitting to others an infection due to a gastrointestinal pathogen.

[077] The term "phenotype" refers to a set of observable characteristics of an individual entity. As example an individual subject may have a phenotype of "health" or "disease". Phenotypes describe the state of an entity and all entities within a phenotype share the same set of characteristics that describe the phenotype. The phenotype of an individual results in part, or in whole, from the interaction of the entities genome and/or microbiome with the environment.

[078] The term "Network Ecology" refers to a consortium of OTUs that co-occur in some number of subjects. As used herein, a "network" is defined mathematically by a graph delineating how specific nodes (i.e. OTUs) and edges (connections between specific OTUs) relate to one another to define the structural ecology of a consortium of OTUs. Any given Network Ecology will possess inherent phylogenetic diversity and functional properties. A Network Ecology can also be defined in terms of function where for example the nodes would be comprised of elements such as, but not limited to, enzymes, clusters of orthologous groups (COGS; http://www.ncbi.nlm.nih.gov/books/NBK21090/), or KEGG pathways (www.genome.jp/kegg/).

[079] The terms "Network Class", "Core Network" and "Core Network Ecology" refer to a group of network ecologies that in general are computationally determined to comprise ecologies with similar phylogenetic and/or functional characteristics. A Core Network therefore contains important biological features, defined either phylogenetically or functionally, of a group (i.e., a cluster) of related network ecologies. One representation of a Core Network Ecology is a designed consortium of microbes, typically non-pathogenic bacteria, that represents core features of a set of phylogenetically or functionally related network ecologies seen in many different

subjects. In many occurrences, a Core Network, while designed as described herein, exists as a Network Ecology observed in one or more subjects. Core Network ecologies are useful for reversing or reducing a dysbiosis in subjects where the underlying, related Network Ecology has been disrupted.

[080] The term "Keystone OTU" refers to one or more OTUs that are common to many network ecologies and are members of networks ecologies that occur in many subjects (i.e. are pervasive) (Figure 1). Due to the ubiquitous nature of Keystone OTUs, they are central to the function of network ecologies in healthy subjects and are often missing or at reduced levels in subjects with disease. Keystone OTUs may exist in low, moderate, or high abundance in subjects.

[081] The term "non-Keystone OTU" refers to an OTU that is observed in a Network Ecology and is not a keystone OTU.

[082] The term "Phylogenetic Diversity" refers to the biodiversity present in a given Network Ecology or Core Network Ecology based on the OTUs that comprise the network. Phylogenetic diversity is a relative term, meaning that a Network Ecology or Core Network that is comparatively more phylogenetically diverse than another network contains a greater number of unique species, genera, and taxonomic families. Uniqueness of a species, genera, or taxonomic family is generally defined using a phylogenetic tree that represents the genetic diversity all species, genera, or taxonomic families relative to one another. In another embodiment phylogenetic diversity may be measured using the total branch length or average branch length of a phylogenetic tree.

[083] "Spore" or "endospore" refers to an entity, particularly a bacterial entity, which is in a dormant, non-vegetative and non-reproductive stage. Spores are generally resistant to environmental stress such as radiation, desiccation, enzymatic treatment, temperature variation, nutrient deprivation, and chemical disinfectants.

[084] A "spore population" refers to a plurality of spores present in a composition. Synonymous terms used herein include spore composition, spore preparation, *ethanol treated spore fraction* and spore ecology. A spore population may be purified from a fecal donation, e.g. via ethanol or heat treatment, or a density gradient separation or any combination of methods described herein to increase the purity, potency and/or concentration of spores in a sample. Alternatively, a spore

population may be derived through culture methods starting from isolated *spore former species* or *spore former OTUs* or from a mixture of such species, either in vegetative or spore form.

[085] In one embodiment, the spore preparation comprises spore forming species wherein residual non-spore forming species have been inactivated by chemical or physical treatments including ethanol, detergent, heat, sonication, and the like; or wherein the non-spore forming species have been removed from the spore preparation by various separations steps including density gradients, centrifugation, filtration and/or chromatography; or wherein inactivation and separation methods are combined to make the spore preparation. In yet another embodiment, the spore preparation comprises spore forming species that are enriched over viable non-spore formers or vegetative forms of spore formers. In this embodiment, spores are enriched by 2-fold, 5-fold, 10-fold, 50-fold, 100-fold, 1000-fold, 10,000-fold or greater than 10,000-fold compared to all vegetative forms of bacteria. In yet another embodiment, the spores in the spore preparation undergo partial germination during processing and formulation such that the final composition comprises spores and vegetative bacteria derived from spore forming species.

[086] A "germinant" is a material or composition or physical-chemical process capable of inducing vegetative growth of a bacterium that is in a dormant spore form, or group of bacteria in the spore form, either directly or indirectly in a host organism and/or in vitro.

[087] A "sporulation induction agent" is a material or physical-chemical process that is capable of inducing sporulation in a bacterium, either directly or indirectly, in a host organism and/or in vitro.

[088] To "increase production of bacterial spores" includes an activity or a sporulation induction agent. "Production" includes conversion of vegetative bacterial cells into spores and augmentation of the rate of such conversion, as well as decreasing the germination of bacteria in spore form, decreasing the rate of spore decay *in vivo*, or *ex vivo*, or to increasing the total output of spores (*e.g.* via an increase in volumetric output of fecal material).

[089] The "colonization" of a host organism includes the non-transitory residence of a bacterium or other microscopic organism. As used herein, "reducing

colonization" of a host subject's gastrointestinal tract (or any other microbiotal niche) by a pathogenic bacterium includes a reduction in the residence time of the pathogen in the gastrointestinal tract as well as a reduction in the number (or concentration) of the pathogen in the gastrointestinal tract or adhered to the luminal surface of the gastrointestinal tract. Measuring reductions of adherent pathogens may be demonstrated, e.g., by a biopsy sample, or reductions may be measured indirectly, e.g., by measuring the pathogenic burden in the stool of a mammalian host.

[090] A "combination" of two or more bacteria includes the physical co-existence of the two bacteria, either in the same material or product or in physically connected products, as well as the temporal co-administration or co-localization of the two bacteria.

[091] A "cytotoxic" activity or bacterium includes the ability to kill a bacterial cell, such as a pathogenic bacterial cell. A "cytostatic" activity or bacterium includes the ability to inhibit, partially or fully, growth, metabolism, and/or proliferation of a bacterial cell, such as a pathogenic bacterial cell.

[092] To be free of "non-comestible products" means that a bacterial composition or other material provided herein does not have a substantial amount of a non-comestible product, e.g., a product or material that is inedible, harmful or otherwise undesired in a product suitable for administration, e.g., oral administration, to a human subject. Non-comestible products are often found in preparations of bacteria from the prior art.

[093] As used herein the term "vitamin" is understood to include any of various fat-soluble or water-soluble organic substances (non-limiting examples include ***vitamin A,*** Vitamin B1 (thiamine), Vitamin B2 (riboflavin), Vitamin B3 (***niacin*** or niacinamide), Vitamin B5 (pantothenic acid), Vitamin B6 (pyridoxine, pyridoxal, or pyridoxamine, or pyridoxine hydrochloride), Vitamin B7 (biotin), Vitamin B9 (folic acid), and Vitamin B12 (various cobalamins; commonly cyanocobalamin in vitamin supplements), vitamin C, vitamin D, vitamin E, vitamin K, K1 and K2 (i.e. MK-4, MK-7), folic acid and biotin) essential in minute amounts for normal growth and activity of the body and obtained naturally from plant and animal foods or synthetically made, pro-vitamins, derivatives, analogs.

[094] As used herein, the term "minerals" is understood to include boron, calcium, chromium, copper, iodine, iron, magnesium, manganese, molybdenum, nickel, phosphorus, potassium, selenium, silicon, tin, vanadium, zinc, or combinations thereof.

[095] As used herein, the term "antioxidant" is understood to include any one or more of various substances such as beta-carotene (a ***vitamin A*** precursor), vitamin C, vitamin E, and selenium) that inhibit oxidation or reactions promoted by Reactive Oxygen Species ("ROS") and other radical and non-radical species. Additionally, antioxidants are molecules capable of slowing or preventing the oxidation of other molecules. Non-limiting examples of antioxidants include astaxanthin, carotenoids, coenzyme Q10 ("CoQ10"), flavonoids, glutathione, Goji (wolfberry), hesperidin, lactowolfberry, lignan, lutein, lycopene, polyphenols, selenium, ***vitamin A,*** vitamin C, vitamin E, zeaxanthin, or combinations thereof.

COMPOSITIONS OF THE INVENTION

[096] Disclosed herein are therapeutic compositions containing non-pathogenic, germination-competent bacterial spores, for the prevention, control, and treatment of gastrointestinal diseases, disorders and conditions and for general nutritional health. These compositions are advantageous in being suitable for safe administration to humans and other mammalian subjects and are efficacious in numerous gastrointestinal diseases, disorders and conditions and in general nutritional health. While spore-based compositions are known, these are generally prepared according to various techniques such as lyophilization or spray-drying of liquid bacterial cultures, resulting in poor efficacy, instability, substantial variability and lack of adequate safety and efficacy.

[097] It has now been found that populations of bacterial spores can be obtained from biological materials obtained from mammalian subjects, including humans. These populations are formulated into compositions as provided herein, and administered to mammalian subjects using the methods as provided herein.

[098] Provided herein are therapeutic compositions containing a purified population of bacterial spores. As used herein, the terms “purify”, “purified” and “purifying” refer to the state of a population (e.g., a plurality of known or unknown amount and/or concentration) of desired bacterial spores, that have undergone one

or more processes of purification, e.g., a selection or an enrichment of the desired bacterial spore, or alternatively a removal or reduction of residual habitat products as described herein. In some embodiments, a purified population has no detectable undesired activity or, alternatively, the level or amount of the undesired activity is at or below an acceptable level or amount. In other embodiments, a purified population has an amount and/or concentration of desired bacterial spores at or above an acceptable amount and/or concentration. In other embodiments, the ratio of desired-to-undesired activity (e.g. spores compared to vegetative bacteria), has changed by 2-, 5-, 10-, 30-, 100-, 300-, $1x10^4$, $1x10^5$, $1x10^6$, $1x10^7$, $1x10^8$, or greater than $1x10^8$. In other embodiments, the purified population of bacterial spores is enriched as compared to the starting material (e.g., a fecal material) from which the population is obtained. This enrichment may be by 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, 99%, 99.9%, 99.99%, 99.999%, 99.9999%, 99.9999%, or greater than 99.999999% as compared to the starting material.

[099] In certain embodiments, the purified populations of bacterial spores have reduced or undetectable levels of one or more pathogenic activities, such as toxicity, an ability to cause infection of the mammalian recipient subject, an undesired immunomodulatory activity, an autoimmune response, a metabolic response, or an inflammatory response or a neurological response. Such a reduction in a pathogenic activity may be by 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, 99%, 99.9%, 99.99%, 99.999%, 99.9999%, or greater than 99.9999% as compared to the starting material. In other embodiments, the purified populations of bacterial spores have reduced sensory components as compared to fecal material, such as reduced odor, taste, appearance, and umami.

[0100] Provided are purified populations of bacterial spores that are substantially free of residual habitat products. In certain embodiments, this means that the bacterial spore composition no longer contains a substantial amount of the biological matter associated with the microbial community while living on or in the human or animal subject, and the purified population of spores may be 100% free, 99% free, 98% free, 97% free, 96% free, or 95% free of any contamination of the biological matter associated with the microbial community. Substantially free of residual habitat products may also mean that the bacterial spore composition contains no detectable cells from a human or animal, and that only microbial cells are detectable, in

particular, only desired microbial cells are detectable. In another embodiment, it means that fewer than $1x10^{-2}$%, $1x10^{-3}$%, $1x10^{-4}$%, $1x10^{-5}$%, $1x10^{-6}$%, $1x10^{-7}$%, $1x10^{-8}$% of the cells in the bacterial composition are human or animal, as compared to microbial cells. In another embodiment, the residual habitat product present in the purified population is reduced at least a certain level from the fecal material obtained from the mammalian donor subject, e.g., reduced by at least about 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, 99%, 99.9%, 99.99%, 99.999%, 99.9999%, or greater than 99.9999%.

[0101] In one embodiment, substantially free of residual habitat products or substantially free of a detectable level of a pathogenic material means that the bacterial composition contains no detectable viral (including bacterial viruses (i.e., phage)), fungal, or mycoplasmal or toxoplasmal contaminants, or a eukaryotic parasite such as a helminth. Alternatively, the purified spore populations are substantially free of an acellular material, e.g., DNA, viral coat material, or non-viable bacterial material. Alternatively, the purified spore population may processed by a method that kills, inactivates, or removes one or more specific undesirable viruses, such as an enteric virus, including norovirus, poliovirus or hepatitis A virus.

[0102] As described herein, purified spore populations can be demonstrated by genetic analysis (e.g., PCR, DNA sequencing), serology and antigen analysis, microscopic analysis, microbial analysis including germination and culturing, and methods using instrumentation such as flow cytometry with reagents that distinguish desired bacterial spores from non-desired, contaminating materials.

[0103] Exemplary biological materials include fecal materials such as feces or materials isolated from the various segments of the small and large intestines. Fecal materials are obtained from a mammalian donor subject, or can be obtained from more than one donor subject, e.g., 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 200, 300, 400, 500, 750, 1000 or from greater than 1000 donors, where such materials are then pooled prior to purification of the desired bacterial spores. In another embodiment, fecal materials can be obtained from a single donor subject over multiple times and pooled from multiple samples e.g. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 32, 35, 40, 45, 48, 50, 100 samples from a single donor.

[0104] In alternative embodiments, the desired bacterial spores are purified from a single fecal material sample obtained from a single donor, and after such purification are combined with purified spore populations from other purifications, either from the same donor at a different time, or from one or more different donors, or both.

[0105] Mammalian donor subjects are generally of good health and have microbiota consistent with such good health. Often, the donor subjects have not been administered antibiotic compounds within a certain period prior to the collection of the fecal material. In certain embodiments, the donor subjects are not obese or overweight, and may have body mass index (BMI) scores of below 25, such as between 18.5 and 24.9. In other embodiments, the donor subjects are not mentally ill or have no history or familial history of mental illness, such as anxiety disorder, depression, bipolar disorder, autism spectrum disorders, schizophrenia, panic disorders, attention deficit (hyperactivity) disorders, eating disorders or mood disorders. In other embodiments, the donor subjects do not have irritable bowel disease (e.g., crohn's disease, ulcerative colitis), irritable bowel syndrome, celiac disease, colorectal cancer or a family history of these diseases. In other embodiments, donors have been screened for blood borne pathogens and fecal transmissible pathogens using standard techniques known to one in the art (e.g. nucleic acid testing, serological testing, antigen testing, culturing techniques, enzymatic assays, assays of cell free fecal filtrates looking for toxins on susceptible cell culture substrates).

[0106] In some embodiments, donors are also selected for the presence of certain genera and/or species that provide increased efficacy of therapeutic compositions containing these genera or species. In other embodiments, donors are preferred that produce relatively higher concentrations of spores in fecal material than other donors. In further embodiments, donors are preferred that provide fecal material from which spores having increased efficacy are purified; this increased efficacy is measured using in vitro or in animal studies as described below. In some embodiments, the donor may be subjected to one or more pre-donation treatments in order to reduce undesired material in the fecal material, and/or increase desired spore populations.

[0107] It is advantageous to screen the health of the donor subject prior to and optionally, one or more times after, the collection of the fecal material. Such screening identifies donors carrying pathogenic materials such as viruses (HIV, hepatitis, polio) and pathogenic bacteria. Post-collection, donors are screened about one week, two weeks, three weeks, one month, two months, three months, six months, one year or more than one year, and the frequency of such screening may be daily, weekly, bi-weekly, monthly, bi-monthly, semi-yearly or yearly. Donors that are screened and do not test positive, either before or after donation or both, are considered "validated" donors.

[0108] Solvent treatments. To purify the bacterial spores, the fecal material is subjected to one or more solvent treatments. A solvent treatment is a miscible solvent treatment (either partially miscible or fully miscible) or an immiscible solvent treatment. Miscibility is the ability of two liquids to mix with each to form a homogeneous solution. Water and ethanol, for example, are fully miscible such that a mixture containing water and ethanol in any ratio will show only one phase. Miscibility is provided as a wt/wt%, or weight of one solvent in 100 g of final solution. If two solvents are fully miscible in all proportions, their miscibility is 100%. Provided as fully miscible solutions with water are alcohols, e.g., methanol, ethanol, isopropanol, butanol, propanediol, butanediol, etc. The alcohols can be provided already combined with water; e.g., a solution containing 10%, 20%, 25%, 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%, 70%, 75%, 89%, 85%, 90%, 95% or greater than 95%. Other solvents are only partially miscible, meaning that only some portion will dissolve in water. Diethyl ether, for example, is partially miscible with water. Up to 7 grams of diethyl ether will dissolve in 93 g of water to give a 7% (wt/wt%) solution. If more diethyl ether is added, a two-phase solution will result with a distinct diethyl ether layer above the water. Other partially miscible materials include ethers, propanoate, butanoate, chloroform, dimethoxyethane, or tetrahydrofuran. In contrast, an oil such as an alkane and water are immiscible and form two phases. Further, immiscible treatments are optionally combined with a detergent, either an ionic detergent or a non-ionic detergent. Exemplary detergents include Triton X-100, Tween 20, Tween 80, Nonidet P40, a pluronic, or a polyol. The solvent treatment steps reduces the viability of non-spore forming bacterial species by 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 85%, 90%, 95%, 99%, 99.9%, 99.99%, 99.999%,

or 99.9999%, and it may optionally reduce the viability of contaminating protists, parasites and/or viruses.

[0109] Chromatography treatments. To purify spore populations, the fecal materials are subjected to one or more chromatographic treatments, either sequentially or in parallel. In a chromatographic treatment, a solution containing the fecal material is contacted with a solid medium containing a hydrophobic interaction chromatographic (HIC) medium or an affinity chromatographic medium. In an alternative embodiment, a solid medium capable of absorbing a residual habitat product present in the fecal material is contacted with a solid medium that adsorbs a residual habitat product. In certain embodiments, the HIC medium contains sepharose or a derivatized sepharose such as butyl sepharose, octyl sepharose, phenyl sepharose, or butyl-s sepharose. In other embodiments, the affinity chromatographic medium contains material derivatized with mucin type I, II, III, IV, V, or VI, or oligosaccharides derived from or similar to those of mucins type I, II, III, IV, V, or VI. Alternatively, the affinity chromatographic medium contains material derivatized with antibodies that recognize spore-forming bacteria.

[0110] Mechanical treatments. Provided herein is the physical disruption of the fecal material, particularly by one or more mechanical treatment such as blending, mixing, shaking, vortexing, impact pulverization, and sonication. As provided herein, the mechanical disrupting treatment substantially disrupts a non-spore material present in the fecal material and does not substantially disrupt a spore present in the fecal material, or it may disrupt the spore material less than the non-spore material, e.g. 2-fold less, 5-, 10-, 30-, 100-, 300-, 1000- or greater than 1000-fold less. Furthermore, mechanical treatment homogenizes the material for subsequent sampling, testing, and processing . Mechanical treatments optionally include filtration treatments, where the desired spore populations are retained on a filter while the undesirable (non-spore) fecal components to pass through, and the spore fraction is then recovered from the filter medium. Alternatively, undesirable particulates and eukaryotic cells may be retained on a filter while bacterial cells including spores pass through. In some embodiments the spore fraction retained on the filter medium is subjected to a diafiltration step, wherein the retained spores are contacted with a wash liquid, typically a sterile saline-containing solution or other diluent such as a water compatible polymer including a low-molecular polyethylene

glycol (PEG) solution, in order to further reduce or remove the undesirable fecal components.

[0111] Thermal treatments. Provided herein is the thermal disruption of the fecal material. Generally, the fecal material is mixed in a saline-containing solution such as phosphate-buffered saline (PBS) and subjected to a heated environment, such as a warm room, incubator, water-bath, or the like, such that efficient heat transfer occurs between the heated environment and the fecal material. Preferably the fecal material solution is mixed during the incubation to enhance thermal conductivity and disrupt particulate aggregates. Thermal treatments can be modulated by the temperature of the environment and/or the duration of the thermal treatment. For example, the fecal material or a liquid comprising the fecal material is subjected to a heated environment, e.g., a hot water bath of at least about 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 or greater than 100 degrees Celsius, for at least about 1, 5, 10, 15, 20, 30, 45 seconds, or 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, or 50 minutes, or 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more than 10 hours. In certain embodiments the thermal treatment occurs at two different temperatures, such as 30 seconds in a 100 degree Celsius environment followed by 10 minutes in a 50 degree Celsius environment. In preferred embodiments the temperature and duration of the thermal treatment are sufficient to kill or remove pathogenic materials while not substantially damaging or reducing the germination-competency of the spores. In other preferred embodiments, the temperature and duration of the thermal treatment is short enough to reduce the germination of the spore population.

[0112] Irradiation treatments. Provided are methods of treating the fecal material or separated contents of the fecal material with ionizing radiation, typically gamma irradiation, ultraviolet irradiation or electron beam irradiation provided at an energy level sufficient to kill pathogenic materials while not substantially damaging the desired spore populations. For example, ultraviolet radiation at 254nm provided at an energy level below about 22,000 microwatt seconds per cm^2 will not generally destroy desired spores.

[0113] Centrifugation and density separation treatments. Provided are methods of separating desired spore populations from the other components of the fecal material by centrifugation. A solution containing the fecal material is subjected to one or more centrifugation treatments, e.g., at about 200 x g, 1000 x g, 2000 x g,

3000 x g, 4000 x g, 5000 x g, 6000 x g, 7000 x g, 8000 x g or greater than 8000 x g. Differential centrifugation separates desired spores from undesired non-spore material; at low forces the spores are retained in solution, while at higher forces the spores are pelleted while smaller impurities (e.g., virus particles, phage, microscopic fibers, biological macromolecules such as free protein, nucleic acids and lipids) are retained in solution. For example, a first low force centrifugation pellets fibrous materials; a second, higher force centrifugation pellets undesired eukaryotic cells, and a third, still higher force centrifugation pellets the desired spores while smaller contaminants remain in suspension. In some embodiments density or mobility gradients or cushions (e.g., step cushions), such as CsCl, Percoll, Ficoll, Nycodenz, Histodenz or sucrose gradients, are used to separate desired spore populations from other materials in the fecal material.

[0114] Also provided herein are methods of producing spore populations that combine two or more of the treatments described herein in order to synergistically purify the desired spores while killing or removing undesired materials and/or activities from the spore population. It is generally desirable to retain the spore populations under non-germinating and non-growth promoting conditions and media, in order to minimize the growth of pathogenic bacteria present in the spore populations and to minimize the germination of spores into vegetative bacterial cells.

[0115] Purified spore populations. As described herein, purified spore populations contain combinations of commensal bacteria of the human gut microbiota with the capacity to meaningfully provide functions of a healthy microbiota when administered to a mammalian subject. Without being limited to a specific mechanism, it is thought that such compositions inhibit the growth of a pathogen such as *C. difficile*, *Salmonella* spp., enteropathogenic *E. coli, Fusobacterium spp., Klebsiella spp.* and vancomycin-resistant *Enterococcus* spp., so that a healthy, diverse and protective microbiota can be maintained or, in the case of pathogenic bacterial infections such as *C. difficile* infection, repopulate the intestinal lumen to reestablish ecological control over potential pathogens. In one embodiment, the purified spore populations can engraft in the host and remain present for 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days, 10 days, 14 days, 21 days, 25 days, 30 days, 60 days, 90 days, or longer than 90 days. Additionally, the purified spore populations can induce other healthy commensal bacteria found in a healthy gut to

engraft in the host that are not present in the purified spore populations or present at lesser levels and therefore these species are considered to "augment" the delivered spore populations. In this manner, commensal species augmentation of the purified spore population in the recipient's gut leads to a more diverse population of gut microbiota then present initially.

[0116] Preferred bacterial genera include Acetanaerobacterium, Acetivibrio, Alicyclobacillus, Alkaliphilus, Anaerofustis, Anaerosporobacter, Anaerostipes, Anaerotruncus, Anoxybacillus, Bacillus, Bacteroides, Blautia, Brachyspira, Brevibacillus, Bryantella, Bulleidia, Butyricicoccus, Butyrivibrio, Catenibacterium, Chlamydiales, Clostridiaceae, Clostridiales, Clostridium, Collinsella, Coprobacillus, Coprococcus, Coxiella, Deferribacteres, Desulfitobacterium, Desulfotomaculum, Dorea, Eggerthella, Erysipelothrix, Erysipelotrichaceae, Ethanoligenens, Eubacterium, Faecalibacterium, Filifactor, Flavonifractor, Flexistipes, Fulvimonas, Fusobacterium, Gemmiger, Geobacillus, Gloeobacter, Holdemania, Hydrogenoanaerobacterium, Kocuria, Lachnobacterium, Lachnospira, Lachnospiraceae, Lactobacillus, Lactonifactor, Leptospira, Lutispora, Lysinibacillus, Mollicutes, Moorella, Nocardia, Oscillibacter, Oscillospira, Paenibacillus, Papillibacter, Pseudoflavonifractor, Robinsoniella, Roseburia, Ruminococcaceae, Ruminococcus, Saccharomonospora, Sarcina, Solobacterium, Sporobacter, Sporolactobacillus, Streptomyces, Subdoligranulum, Sutterella, Syntrophococcus, Thermoanaerobacter,Thermobifida, Turicibacter

[0117] Preferred bacterial species are provided at Table 1 and demarcated as spore formers. Where specific strains of a species are provided, one of skill in the art will recognize that other strains of the species can be substituted for the named strain.

[0118] In some embodiments, spore-forming bacteria are identified by the presence of nucleic acid sequences that modulate sporulation. In particular, signature sporulation genes are highly conserved across members of distantly related genera including Clostridium and Bacillus. Traditional approaches of forward genetics have identified many, if not all, genes that are essential for sporulation (spo). The developmental program of sporulation is governed in part by the successive action of four compartment-specific sigma factors (appearing in the order σF, σE, σG and σK), whose activities are confined to the forespore (σF and σG) or

the mother cell (σE and σK). In other embodiments, spore-forming bacteria are identified by the biochemical activity of DPA producing enzymes or by analyzing DPA content of cultures. As part of the bacterial sporulation, large amounts of DPA are produced, and comprise 5-15% of the mass of a spore. Because not all viable spores germinate and grow under known media conditions, it is difficult to assess a total spore count in a population of bacteria. As such, a measurement of DPA content highly correlates with spore content and is an appropriate measure for characterizing total spore content in a bacterial population.

[0119] [Provided are spore populations containing more than one type of bacterium. As used herein, a "type" or more than one "types" of bacteria may be differentiated at the genus level, the species, level, the sub-species level, the strain level or by any other taxonomic method, as described herein and otherwise known in the art.

[0120] In some embodiments all or essentially all of the bacterial spores present in a purified population are obtained from a fecal material treated as described herein or otherwise known in the art. In alternative embodiments, one or more than one bacterial spores or types of bacterial spores are generated in culture and combined to form a purified spore population. In other alternative embodiments, one or more of these culture-generated spore populations are combined with a fecal material-derived spore population to generate a hybrid spore population. Bacterial compositions may contain at least two types of these preferred bacteria, including strains of the same species. For instance, a bacterial composition may comprise at least 2, at least 3, at least 4, at least 5, at least 6, at least 7, at least 8, at least 9, at least 10, at least 11, at least 12, at least 13, at least 14, at least 15, at least 16, at least 17, at least 18, at least 19, or at least 20 or more than 20 types of bacteria, as defined by species or operational taxonomic unit (OTU) encompassing such species.

[0121] Thus, provided herein are methods for production of a composition containing a population of bacterial spores suitable for therapeutic administration to a mammalian subject in need thereof. And the composition is produced by generally following the steps of: (a) providing a fecal material obtained from a mammalian donor subject; and (b) subjecting the fecal material to at least one purification treatment or step under conditions such that a population of bacterial spores is produced from the fecal material. The composition is formulated such that a single

oral dose contains at least about $1x10^4$ colony forming units of the bacterial spores, and a single oral dose will typically contain about $1x10^4$, $1x10^5$, $1x10^6$, $1x10^7$, $1x10^8$, $1x10^9$, $1x10^{10}$, $1x10^{11}$, $1x10^{12}$, $1x10^{13}$, $1x10^{14}$, $1x10^{15}$, or greater than $1x10^{15}$ CFUs of the bacterial spores. The presence and/or concentration of a given type of bacterial spore may be known or unknown in a given purified spore population. If known, for example the concentration of spores of a given strain, or the aggregate of all strains, is e.g., $1x10^4$, $1x10^5$, $1x10^6$, $1x10^7$, $1x10^8$, $1x10^9$, $1x10^{10}$, $1x10^{11}$, $1x10^{12}$, $1x10^{13}$, $1x10^{14}$, $1x10^{15}$, or greater than $1x10^{15}$ viable bacterial spores per gram of composition or per administered dose.

[0122] In some formulations, the composition contains at least about 0.5%,1%, 2%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% or greater than 90% spores on a mass basis. In some formulations, the administered dose does not exceed 200, 300, 400, 500, 600, 700, 800, 900 milligrams or 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, or 1.9 grams in mass.

[0123] The bacterial spore compositions are generally formulated for oral or gastric administration, typically to a mammalian subject. In particular embodiments, the composition is formulated for oral administration as a solid, semi-solid, gel, or liquid form, such as in the form of a pill, tablet, capsule, or lozenge. In some embodiments, such formulations contain or are coated by an enteric coating to protect the bacteria through the stomach and small intestine, although spores are generally resistant to the stomach and small intestines. In other embodiments, the bacterial spore compositions may be formulated with a germinant to enhance engraftment, or efficacy. In yet other embodiments, the bacterial spore compositions may be co-formulated or co-administered with prebiotic substances, to enhance engraftment or efficacy.

[0124] The bacterial spore compositions may be formulated to be effective in a given mammalian subject in a single administration or over multiple administrations. For example, a single administration is substantially effective to reduce *Cl. difficile* and/or *Cl. difficile* toxin content in a mammalian subject to whom the composition is administered. Substantially effective means that *Cl. difficile* and/or *Cl. difficile* toxin content in the subject is reduced by at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 98%, 99% or greater than 99% following administration of the composition. Alternatively, efficacy may be measured by the absence of diarrheal

symptoms or the absence of carriage of *C. difficile* or *C. difficile* toxin after 2 day, 4 days, 1 week, 2 weeks, 4 weeks, 8 weeks or longer than 8 weeks.

Bacterial Compositions

[0125] Provided are bacteria and combinations of bacteria of the human gut microbiota with the capacity to meaningfully provide functions of a healthy microbiota when administered to mammalian hosts. Without being limited to a specific mechanism, it is thought that such compositions inhibit the growth, proliferation, and/or colonization of one or a plurality of pathogenic bacteria in the dysbiotic microbiotal niche, so that a healthy, diverse and protective microbiota colonizes and populates the intestinal lumen to establish or reestablish ecological control over pathogens or potential pathogens (e.g., some bacteria are pathogenic bacteria only when present in a dysbiotic environment). Inhibition of pathogens includes those pathogens such as *C. difficile, Salmonella* spp., enteropathogenic *E coli,* multi-drug resistant bacteria such as *Klebsiella*, and *E. coli*, Carbapenem-resistent Enterobacteriaceae (CRE), extended spectrum beta-lactam resistant *Enterococci (ESBL),* and vancomycin-resistant Enterococci (VRE).

[0126] As used herein, a "type" or more than one "types" of bacteria may be differentiated at the genus level, the species, level, the sub-species level, the strain level or by any other taxonomic method, as described herein and otherwise known in the art.

[0127] Bacterial compositions may comprise two types of bacteria (termed "binary combinations" or "binary pairs") or greater than two types of bacteria. For instance, a bacterial composition may comprise at least 2, at least 3, at least 4, at least 5, at least 6, at least 7, at least 8, at least 9, at least 10, at least 11, at least 12, at least 13, at least 14, at least 15, at least 16, at least 17, at least 18, at least 19, at least 20, or at least 21, 22, 23, 24, 25, 26, 27, 28, 29 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, or at least 40, at least 50 or greater than 50 types of bacteria, as defined by species or operational taxonomic unit (OTU), or otherwise as provided herein.

[0128] In another embodiment, the number of types of bacteria present in a bacterial composition is at or below a known value. For example, in such embodiments the bacterial composition comprises 50 or fewer types of bacteria, such as 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30,

29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, or 10 or fewer, or 9 or fewer types of bacteria, 8 or fewer types of bacteria, 7 or fewer types of bacteria, 6 or fewer types of bacteria, 5 or fewer types of bacteria, 4 or fewer types of bacteria, or 3 or fewer types of bacteria. In another embodiment, a bacterial composition comprises from 2 to no more than 40, from 2 to no more than 30, from 2 to no more than 20, from 2 to no more than 15, from 2 to no more than 10, or from 2 to no more than 5 types of bacteria.

Bacterial Compositions Described by Species

[0129] Bacterial compositions may be prepared comprising at least two types of isolated bacteria, chosen from the species in **Table 1**.

[0130] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Enterococcus faecalis* (previously known as *Streptococcus faecalis*), *Clostridium innocuum*, *Clostridium ramosum*, *Bacteroides ovatus*, *Bacteroides vulgatus*, *Bacteroides thetaoiotaomicron*, *Escherichia coli* (1109 and 1108-1), *Clostridum bifermentans*, and *Blautia producta* (previously known as *Peptostreptococcus productus*). In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0131] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Enterococcus faecalis* (previously known as *Streptococcus faecalis*), *Clostridium innocuum*, *Clostridium ramosum*, *Bacteroides ovatus*, *Bacteroides vulgatus*, *Bacteroides thetaoiotaomicron*, *Escherichia coli* (1109 and 1108-1), *Clostridum bifermentans*, and *Blautia producta* (previously known as *Peptostreptococcus productus*). In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0132] In another embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Acidaminococcus intestinalis, Bacteroides ovatus,* two strains of *Bifidobacterium adolescentis,* two strains of *Bifidobacterium longum, Blautia producta, Clostridium cocleatum, Collinsella aerofaciens,* two strains of *Dorea longicatena, Escherichia coli, Eubacterium desmolans, Eubacterium eligens, Eubacterium limosum,* four strains of *Eubacterium*

rectale, Eubacterium ventriosumi, Faecalibacterium prausnitzii, Lachnospira pectinoshiza, Lactobacillus casei, Lactobacillus casei/paracasei, Paracateroides distasonis, Raoultella sp., one strain of *Roseburia* (chosen from *Roseburia faecalis* or *Roseburia faecis*), *Roseburia intestinalis,* two strains of *Ruminococcus torques, two* strains of *Ruminococcus obeum,* and *Streptococcus mitis*. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0133] In yet another embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Barnesiella intestinihominis; Lactobacillus reuteri;* a species characterized as one of *Enterococcus hirae*, *Enterococus faecium*, or *Enterococcus durans;* a species characterized as one of *Anaerostipes caccae* or *Clostridium indolis;* a species characterized as one of *Staphylococcus warneri* or *Staphylococcus pasteuri*; and *Adlercreutzia equolifaciens.* In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0134] In other embodiments, the bacterial composition comprises at least one and preferably more than one of the following: Clostridium absonum, Clostridium argentinense, Clostridium baratii, Clostridium bartlettii, Clostridium bifermentans, Clostridium botulinum, Clostridium butyricum, Clostridium cadaveris, Clostridium camis, Clostridium celatum, Clostridium chauvoei, Clostridium clostridioforme, Clostridium cochlearium, Clostridium difficile, Clostridium fallax, Clostridium felsineum, Clostridium ghonii, Clostridium glycolicum, Clostridium haemolyticum, Clostridium hastiforme, Clostridium histolyticum, Clostridium indolis, Clostridium innocuum, Clostridium irregulare, Clostridium limosum, Clostridium malenominatum, Clostridium novyi, Clostridium oroticum, Clostridium paraputrificum, Clostridium perfringens, Clostridium piliforme, Clostridium putrefaciens, Clostridium putrificum, Clostridium ramosum, Clostridium sardiniense, Clostridium sartagoforme, Clostridium scindens, Clostridium septicum, Clostridium sordellii, Clostridium sphenoides, Clostridium spiroforme, Clostridium sporogenes, Clostridium subterminale, Clostridium symbiosum, Clostridium tertium, Clostridium tetani, Clostridium welchii, and Clostridium villosum. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0135] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: Clostridium innocuum, Clostridum bifermentans, Clostridium butyricum, Bacteroides fragilis, Bacteroides thetaiotaomicron, Bacteroides uniformis, three strains of Escherichia coli, and Lactobacillus sp. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0136] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Clostridium bifermentans, Clostridium innocuum, Clostridium butyricum*, three strains of *Escherichia coli*, three strains of *Bacteroides,* and *Blautia producta.* In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0137] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Bacteroides sp.*, *Escherichia coli*, and non pathogenic *Clostridia*, including *Clostridium innocuum*, *Clostridium bifermentans* and *Clostridium ramosum*. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0138] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Bacteroides* species, *Escherichia coli* and non-pathogenic *Clostridia*, such as *Clostridium butyricum, Clostridium bifermentans* and *Clostridium innocuum*. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0139] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: Bacteroides caccae, Bacteroides capillosus, Bacteroides coagulans, Bacteroides distasonis, Bacteroides eggerthii, Bacteroides forsythus, Bacteroides fragilis, Bacteroides fragilis-ryhm, Bacteroides gracilis, Bacteroides levii, Bacteroides macacae, Bacteroides merdae, Bacteroides ovatus, Bacteroides pneumosintes, Bacteroides putredinis, Bacteroides pyogenes, Bacteroides splanchnicus, Bacteroides stercoris, Bacteroides tectum, Bacteroides thetaiotaomicron, Bacteroides uniformis, Bacteroides ureolyticus, and Bacteroides vulgatus. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0140] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Bacteroides, Eubacteria, Fusobacteria, Propionibacteria,* Lactobacilli, *anaerobic cocci, Ruminococcus, Escherichia coli, Gemmiger, Desulfomonas,* and *Peptostreptococcus*. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

[0141] In one embodiment, the bacterial composition comprises at least one and preferably more than one of the following: *Bacteroides fragilis ss. Vulgatus, Eubacterium aerofaciens, Bacteroides fragilis ss. Thetaiotaomicron, Blautia producta* (previously known as *Peptostreptococcus productus II*), *Bacteroides fragilis ss. Distasonis, Fusobacterium prausnitzii, Coprococcus eutactus, Eubacterium aerofaciens III, Blautia producta* (previously known as *Peptostreptococcus productus I*), *Ruminococcus bronii, Bifidobacterium adolescentis, Gemmiger formicilis, Bifidobacterium longum, Eubacterium siraeum, Ruminococcus torques, Eubacterium rectale III-H, Eubacterium rectale IV, Eubacterium eligens, Bacteroides eggerthii, Clostridium leptum, Bacteroides fragilis ss. A, Eubacterium biforme, Bifidobacterium infantis, Eubacterium rectale III-F, Coprococcus comes, Bacteroides capillosus, Ruminococcus albus, Eubacterium formicigenerans, Eubacterium hallii, Eubacterium ventriosum I, Fusobacterium russii, Ruminococcus obeum, Eubacterium rectale II, Clostridium ramosum I, Lactobacillus leichmanii, Ruminococcus cailidus, Butyrivibrio crossotus, Acidaminococcus fermentans, Eubacterium ventriosum, Bacteroides fragilis ss. fragilis, Bacteroides AR, Coprococcus catus, Eubacterium hadrum, Eubacterium cylindroides, Eubacterium ruminantium, Eubacterium CH-1, Staphylococcus epidermidis, Peptostreptococcus BL, Eubacterium limosum, Bacteroides praeacutus, Bacteroides L, Fusobacterium mortiferum I, Fusobacterium naviforme, Clostridium innocuum, Clostridium ramosum, Propionibacterium acnes, Ruminococcus flavefaciens, Ruminococcus AT, Peptococcus AU-1, Eubacterium AG, -AK, -AL, -AL-1, -AN; Bacteroides fragilis ss. ovatus, -ss. d, -ss. f; Bacteroides L-1, L-5; Fusobacterium nucleatum, Fusobacterium mortiferum, Escherichia coli, Streptococcus morbiliorum, Peptococcus magnus, Peptococcus G, AU-2; Streptococcus intermedius, Ruminococcus lactaris, Ruminococcus CO Gemmiger X, Coprococcus BH, -CC; Eubacterium tenue, Eubacterium ramulus, Eubacterium AE, -AG-H, -AG-M, -AJ, -BN-1; Bacteroides clostridiiformis ss. clostridliformis,*

Bacteroides coagulans, Bacteroides orails, Bacteroides ruminicola ss. brevis, -ss. ruminicola, Bacteroides splanchnicus, Desuifomonas pigra, Bacteroides L-4, -N-i; Fusobacterium H, Lactobacillus G, and *Succinivibrio A*. In an alternative embodiment, at least one of the preceding species is not substantially present in the bacterial composition.

Bacterial Compositions Described by Operational Taxonomic Unit (OTUs)

[0142] Bacterial compositions may be prepared comprising at least two types of isolated bacteria, chosen from the species in Table 1.

[0143] In one embodiment, the OTUs can be characterized by one or more of the variable regions of the 16S sequence (V1-V9). These regions in bacteria are defined by nucleotides 69-99, 137-242, 433-497, 576-682, 822-879, 986-1043, 1117-1173, 1243-1294 and 1435-1465 respectively using numbering based on the *E. coli* system of nomenclature. (*See, e.g.*, Brosius *et al.*, Complete nucleotide sequence of a 16S ribosomal RNA gene from Escherichia coli, PNAS 75(10):4801-4805 (1978)). In some embodiments, at least one of the V1, V2, V3, V4, V5, V6, V7, V8, and V9 regions are used to characterize an OTU. In one embodiment, the V1, V2, and V3 regions are used to characterize an OTU. In another embodiment, the V3, V4, and V5 regions are used to characterize an OTU. In another embodiment, the V4 region is used to characterize an OTU.

Bacterial Compositions Exclusive of Certain Bacterial Species Or Strains

[0144] In one embodiment, the bacterial composition does not comprise at least one of Enterococcus faecalis (previously known as Streptococcus faecalis), Clostridium innocuum, Clostridium ramosum, Bacteroides ovatus, Bacteroides vulgatus, Bacteroides thetaoiotaomicron, Escherichia coli (1109 and 1108-1), Clostridum bifermentans, and Blautia producta (previously known as Peptostreptococcus productus).

[0145] In another embodiment, the bacterial composition does not comprise at least one of Acidaminococcus intestinalis, Bacteroides ovatus, two species of Bifidobacterium adolescentis, two species of Bifidobacterium longum, Collinsella aerofaciens, two species of Dorea longicatena, Escherichia coli, Eubacterium eligens, Eubacterium limosum, four species of Eubacterium rectale, Eubacterium

ventriosumi, Faecalibacterium prausnitzii, Lactobacillus casei, Lactobacillus paracasei, Paracateroides distasonis, Raoultella sp., one species of Roseburia (chosen from Roseburia faecalis or Roseburia faecis), Roseburia intestinalis, two species of Ruminococcus torques, and Streptococcus mitis.

[0146] In yet another embodiment, the bacterial composition does not comprise at least one of *Barnesiella intestinihominis; Lactobacillus reuteri;* a species characterized as one of *Enterococcus hirae*, *Enterococus faecium*, or *Enterococcus durans;* a species characterized as one of *Anaerostipes caccae* or *Clostridium indolis;* a species characterized as one of *Staphylococcus warneri* or *Staphylococcus pasteuri*; and *Adlercreutzia equolifaciens.*

[0147] In other embodiments, the bacterial composition does not comprise at least one of Clostridium absonum, Clostridium argentinense, Clostridium baratii, Clostridium bifermentans, Clostridium botulinum, Clostridium butyricum, Clostridium cadaveris, Clostridium camis, Clostridium celatum, Clostridium chauvoei, Clostridium clostridioforme, Clostridium cochlearium, Clostridium difficile, Clostridium fallax, Clostridium felsineum, Clostridium ghonii, Clostridium glycolicum, Clostridium haemolyticum, Clostridium hastiforme, Clostridium histolyticum, Clostridium indolis, Clostridium innocuum, Clostridium irregulare, Clostridium limosum, Clostridium malenominatum, Clostridium novyi, Clostridium oroticum, Clostridium paraputrificum, Clostridium perfringens, Clostridium piliforme, Clostridium putrefaciens, Clostridium putrificum, Clostridium ramosum, Clostridium sardiniense, Clostridium sartagoforme, Clostridium scindens, Clostridium septicum, Clostridium sordellii, Clostridium sphenoides, Clostridium spiroforme, Clostridium sporogenes, Clostridium subterminale, Clostridium symbiosum, Clostridium tertium, Clostridium tetani, Clostridium welchii, and Clostridium villosum.

[0148] In another embodiment, the bacterial composition does not comprise at least one of Clostridium innocuum, Clostridum bifermentans, Clostridium butyricum, Bacteroides fragilis, Bacteroides thetaiotaomicron, Bacteroides uniformis, three strains of Escherichia coli, and Lactobacillus sp.

[0149] In another embodiment, the bacterial composition does not comprise at least one of *Clostridium bifermentans, Clostridium innocuum, Clostridium butyricum*,

three strains of *Escherichia coli*, three strains of *Bacteroides,* and *Blautia producta* (previously known as *Peptostreptococcus productus).*

[0150] In another embodiment, the bacterial composition does not comprise at least one of *Bacteroides sp.*, *Escherichia coli*, and non pathogenic *Clostridia*, including *Clostridium innocuum*, *Clostridium bifermentans* and *Clostridium ramosum*.

[0151] In another embodiment, the bacterial composition does not comprise at least one of more than one *Bacteroides* species, *Escherichia coli* and non-pathogenic *Clostridia*, such as *Clostridium butyricum, Clostridium bifermentans* and *Clostridium innocuum*.

[0152] In another embodiment, the bacterial composition does not comprise at least one of Bacteroides caccae, Bacteroides capillosus, Bacteroides coagulans, Bacteroides distasonis, Bacteroides eggerthii, Bacteroides forsythus, Bacteroides fragilis, Bacteroides fragilis-ryhm, Bacteroides gracilis, Bacteroides levii, Bacteroides macacae, Bacteroides merdae, Bacteroides ovatus, Bacteroides pneumosintes, Bacteroides putredinis, Bacteroides pyogenes, Bacteroides splanchnicus, Bacteroides stercoris, Bacteroides tectum, Bacteroides thetaiotaomicron, Bacteroides uniformis, Bacteroides ureolyticus, and Bacteroides vulgatus.

[0153] In another embodiment, the bacterial composition does not comprise at least one of Bacteroides, Eubacteria, Fusobacteria, Propionibacteria, Lactobacilli, anaerobic cocci, Ruminococcus, Escherichia coli, Gemmiger, Desulfomonas, and Peptostreptococcus.

[0154] In another embodiment, the bacterial composition does not comprise at least one of Bacteroides fragilis ss. Vulgatus, Eubacterium aerofaciens, Bacteroides fragilis ss. Thetaiotaomicron, Blautia producta (previously known as Peptostreptococcus productus II), Bacteroides fragilis ss. Distasonis, Fusobacterium prausnitzii, Coprococcus eutactus, Eubacterium aerofaciens III, Blautia producta (previously known as Peptostreptococcus productus I), Ruminococcus bromii, Bifidobacterium adolescentis, Gemmiger formicilis, Bifidobacterium longum, Eubacterium siraeum, Ruminococcus torques, Eubacterium rectale III-H, Eubacterium rectale IV, Eubacterium eligens, Bacteroides eggerthii, Clostridium leptum, Bacteroides fragilis ss. A, Eubacterium biforme, Bifidobacterium infantis, Eubacterium rectale III-F, Coprococcus comes, Bacteroides capillosus,

Ruminococcus albus, Eubacterium formicigenerans, Eubacterium hallii, Eubacterium ventriosum I, Fusobacterium russii, Ruminococcus obeum, Eubacterium rectale II, Clostridium ramosum I, Lactobacillus leichmanii, Ruminococcus cailidus, Butyrivibrio crossotus, Acidaminococcus fermentans, Eubacterium ventriosum, Bacteroides fragilis ss. fragilis, Bacteroides AR, Coprococcus catus, Eubacterium hadrum, Eubacterium cylindroides, Eubacterium ruminantium, Eubacterium CH-1, Staphylococcus epidermidis, Peptostreptococcus BL, Eubacterium limosum, Bacteroides praeacutus, Bacteroides L, Fusobacterium mortiferum I, Fusobacterium naviforme, Clostridium innocuum, Clostridium ramosum, Propionibacterium acnes, Ruminococcus flavefaciens, Ruminococcus AT, Peptococcus AU-1, Eubacterium AG, -AK, -AL, -AL-1, -AN; Bacteroides fragilis ss. ovatus, -ss. d, -ss. f; Bacteroides L-1, L-5; Fusobacterium nucleatum, Fusobacterium mortiferum, Escherichia coli, Streptococcus morbiliorum, Peptococcus magnus, Peptococcus G, AU-2; Streptococcus intermedius, Ruminococcus lactaris, Ruminococcus CO Gemmiger X, Coprococcus BH, -CC; Eubacterium tenue, Eubacterium ramulus, Eubacterium AE, -AG-H, -AG-M, -AJ, -BN-1; Bacteroides clostridiiformis ss. clostridliformis, Bacteroides coagulans, Bacteroides orails, Bacteroides ruminicola ss. brevis, -ss. ruminicola, Bacteroides splanchnicus, Desuifomonas pigra, Bacteroides L-4, -N-i; Fusobacterium H, Lactobacillus G, and Succinivibrio A.

Inhibition of Bacterial Pathogens

[0155] In some embodiments, the bacterial composition provides a protective or therapeutic effect against infection by one or more GI pathogens of interest.

[0156] A list of exemplary bacterial pathogens is provided in Table 1 as indicated by pathogen status.

[0157] In some embodiments, the pathogenic bacterium is selected from the group consisting of Yersinia, Vibrio, Treponema, Streptococcus, Staphylococcus, Shigella, Salmonella, Rickettsia, Orientia, Pseudomonas, Neisseria, Mycoplasma, Mycobacterium, Listeria, Leptospira, Legionella, Klebsiella, Helicobacter, Haemophilus, Francisella, Escherichia, Ehrlichia, Enterococcus, Coxiella, Corynebacterium, Clostridium, Chlamydia, Chlamydophila, Campylobacter, Burkholderia, Brucella, Borrelia, Bordetella, Bifidobacterium , Bacillus, multi-drug resistant bacteria, extended spectrum beta-lactam resistant Enterococci (ESBL),

Carbapenem-resistent Enterobacteriaceae (CRE), and vancomycin-resistant Enterococci (VRE).

[0158] In some embodiments, these pathogens include, but are not limited to, Aeromonas hydrophila, Campylobacter fetus, Plesiomonas shigelloides, Bacillus cereus, Campylobacter jejuni, Clostridium botulinum, Clostridium difficile, Clostridium perfringens, enteroaggregative Escherichia coli, enterohemorrhagic Escherichia coli, enteroinvasive Escherichia coli, enterotoxigenic Escherichia coli (such as, but not limited to, LT and/or ST), Escherichia coli 0157:H7, Helicobacter pylori, Klebsiellia pneumonia, Lysteria monocytogenes, Plesiomonas shigelloides, Salmonella spp., Salmonella typhi, Salmonella paratyphi, Shigella spp., Staphylococcus spp., Staphylococcus aureus, vancomycin-resistant enterococcus spp., Vibrio spp., Vibrio cholerae, Vibrio parahaemolyticus, Vibrio vulnificus, and Yersinia enterocolitica.

[0159] In one embodiment, the pathogen of interest is at least one pathogen chosen from *Clostridium difficile*, *Salmonella* spp., pathogenic *Escherichia coli*, vancomycin-resistant *Enterococcus* spp., and extended spectrum beta-lactam resistant *Enterococci (ESBL)*.

Purified Spore Populations

[0160] In some embodiments, the bacterial compositions comprise purified spore populations. Purified spore populations contain combinations of commensal bacteria of the human gut microbiota with the capacity to meaningfully provide functions of a healthy microbiota when administered to a mammalian subject. Without being limited to a specific mechanism, it is thought that such compositions inhibit the growth of a pathogen such as *C. difficile*, *Salmonella* spp., enteropathogenic *E. coli,* and vancomycin-resistant *Enterococcus* spp., so that a healthy, diverse and protective microbiota can be maintained or, in the case of pathogenic bacterial infections such as *C. difficile* infection, repopulate the intestinal lumen to reestablish ecological control over potential pathogens. In some embodiments, yeast spores and other fungal spores are also purified and selected for therapeutic use.

[0161] Disclosed herein are therapeutic compositions containing non-pathogenic, germination-competent bacterial spores, for the prevention, control, and treatment of gastrointestinal diseases, disorders and conditions and for general nutritional health. These compositions are advantageous in being suitable for safe

administration to humans and other mammalian subjects and are efficacious in numerous gastrointestinal diseases, disorders and conditions and in general nutritional health. While spore-based compositions are known, these are generally prepared according to various techniques such as lyophilization or spray-drying of liquid bacterial cultures, resulting in poor efficacy, instability, substantial variability and lack of adequate safety.

[0162] It has now been found that populations of bacterial spores can be obtained from biological materials obtained from mammalian subjects, including humans. These populations are formulated into compositions as provided herein, and administered to mammalian subjects using the methods as provided herein.

[0163] Provided herein are therapeutic compositions containing a purified population of bacterial spores. As used herein, the terms "purify", "purified" and "purifying" refer to the state of a population (e.g., a plurality of known or unknown amount and/or concentration) of desired bacterial spores, that have undergone one or more processes of purification, e.g., a selection or an enrichment of the desired bacterial spore, or alternatively a removal or reduction of residual habitat products as described herein. In some embodiments, a purified population has no detectable undesired activity or, alternatively, the level or amount of the undesired activity is at or below an acceptable level or amount. In other embodiments, a purified population has an amount and/or concentration of desired bacterial spores at or above an acceptable amount and/or concentration. In other embodiments, the purified population of bacterial spores is enriched as compared to the starting material (e.g., a fecal material) from which the population is obtained. This enrichment may be by 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, 99%, 99.9%, 99.99%, 99.999%, 99.9999%, or greater than 99.9999% as compared to the starting material.

[0164] In certain embodiments, the purified populations of bacterial spores have reduced or undetectable levels of one or more pathogenic activities, such as toxicity, an infection of the mammalian recipient subject, an immunomodulatory activity, an autoimmune response, a metabolic response, or an inflammatory response or a neurological response. Such a reduction in a pathogenic activity may be by 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, 99%, 99.9%, 99.99%, 99.999%, 99.9999%, or greater than 99.9999% as compared

to the starting material. In other embodiments, the purified populations of bacterial spores have reduced sensory components as compared to fecal material, such as reduced odor, taste, appearance, and umami.

[0165] Provided are purified populations of bacterial spores that are substantially free of residual habitat products. In certain embodiments, this means that the bacterial spore composition no longer contains a substantial amount of the biological matter associated with the microbial community while living on or in the human or animal subject, and the purified population of spores may be 100% free, 99% free, 98% free, 97% free, 96% free, or 95% free of any contamination of the biological matter associated with the microbial community. Substantially free of residual habitat products may also mean that the bacterial spore composition contains no detectable cells from a human or animal, and that only microbial cells are detectable, in particular, only desired microbial cells are detectable. In another embodiment, it means that fewer than $1x10^{-2}$%, $1x10^{-3}$%, $1x10^{-4}$%, $1x10^{-5}$%, $1x10^{-6}$%, $1x10^{-7}$%, $1x10^{-8}$% of the cells in the bacterial composition are human or animal, as compared to microbial cells. In another embodiment, the residual habitat product present in the purified population is reduced at least a certain level from the fecal material obtained from the mammalian donor subject, e.g., reduced by at least about 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, 99%, 99.9%, 99.99%, 99.999%, 99.9999%, or greater than 99.9999%.

[0166] In one embodiment, substantially free of residual habitat products or substantially free of a detectable level of a pathogenic material means that the bacterial composition contains no detectable viral (including bacterial viruses (i.e., phage)), fungal, or mycoplasmal or toxoplasmal contaminants, or a eukaryotic parasite such as a helminth. Alternatively, the purified spore populations are substantially free of an acellular material, e.g., DNA, viral coat material, or non-viable bacterial material.

[0167] As described herein, purified spore populations can be demonstrated by genetic analysis (e.g., PCR, DNA sequencing), serology and antigen analysis, and methods using instrumentation such as flow cytometry with reagents that distinguish desired bacterial spores from non-desired, contaminating materials.

[0168] Exemplary biological materials include fecal materials such as feces or materials isolated from the various segments of the small and large intestines. Fecal materials are obtained from a mammalian donor subject, or can be obtained from more than one donor subject, e.g., 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 200, 300, 400, 500, 750, 1000 or from greater than 1000 donors, where such materials are then pooled prior to purification of the desired bacterial spores.

[0169] In alternative embodiments, the desired bacterial spores are purified from a single fecal material sample obtained from a single donor, and after such purification are combined with purified spore populations from other purifications, either from the same donor at a different time, or from one or more different donors, or both.

[0170] Preferred bacterial genera include Acetonema, Alkaliphilus, Alicyclobacillus, Amphibacillus, Ammonifex, Anaerobacter, Anaerofustis, Anaerostipes, Anaerotruncus, Anoxybacillus, Bacillus, Blautia, Brevibacillus, Bryantella, Caldicellulosiruptor, Caloramator, Candidatus, Carboxydibrachium, Carboxydothermus, Clostridium, Cohnella, Coprococcus, Dendrosporobacter Desulfitobacterium, Desulfosporosinus, Desulfotomaculum, Dorea, Eubacterium, Faecalibacterium, Filifactor, Geobacillus, Halobacteroides, Heliobacillus, Heliobacterium, Heliophilum, Heliorestis, Lachnoanaerobaculum, Lysinibacillus, Moorella, Oceanobacillus, Orenia (S.), Oxalophagus, Oxobacter, Paenibacillus, Pelospora, Pelotomaculum, Propionispora, Roseburia, Ruminococcus, Sarcina, Sporobacterium, Sporohalobacter, Sporolactobacillus, Sporomusa, Sporosarcina, Sporotomaculum, Subdoligranulum, Symbiobacterium, Syntrophobotulus, Syntrophospora, Terribacillus, Thermoanaerobacter, and Thermosinus.

[0171] Preferred bacterial species are provided at **Table X4**. Where specific strains of a species are provided, one of skill in the art will recognize that other strains of the species can be substituted for the named strain.

[0172] In some embodiments, spore-forming bacteria are identified by the presence of nucleic acid sequences that modulate sporulation. In particular, signature sporulation genes are highly conserved across members of distantly related genera including Clostridium and Bacillus. Traditional approaches of forward genetics have identified many, if not all, genes that are essential for sporulation

(spo). The developmental program of sporulation is governed in part by the successive action of four compartment-specific sigma factors (appearing in the order σF, σE, σG and σK), whose activities are confined to the forespore (σF and σG) or the mother cell (σE and σK).

[0173] Provided are spore populations containing more than one type of bacterium. As used herein, a "type" or more than one "types" of bacteria may be differentiated at the genus level, the species, level, the sub-species level, the strain level or by any other taxonomic method, as described herein and otherwise known in the art.

[0174] In some embodiments, all or essentially all of the bacterial spores present in a purified population are obtained from a fecal material treated as described herein or otherwise known in the art. In alternative embodiments, one or more than one bacterial spores or types of bacterial spores are generated in culture and combined to form a purified spore population. In other alternative embodiments, one or more of these culture-generated spore populations are combined with a fecal material-derived spore population to generate a hybrid spore population. Bacterial compositions may contain at least two types of these preferred bacteria, including strains of the same species. For instance, a bacterial composition may comprise at least 2, at least 3, at least 4, at least 5, at least 6, at least 7, at least 8, at least 9, at least 10, at least 11, at least 12, at least 13, at least 14, at least 15, at least 16, at least 17, at least 18, at least 19, or at least 20 or more than 20 types of bacteria, as defined by species or operational taxonomic unit (OTU) encompassing such species.

[0175] Thus, provided herein are methods for production of a composition containing a population of bacterial spores suitable for therapeutic administration to a mammalian subject in need thereof. And the composition is produced by generally following the steps of: (a) providing a fecal material obtained from a mammalian donor subject; and (b) subjecting the fecal material to at least one purification treatment or step under conditions such that a population of bacterial spores is produced from the fecal material. The composition is formulated such that a single oral dose contains at least about $1x10^4$ colony forming units of the bacterial spores, and a single oral dose will typically contain about $1x10^4$, $1x10^5$, $1x10^6$, $1x10^7$, $1x10^8$, $1x10^9$, $1x10^{10}$, $1x10^{11}$, $1x10^{12}$, $1x10^{13}$, $1x10^{14}$, $1x10^{15}$, or greater than $1x10^{15}$ CFUs of the bacterial spores. The presence and/or concentration of a given type of bacteria

spore may be known or unknown in a given purified spore population. If known, for example the concentration of spores of a given strain, or the aggregate of all strains, is e.g., $1x10^4$, $1x10^5$, $1x10^6$, $1x10^7$, $1x10^8$, $1x10^9$, $1x10^{10}$, $1x10^{11}$, $1x10^{12}$, $1x10^{13}$, $1x10^{14}$, $1x10^{15}$, or greater than $1x10^{15}$ viable bacterial spores per gram of composition or per administered dose.

[0176] In some formulations, the composition contains at least about 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90% or greater than 90% spores on a mass basis. In some formulations, the administered dose does not exceed 200, 300, 400, 500, 600, 700, 800, 900 milligrams or 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, or 1.9 grams in mass.

[0177] The bacterial spore compositions are generally formulated for oral or gastric administration, typically to a mammalian subject. In particular embodiments, the composition is formulated for oral administration as a solid, semi-solid, gel, or liquid form, such as in the form of a pill, tablet, capsule, or lozenge. In some embodiments, such formulations contain or are coated by an enteric coating to protect the bacteria through the stomach and small intestine, although spores are generally resistant to the stomach and small intestines.

[0178] The bacterial spore compositions may be formulated to be effective in a given mammalian subject in a single administration or over multiple administrations. For example, a single administration is substantially effective to reduce *Cl. difficile* and/or *Cl. difficile* toxin content in a mammalian subject to whom the composition is administered. Substantially effective means that *Cl. difficile* and/or *Cl. difficile* toxin content in the subject is reduced by at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 98%, 99% or greater than 99% following administration of the composition.

METHODS OF THE INVENTION

Methods for Determining 16S Sequences

[0179] OTUs can be defined either by full 16S sequencing of the rRNA gene, by sequencing of a specific hypervariable region of this gene (i.e. V1, V2, V3, V4, V5, V6, V7, V8, or V9), or by sequencing of any combination of hypervariable regions from this gene (e.g. V1-3 or V3-5). The bacterial 16S rDNA is approximately 1500 nucleotides in length and is used in reconstructing the evolutionary relationships and

sequence similarity of one bacterial isolate to another using phylogenetic approaches. 16S sequences are used for phylogenetic reconstruction as they are in general highly conserved, but contain specific hypervariable regions that harbor sufficient nucleotide diversity to differentiate genera and species of most microbes.

[0180] Using well known techniques, in order to determine the full 16S sequence or the sequence of any hypervariable region of the 16S sequence, genomic DNA is extracted from a bacterial sample, the 16S rDNA (full region or specific hypervariable regions) amplified using polymerase chain reaction (PCR), the PCR products cleaned, and nucleotide sequences delineated to determine the genetic composition of 16S gene or subdomain of the gene. If full 16S sequencing is performed, the sequencing method used may be, but is not limited to, Sanger sequencing. If one or more hypervariable regions are used, such as the V4 region, the sequencing can be, but is not limited to being, performed using the Sanger method or using a next-generation sequencing method, such as an Illumina (sequencing by synthesis) method using barcoded primers allowing for multiplex reactions.

[0181] OTUs can be defined by a combination of nucleotide markers or genes, in particular highly conserved genes (e.g., "house-keeping" genes), or a combination thereof, full-genome sequence, or partial genome sequence generated using amplified genetic products, or whole genome sequence (WGS). Using well defined methods DNA extracted from a bacterial sample will have specific genomic regions amplified using PCR and sequenced to determine the nucleotide sequence of the amplified products. In the whole genome shotgun (WGS) method, extracted DNA will be directly sequenced without amplification. Sequence data can be generated using any sequencing technology including, but not limited to Sanger, Illumina, 454 Life Sciences, Ion Torrent, ABI, Pacific Biosciences, and/or Oxford Nanopore.

Methods for Preparing a Bacterial Composition for Administration to a Subject

[0182] Methods for producing bacterial compositions can include three main processing steps, combined with one or more mixing steps. The steps include organism banking, organism production, and preservation.

[0183] For banking, the strains included in the bacterial composition may be (1) isolated directly from a specimen or taken from a banked stock, (2) optionally

cultured on a nutrient agar or broth that supports growth to generate viable biomass, and (3) the biomass optionally preserved in multiple aliquots in long-term storage.

[0184] In embodiments that use a culturing step, the agar or broth can contain nutrients that provide essential elements and specific factors that enable growth. An example would be a medium composed of 20 g/L glucose, 10 g/L yeast extract, 10 g/L soy peptone, 2 g/L citric acid, 1.5 g/L sodium phosphate monobasic, 100 mg/L ferric ammonium citrate, 80 mg/L magnesium sulfate, 10 mg/L hemin chloride, 2 mg/L calcium chloride, 1 mg/L menadione. A variety of microbiological media and variations are well known in the art (e.g. R.M. Atlas, *Handbook of Microbiological Media* (2010) CRC Press). Medium can be added to the culture at the start, may be added during the culture, or may be intermittently/continuously flowed through the culture. The strains in the bacterial composition may be cultivated alone, as a subset of the bacterial composition, or as an entire collection comprising the bacterial composition. As an example, a first strain may be cultivated together with a second strain in a mixed continuous culture, at a dilution rate lower than the maximum growth rate of either cell to prevent the culture from washing out of the cultivation.

[0185] The inoculated culture is incubated under favorable conditions for a time sufficient to build biomass. For bacterial compositions for human use, this is often at 37°C temperature, pH, and other parameter with values similar to the normal human niche. The environment can be actively controlled, passively controlled (e.g., via buffers), or allowed to drift. For example, for anaerobic bacterial compositions (e.g., gut microbiota), an anoxic/reducing environment can be employed. This can be accomplished by addition of reducing agents such as cysteine to the broth, and/or stripping it of oxygen. As an example, a culture of a bacterial composition can be grown at 37°C, pH 7, in the medium above, pre-reduced with 1 g/L cysteine HCl.

[0186] When the culture has generated sufficient biomass, it can be preserved for banking. The organisms can be placed into a chemical milieu that protects from freezing (adding 'cryoprotectants'), drying ('lyoprotectants'), and/or osmotic shock ('osmoprotectants'), dispensing into multiple (optionally identical) containers to create a uniform bank, and then treating the culture for preservation. Containers are generally impermeable and have closures that assure isolation from the environment. Cryopreservation treatment is accomplished by freezing a liquid at ultra-low temperatures (e.g., at or below -80°C). Dried preservation removes water

from the culture by evaporation (in the case of spray drying or 'cool drying') or by sublimation (e.g., for freeze drying, spray freeze drying). Removal of water improves long-term bacterial composition storage stability at temperatures elevated above cryogenic. If the bacterial composition comprises spore forming species and results in the production of spores, the final composition can be purified by additional means, such as density gradient centrifugation preserved using the techniques described above. Bacterial composition banking can be done by culturing and preserving the strains individually, or by mixing the strains together to create a combined bank. As an example of cryopreservation, a bacterial composition culture can be harvested by centrifugation to pellet the cells from the culture medium, the supernate decanted and replaced with fresh culture broth containing 15% glycerol. The culture can then be aliquoted into 1 mL cryotubes, sealed, and placed at -80°C for long-term viability retention. This procedure achieves acceptable viability upon recovery from frozen storage.

[0187] Organism production can be conducted using similar culture steps to banking, including medium composition and culture conditions. It can be conducted at larger scales of operation, especially for clinical development or commercial production. At larger scales, there can be several subcultivations of the bacterial composition prior to the final cultivation. At the end of cultivation, the culture is harvested to enable further formulation into a dosage form for administration. This can involve concentration, removal of undesirable medium components, and/or introduction into a chemical milieu that preserves the bacterial composition and renders it acceptable for administration via the chosen route. For example, a bacterial composition can be cultivated to a concentration of 10^{10} CFU/mL, then concentrated 20-fold by tangential flow microfiltration; the spent medium can be exchanged by diafiltering with a preservative medium consisting of 2% gelatin, 100 mM trehalose, and 10 mM sodium phosphate buffer. The suspension can then be freeze-dried to a powder and titrated.

[0188] After drying, the powder can be blended to an appropriate potency, and mixed with other cultures and/or a filler such as microcrystalline cellulose for consistency and ease of handling, and the bacterial composition formulated as provided herein.

Administration of Bacterial Compositions.

[0189] The bacterial compositions of the invention are suitable for administration to mammals and non-mammalian animals in need thereof. In certain embodiments, the mammalian subject is a human subject who has one or more symptoms of a dysbiosis, including but not limited to overgrowth of an undesired pathobiont or pathogen, reduced representation of key bacterial taxa such as the Bacteroidetes or Firmicutes or genera or species thereof, or reduced diversity of microbial species compared to a healthy individual, or reduced overall abundance of anaerobic bacteria.

[0190] When the mammalian subject is suffering from a disease, disorder or condition characterized by an aberrant microbiota, the bacterial compositions described herein are suitable for treatment thereof. In some embodiments, the mammalian subject has not received antibiotics in advance of treatment with the bacterial compositions. For example, the mammalian subject has not been administered at least two doses of vancomycin, metronidazole and/or or similar antibiotic compound within one week prior to administration of the therapeutic composition. In other embodiments, the mammalian subject has not previously received an antibiotic compound in the one month prior to administration of the therapeutic composition. In other embodiments, the mammalian subject has received one or more treatments with one or more different antibiotic compounds and such treatment(s) resulted in no improvement or a worsening of symptoms. In some embodiments, the spore composition is administered following a successful course of antibiotics to prevent dysbiosis and enhance recovery of a diverse, healthy microbiota.

[0191] In some embodiments, the gastrointestinal disease, disorder or condition is diarrhea caused by *C. difficile* including recurrent *C. difficile* infection, ulcerative colitis, colitis, Crohn's disease, or irritable bowel disease. Beneficially, the therapeutic composition is administered only once prior to improvement of the disease, disorder or condition. In some embodiments the therapeutic composition is administered at intervals greater than two days, such as once every three, four, five or six days, or every week or less frequently than every week. Or the preparation may be administered intermittently according to a set schedule, e.g., once a day, once weekly, or once monthly, or when the subject relapses from the primary illness.

In another embodiment, the preparation may be administered on a long-term basis to individuals who are at risk for infection with or who may be carriers of these pathogens, including individuals who will have an invasive medical procedure (such as surgery), who will be hospitalized, who live in a long-term care or rehabilitation facility, who are exposed to pathogens by virtue of their profession (livestock and animal processing workers), or who could be carriers of pathogens (including hospital workers such as physicians, nurses, and other healthcare professionals).

[0192] Also provided are methods of treating or preventing a mammalian subject suffering from or at risk of developing a metabolic disease, and disorder or condition selected from the group consisting of diabetes, metabolic syndrome, obesity, heart disease, autoimmune disease, liver disease, and autism using the therapeutic compositions provided herein.

[0193] In embodiments, the bacterial spore composition is administered enterically. This preferentially includes oral administration, or by an oral or nasal tube (including nasogastric, nasojejunal, oral gastric, or oral jejunal). In other embodiments, administration includes rectal administration (including enema, suppository, or colonoscopy). The bacterial composition may be administered to at least one region of the gastrointestinal tract, including the mouth, esophagus, stomach, small intestine, large intestine, and rectum. In some embodiments, it is administered to all regions of the gastrointestinal tract. The bacterial compositions may be administered orally in the form of medicaments such as powders, capsules, tablets, gels or liquids. The bacterial compositions may also be administered in gel or liquid form by the oral route or through a nasogastric tube, or by the rectal route in a gel or liquid form, by enema or instillation through a colonoscope or by a suppository.

[0194] If the composition is administered colonoscopically and, optionally, if the bacterial composition is administered by other rectal routes (such as an enema or suppository) or even if the subject has an oral administration, the subject may have a colonic-cleansing preparation. The colon-cleansing preparation can facilitate proper use of the colonoscope or other administration devices, but even when it does not serve a mechanical purpose it can also maximize the proportion of the bacterial composition relative to the other organisms previously residing in the gastrointestinal tract of the subject. Any ordinarily acceptable colonic-cleansing preparation may be used such as those typically provided when a subject undergoes a colonoscopy.

[0195] To evaluate the subject, symptoms of dysbiosis are evaluated post treatment ranging from 1 day to 6 months after administration of the purified spore population. Fecal material is collected during this period and the microbes present in the gastrointestinal tract can be assessed by 16S rDNA or metagenomic sequencing analysis or other analyses commonly used by the skilled artisan. Repopulation by species provided by the spore population as well as Augmentation by commensal microbes not present in the spore population will occur in this time as the spore population catalyzes a reshaping of the gut ecology to a state of healthy biosis. The specification is most thoroughly understood in light of the teachings of the references cited within the specification. The embodiments within the specification provide an illustration of embodiments and should not be construed to limit the scope. The skilled artisan readily recognizes that many other embodiments are encompassed. All publications and patents cited in this disclosure are incorporated by reference in their entirety. To the extent the material incorporated by reference contradicts or is inconsistent with this specification, the specification will supersede any such material. The citation of any references herein is not an admission that such references are prior art.

Methods of Treating a Subject

[0196] In some embodiments, the compositions disclosed herein are administered to a patient or a user (sometimes collectively referred to as a "subject"). As used herein "administer" and "administration" encompasses embodiments in which one person directs another to consume a bacterial composition in a certain manner and/or for a certain purpose, and also situations in which a user uses a bacteria composition in a certain manner and/or for a certain purpose independently of or in variance to any instructions received from a second person. Non-limiting examples of embodiments in which one person directs another to consume a bacterial composition in a certain manner and/or for a certain purpose include when a physician prescribes a course of conduct and/or treatment to a patient, when a parent commands a minor user (such as a child) to consume a bacterial composition, when a trainer advises a user (such as an athlete) to follow a particular course of conduct and/or treatment, and when a manufacturer, distributer, or marketer recommends conditions of use to an end user, for example through

advertisements or labeling on packaging or on other materials provided in association with the sale or marketing of a product.

[0197] The bacterial compositions offer a protective and/or therapeutic effect against infection by one or more GI pathogens of interest and can be administered after an acute case of infection has been resolved in order to prevent relapse, during an acute case of infection as a complement to antibiotic therapy if the bacterial composition is not sensitive to the same antibiotics as the GI pathogen, or to prevent infection or reduce transmission from disease carriers.

[0198] The present bacterial compositions can be useful in a variety of clinical situations. For example, the bacterial compositions can be administered as a complementary treatment to antibiotics when a patient is suffering from an acute infection, to reduce the risk of recurrence after an acute infection has subsided, or when a patient will be in close proximity to others with or at risk of serious gastrointestinal infections (physicians, nurses, hospital workers, family members of those who are ill or hospitalized).

[0199] The present bacterial compositions can be administered to animals, including humans, laboratory animals (e.g., primates, rats, mice), livestock (e.g., cows, sheep, goats, pigs, turkeys, chickens), and household pets (e.g., dogs, cats, rodents).

[0200] In the present method, the bacterial composition can be administered enterically, in other words, by a route of access to the gastrointestinal tract. This includes oral administration, rectal administration (including enema, suppository, or colonoscopy), by an oral or nasal tube (nasogastric, nasojejunal, oral gastric, or oral jejunal), as detailed more fully herein.

Pretreatment Protocols

[0201] Prior to administration of the bacterial composition, the patient can optionally have a pretreatment protocol to prepare the gastrointestinal tract to receive the bacterial composition. In certain embodiments, the pretreatment protocol is advisable, such as when a patient has an acute infection with a highly resilient pathogen. In other embodiments, the pretreatment protocol is entirely optional, such as when the pathogen causing the infection is not resilient, or the patient has had an acute infection that has been successfully treated but where the physician is

concerned that the infection may recur. In these instances, the pretreatment protocol can enhance the ability of the bacterial composition to affect the patient's microbiome.

[0202] As one way of preparing the patient for administration of the microbial ecosystem, at least one antibiotic can be administered to alter the bacteria in the patient. As another way of preparing the patient for administration of the microbial ecosystem, a standard colon-cleansing preparation can be administered to the patient to substantially empty the contents of the colon, such as used to prepare a patient for a colonscopy. By "substantially emptying the contents of the colon," this application means removing at least 75%, at least 80%, at least 90%, at least 95%, or about 100% of the contents of the ordinary volume of colon contents. Antibiotic treatment can precede the colon-cleansing protocol.

[0203] If a patient has received an antibiotic for treatment of an infection, or if a patient has received an antibiotic as part of a specific pretreatment protocol, in one embodiment, the antibiotic can be stopped in sufficient time to allow the antibiotic to be substantially reduced in concentration in the gut before the bacterial composition is administered. In one embodiment, the antibiotic can be discontinued 1, 2, or 3 days before the administration of the bacterial composition. In another embodiment, the antibiotic can be discontinued 3, 4, 5, 6, or 7 antibiotic half-lives before administration of the bacterial composition. In another embodiment, the antibiotic can be chosen so the constituents in the bacterial composition have an MIC50 that is higher than the concentration of the antibiotic in the gut.

[0204] MIC50 of a bacterial composition or the elements in the composition can be determined by methods well known in the art. Reller et al., Antimicrobial Susceptibility Testing: A Review of General Principles and Contemporary Practices, Clinical Infectious Diseases 49(11):1749-1755 (2009). In such an embodiment, the additional time between antibiotic administration and administration of the bacterial composition is not necessary. If the pretreatment protocol is part of treatment of an acute infection, the antibiotic can be chosen so that the infection is sensitive to the antibiotic, but the constituents in the bacterial composition are not sensitive to the antibiotic.

Routes of Administration

[0205] The bacterial compositions of the invention are suitable for administration to mammals and non-mammalian animals in need thereof. In certain embodiments, the mammalian subject is a human subject who has one or more symptoms of a dysbiosis.

[0206] When a mammalian subject is suffering from a disease, disorder or condition characterized by an aberrant microbiota, the bacterial compositions described herein are suitable for treatment thereof. In some embodiments, the mammalian subject has not received antibiotics in advance of treatment with the bacterial compositions. For example, the mammalian subject has not been administered at least two doses of vancomycin, metronidazole and/or or similar antibiotic compound within one week prior to administration of the therapeutic composition. In other embodiments, the mammalian subject has not previously received an antibiotic compound in the one month prior to administration of the therapeutic composition. In other embodiments, the mammalian subject has received one or more treatments with one or more different antibiotic compounds and such treatment(s) resulted in no improvement or a worsening of symptoms.

[0207] In some embodiments, the gastrointestinal disease, disorder or condition is diarrhea caused by *C. difficile* including recurrent *C. difficile* infection, ulcerative colitis, colitis, Crohn's disease, or irritable bowel disease. Beneficially, the therapeutic composition is administered only once prior to improvement of the disease, disorder or condition. In some embodiments, the therapeutic composition is administered at intervals greater than two days, such as once every three, four, five or six days, or every week or less frequently than every week. In other embodiments, the preparation can be administered intermittently according to a set schedule, e.g., once a day, once weekly, or once monthly, or when the subject relapses from the primary illness. In another embodiment, the preparation may be administered on a long-term basis to subjects who are at risk for infection with or who may be carriers of these pathogens, including subjects who will have an invasive medical procedure (such as surgery), who will be hospitalized, who live in a long-term care or rehabilitation facility, who are exposed to pathogens by virtue of their profession (livestock and animal processing workers), or who could be carriers

of pathogens (including hospital workers such as physicians, nurses, and other health care professionals).

[0208] In certain embodiments, the bacterial composition is administered enterically. This preferentially includes oral administration, or by an oral or nasal tube (including nasogastric, nasojejunal, oral gastric, or oral jejunal). In other embodiments, administration includes rectal administration (including enema, suppository, or colonoscopy). The bacterial composition can be administered to at least one region of the gastrointestinal tract, including the mouth, esophagus, stomach, small intestine, large intestine, and rectum. In some embodiments, it is administered to all regions of the gastrointestinal tract. The bacterial compositions can be administered orally in the form of medicaments such as powders, capsules, tablets, gels or liquids. The bacterial compositions can also be administered in gel or liquid form by the oral route or through a nasogastric tube, or by the rectal route in a gel or liquid form, by enema or instillation through a colonoscope or by a suppository.

[0209] If the composition is administered colonoscopically and, optionally, if the bacterial composition is administered by other rectal routes (such as an enema or suppository) or even if the subject has an oral administration, the subject can have a colon-cleansing preparation. The colon-cleansing preparation can facilitate proper use of the colonoscope or other administration devices, but even when it does not serve a mechanical purpose, it can also maximize the proportion of the bacterial composition relative to the other organisms previously residing in the gastrointestinal tract of the subject. Any ordinarily acceptable colon-cleansing preparation may be used such as those typically provided when a subject undergoes a colonoscopy.

Dosages and Schedule for Administration

[0210] In some embodiments, the bacteria and bacterial compositions are provided in a dosage form. In certain embodiments, the dosage form is designed for administration of at least one OTU or combination thereof disclosed herein, wherein the total amount of bacterial composition administered is selected from 0.1ng to 10g, 10ng to 1g, 100ng to 0.1g, 0.1mg to 500mg, 1mg to 100mg, or from 10-15mg. In other embodiments, the bacterial composition is consumed at a rate of from 0.1ng to 10g a day, 10ng to 1g a day, 100ng to 0.1g a day, 0.1mg to 500mg a day, 1mg to 100mg a day, or from 10-15mg a day, or more.

[0211] In certain embodiments, the treatment period is at least 1 day, at least 2 days, at least 3 days, at least 4 days, at least 5 days, at least 6 days, at least 1 week, at least 2 weeks, at least 3 weeks, at least 4 weeks, at least 1 month, at least 2 months, at least 3 months, at least 4 months, at least 5 months, at least 6 months, or at least 1 year. In some embodiments the treatment period is from 1 day to 1 week, from 1 week to 4 weeks, from 1 month, to 3 months, from 3 months to 6 months, from 6 months to 1 year, or for over a year.

[0212] In one embodiment, 10^5 and 10^{12} microorganisms total can be administered to the patient in a given dosage form. In another embodiment, an effective amount can be provided in from 1 to 500 ml or from 1 to 500 grams of the bacterial composition having from 10^7 to 10^{11} bacteria per ml or per gram, or a capsule, tablet or suppository having from 1 mg to 1000 mg lyophilized powder having from 10^7 to 10^{11} bacteria. Those receiving acute treatment can receive higher doses than those who are receiving chronic administration (such as hospital workers or those admitted into long-term care facilities).

[0213] Any of the preparations described herein can be administered once on a single occasion or on multiple occasions, such as once a day for several days or more than once a day on the day of administration (including twice daily, three times daily, or up to five times daily). In another embodiment, the preparation can be administered intermittently according to a set schedule, e.g., once weekly, once monthly, or when the patient relapses from the primary illness. In one embodiment, the preparation can be administered on a long-term basis to individuals who are at risk for infection with or who may be carriers of these pathogens, including individuals who will have an invasive medical procedure (such as surgery), who will be hospitalized, who live in a long-term care or rehabilitation facility, who are exposed to pathogens by virtue of their profession (livestock and animal processing workers), or who could be carriers of pathogens (including hospital workers such as physicians, nurses, and other health care professionals).

Patient Selection

[0214] Particular bacterial compositions can be selected for individual patients or for patients with particular profiles. For example, 16S sequencing can be performed for a given patient to identify the bacteria present in his or her microbiota. The sequencing can either profile the patient's entire microbiome using 16S sequencing

(to the family, genera, or species level), a portion of the patient's microbiome using 16S sequencing, or it can be used to detect the presence or absence of specific candidate bacteria that are biomarkers for health or a particular disease state, such as markers of multi-drug resistant organisms or specific genera of concern such as *Escherichia*. Based on the biomarker data, a particular composition can be selected for administration to a patient to supplement or complement a patient's microbiota in order to restore health or treat or prevent disease. In another embodiment, patients can be screened to determine the composition of their microbiota to determine the likelihood of successful treatment.

Combination Therapy

[0215] The bacterial compositions can be administered with other agents in a combination therapy mode, including anti-microbial agents and prebiotics. Administration can be sequential, over a period of hours or days, or simultaneous.

[0216] In one embodiment, the bacterial compositions are included in combination therapy with one or more anti-microbial agents, which include anti-bacterial agents, anti-fungal agents, anti-viral agents and anti-parasitic agents.

[0217] Anti-bacterial agents can include cephalosporin antibiotics (cephalexin, cefuroxime, cefadroxil, cefazolin, cephalothin, cefaclor, cefamandole, cefoxitin, cefprozil, and ceftobiprole); fluoroquinolone antibiotics (cipro, Levaquin, floxin, tequin, avelox, and norflox); tetracycline antibiotics (tetracycline, minocycline, oxytetracycline, and doxycycline); penicillin antibiotics (amoxicillin, ampicillin, penicillin V, dicloxacillin, carbenicillin, vancomycin, and methicillin); and carbapenem antibiotics (ertapenem, doripenem, imipenem/cilastatin, and meropenem).

[0218] Anti-viral agents can include Abacavir, Acyclovir, Adefovir, Amprenavir, Atazanavir, Cidofovir, Darunavir, Delavirdine, Didanosine, Docosanol, Efavirenz, Elvitegravir, Emtricitabine, Enfuvirtide, Etravirine, Famciclovir, Foscarnet, Fomivirsen, Ganciclovir, Indinavir, Idoxuridine, Lamivudine, Lopinavir Maraviroc, MK-2048, Nelfinavir, Nevirapine, Penciclovir, Raltegravir, Rilpivirine, Ritonavir, Saquinavir, Stavudine, Tenofovir Trifluridine, Valaciclovir, Valganciclovir, Vidarabine, Ibacitabine, Amantadine, Oseltamivir, Rimantidine, Tipranavir, Zalcitabine, Zanamivir and Zidovudine.

[0219] Examples of antifungal compounds include, but are not limited to polyene antifungals such as natamycin, rimocidin, filipin, nystatin, amphotericin B, candicin, and hamycin; imidazole antifungals such as miconazole, ketoconazole, clotrimazole, econazole, omoconazole, bifonazole, butoconazole, fenticonazole, isoconazole, oxiconazole, sertaconazole, sulconazole, and tioconazole; triazole antifungals such as fluconazole, itraconazole, isavuconazole, ravuconazole, posaconazole, voriconazole, terconazole, and albaconazole; thiazole antifungals such as abafungin; allylamine antifungals such as terbinafine, naftifine, and butenafine; and echinocandin antifungals such as anidulafungin, caspofungin, and micafungin. Other compounds that have antifungal properties include, but are not limited to polygodial, benzoic acid, ciclopirox, tolnaftate, undecylenic acid, flucytosine or 5-fluorocytosine, griseofulvin, and haloprogin.

[0220] In one embodiment, the bacterial compositions are included in combination therapy with one or more corticosteroids, mesalazine, mesalamine, sulfasalazine, sulfasalazine derivatives, immunosuppressive drugs, cyclosporin A, mercaptopurine, azathiopurine, prednisone, methotrexate, antihistamines, glucocorticoids, epinephrine, theophylline, cromolyn sodium, anti-leukotrienes, anti-cholinergic drugs for rhinitis, anti-cholinergic decongestants, mast-cell stabilizers, monoclonal anti-IgE antibodies, vaccines, and combinations thereof.

[0221] A prebiotic is a selectively fermented ingredient that allows specific changes, both in the composition and/or activity in the gastrointestinal microbiota that confers benefits upon host well-being and health. Prebiotics can include complex carbohydrates, amino acids, peptides, or other essential nutritional components for the survival of the bacterial composition. Prebiotics include, but are not limited to, amino acids, biotin, fructooligosaccharide, galactooligosaccharides, inulin, lactulose, mannan oligosaccharides, oligofructose-enriched inulin, oligofructose, oligodextrose, tagatose, trans-galactooligosaccharide, and xylooligosaccharides.

Methods for Testing Bacterial Compositions for Populating Effect

In Vivo Assay for Determining Whether a Bacterial Composition Populates a Subject's Gastrointestinal Tract

[0222] In order to determine that the bacterial composition populates the gastrointestinal tract of a subject, an animal model, such as a mouse model, can be

used. The model can begin by evaluating the microbiota of the mice. Qualitative assessments can be accomplished using 16S profiling of the microbial community in the feces of normal mice. It can also be accomplished by full genome sequencing, whole genome shotgun sequencing (WGS), or traditional microbiological techniques. Quantitative assessments can be conducted using quantitative PCR (qPCR), described below, or by using traditional microbiological techniques and counting colony formation.

[0223] Optionally, the mice can receive an antibiotic treatment to mimic the condition of dysbiosis. Antibiotic treatment can decrease the taxonomic richness, diversity, and evenness of the community, including a reduction of abundance of a significant number of bacterial taxa. Dethlefsen *et al.*, The pervasive effects of an antibiotic on the human gut microbiota, as revealed by deep 16S rRNA sequencing, PLoS Biology 6(11):3280 (2008). At least one antibiotic can be used, and antibiotics are well known. Antibiotics can include aminoglycoside antibiotic (amikacin, arbekacin,gentamicin, kanamycin, neomycin, netilmicin, paromomycin, rhodostreptomycin, streptomycin, tobramycin, and apramycin), amoxicillin, ampicillin, Augmentin (an amoxicillin/clavulanate potassium combination), cephalosporin (cefaclor, defadroxil, cefazolin, cefixime, fefoxitin, cefprozil, ceftazimdime, cefuroxime, cephalexin), clavulanate potassium, clindamycin, colistin, gentamycin, kanamycin, metronidazole, or vancomycin. As an individual, nonlimiting specific example, the mice can be provided with drinking water containing a mixture of the antibiotics kanamycin, colistin, gentamycin, metronidazole and vancomycin at 40 mg/kg, 4.2 mg/kg, 3.5 mg/kg, 21.5 mg/kg, and 4.5 mg/kg (mg per average mouse body weight), respectively, for 7 days. Alternatively, mice can be administered ciprofloxacin at a dose of 15-20 mg/kg (mg per average mouse body weight), for 7 days.

If the mice are provided with an antibiotic, a wash out period of from one day to three days may be provided with no antibiotic treatment and no bacterial composition treatment.

[0224] Subsequently, the test bacterial composition is administered to the mice by oral gavage. The test bacterial composition may be administered in a volume of 0.2 ml containing 10^4 CFUs of each type of bacteria in the bacterial composition.

Dose-response may be assessed by using a range of doses, including, but not limited to 10^2, 10^3, 10^4, 10^5, 10^6, 10^7, 10^8, 10^9, and/or 10^{10}.

[0225] The mice can be evaluated using 16S sequencing, full genome sequencing, whole genome shotgun sequencing (WGS), or traditional microbiological techniques to determine whether the test bacterial composition has populated the gastrointestinal tract of the mice. For example only, one day, three days, one week, two weeks, and one month after administration of the bacterial composition to the mice, 16S profiling is conducted to determine whether the test bacterial composition has populated the gastrointestinal tract of the mice. Quantitative assessments, including qPCR and traditional microbiological techniques such as colony counting, can additionally or alternatively be performed, at the same time intervals.

[0226] Furthermore, the number of sequence counts that correspond exactly to those in the bacterial composition over time can be assessed to determine specifically which components of the bacterial composition reside in the gastrointestinal tract over a particular period of time. In one embodiment, the strains of the bacterial composition persist for a desired period of time. In another embodiment, the components of the bacterial composition persist for a desired period of time, while also increasing the ability of other microbes (such as those present in the environment, food, etc.) to populate the gastrointestinal tract, further increasing overall diversity, as discussed below.

Ability of Bacterial compositions to Populate Different Regions of the Gastrointestinal Tract

[0227] The present bacterial compositions can also be assessed for their ability to populate different regions on the gastrointestinal tract. In one embodiment, a bacterial composition can be chosen for its ability to populate one or more than one region of the gastrointestinal tract, including, but not limited to the stomach, the small intestine (duodenum, jejunum, and ileum), the large intestine (the cecum, the colon (the ascending, transverse, descending, and sigmoid colon), and the rectum).

[0228] An *in vivo* study can be conducted to determine which regions of the gastrointestinal tract a given bacterial composition will populate. A mouse model similar to the one described above can be conducted, except instead of assessing the feces produced by the mice, particular regions of the gastrointestinal tract can be

removed and studied individually. For example, at least one particular region of the gastrointestinal tract can be removed and a qualitative or quantitative determination can be performed on the contents of that region of the gastrointestinal tract. In another embodiment, the contents can optionally be removed and the qualitative or quantitative determination may be conducted on the tissue removed from the mouse.

qPCR

[0229] As one quantitative method for determining whether a bacterial composition populates the gastrointestinal tract, quantitative PCR (qPCR) can be performed. Standard techniques can be followed to generate a standard curve for the bacterial composition of interest, either for all of the components of the bacterial composition collectively, individually, or in subsets (if applicable). Genomic DNA can be extracted from samples using commercially-available kits, such as the Mo Bio Powersoil®-htp 96 Well Soil DNA Isolation Kit (Mo Bio Laboratories, Carlsbad, CA), the Mo Bio Powersoil® DNA Isolation Kit (Mo Bio Laboratories, Carlsbad, CA), or the QIAamp DNA Stool Mini Kit (QIAGEN, Valencia, CA) according to the manufacturer's instructions.

[0230] In some embodiments, qPCR can be conducted using HotMasterMix (5PRIME, Gaithersburg, MD) and primers specific for the bacterial composition of interest, and may be conducted on a MicroAmp® Fast Optical 96-well Reaction Plate with Barcode (0.1mL) (Life Technologies, Grand Island, NY) and performed on a BioRad C1000™ Thermal Cycler equipped with a CFX96™ Real-Time System (BioRad, Hercules, CA), with fluorescent readings of the FAM and ROX channels. The Cq value for each well on the FAM channel is determined by the CFX Manager™ software version 2.1. The $\log_{10}$(cfu/ml) of each experimental sample is calculated by inputting a given sample's Cq value into linear regression model generated from the standard curve comparing the Cq values of the standard curve wells to the known $\log_{10}$(cfu/ml) of those samples. The skilled artisan may employ alternative qPCR modes.

Methods for Characterization of Bacterial Compositions

[0231] In certain embodiments, provided are methods for testing certain characteristics of bacterial compositions. For example, the sensitivity of bacterial compositions to certain environmental variables is determined, e.g., in order to select for particular desirable characteristics in a given composition, formulation and/or use.

For example, the constituents in the bacterial composition can be tested for pH resistance, bile acid resistance, and/or antibiotic sensitivity, either individually on a constituent-by-constituent basis or collectively as a bacterial composition comprised of multiple bacterial constituents (collectively referred to in this section as bacterial composition).

pH Sensitivity Testing

[0232] If a bacterial composition will be administered other than to the colon or rectum (i.e., for example, an oral route), optionally testing for pH resistance enhances the selection of bacterial compositions that will survive at the highest yield possible through the varying pH environments of the distinct regions of the GI tract. Understanding how the bacterial compositions react to the pH of the GI tract also assists in formulation, so that the number of bacteria in a dosage form can be increased if beneficial and/or so that the composition may be administered in an enteric-coated capsule or tablet or with a buffering or protective composition. As the pH of the stomach can drop to a pH of 1 to 2 after a high-protein meal for a short time before physiological mechanisms adjust it to a pH of 3 to 4 and often resides at a resting pH of 4 to 5, and as the pH of the small intestine can range from a pH of 6 to 7.4, bacterial compositions can be prepared that survive these varying pH ranges (specifically wherein at least 1%, 5%, 10%, 15%, 20%, 25%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, or as much as 100% of the bacteria can survive gut transit times through various pH ranges). This can be tested by exposing the bacterial composition to varying pH ranges for the expected gut transit times through those pH ranges. Therefore, as a nonlimiting example only, 18-hour cultures of bacterial compositions can be grown in standard media, such as gut microbiota medium ("GMM", see Goodman et al., Extensive personal human gut microbiota culture collections characterized and manipulated in gnotobiotic mice, PNAS 108(15):6252-6257 (2011)) or another animal-products-free medium, with the addition of pH adjusting agents for a pH of 1 to 2 for 30 minutes, a pH of 3 to 4 for 1 hour, a pH of 4 to 5 for 1 to 2 hours, and a pH of 6 to 7.4 for 2.5 to 3 hours. An alternative method for testing stability to acid is described in U.S. Patent No. 4,839,281. Survival of bacteria may be determined by culturing the bacteria and counting colonies on appropriate selective or non-selective media.

Bile Acid Sensitivity Testing

[0233] Additionally, in some embodiments, testing for bile-acid resistance enhances the selection of bacterial compositions that will survive exposures to bile acid during transit through the GI tract. Bile acids are secreted into the small intestine and can, like pH, affect the survival of bacterial compositions. This can be tested by exposing the bacterial compositions to bile acids for the expected gut exposure time to bile acids. For example, bile acid solutions can be prepared at desired concentrations using 0.05 mM Tris at pH 9 as the solvent. After the bile acid is dissolved, the pH of the solution may be adjusted to 7.2 with 10% HCl. Bacterial compositions can be cultured in 2.2 ml of a bile acid composition mimicking the concentration and type of bile acids in the patient, 1.0 ml of 10% sterile-filtered feces media and 0.1 ml of an 18-hour culture of the given strain of bacteria. Incubations may be conducted for from 2.5 to 3 hours or longer. An alternative method for testing stability to bile acid is described in U.S. Patent No. 4,839,281. Survival of bacteria **may** be determined by culturing the bacteria and counting colonies on appropriate selective or non-selective media.

Antibiotic Sensitivity Testing

[0234] As a further optional sensitivity test, bacterial compositions can be tested for sensitivity to antibiotics. In one embodiment, bacterial compositions can be chosen so that the bacterial constituents are sensitive to antibiotics such that if necessary they can be eliminated or substantially reduced from the patient's gastrointestinal tract by at least one antibiotic targeting the bacterial composition.

Adherence to Gastrointestinal Cells

[0235] The bacterial compositions may optionally be tested for the ability to adhere to gastrointestinal cells. A method for testing adherence to gastrointestinal cells is described in U.S. Patent No. 4,839,281.

Methods for Purifying Spores

Solvent Treatments

[0236] To purify the bacterial spores, the fecal material is subjected to one or more solvent treatments. A solvent treatment is a miscible solvent treatment (either partially miscible or fully miscible) or an immiscible solvent treatment. Miscibility is the ability of two liquids to mix with each to form a homogeneous solution. Water

and ethanol, for example, are fully miscible such that a mixture containing water and ethanol in any ratio will show only one phase. Miscibility is provided as a wt/wt%, or weight of one solvent in 100 g of final solution. If two solvents are fully miscible in all proportions, their miscibility is 100%. Provided as fully miscible solutions with water are alcohols, e.g., methanol, ethanol, isopropanol, butanol, etc. The alcohols can be provided already combined with water; e.g., a solution containing10%, 20%, 25%, 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%, 70%, 75%, 89%, 85%, 90%, 95% or greater than 95% Other solvents are only partially miscible, meaning that only some portion will dissolve in water. Diethyl ether, for example, is partially miscible with water. Up to 7 grams of diethyl ether will dissolve in 93 g of water to give a 7% (wt/wt%) solution. If more diethyl ether is added, a two phase solution will result with a distinct diethyl ether layer above the water. Other miscible materials include ethers, dimethoxyethane, or tetrahydrofuran In contrast, an oil such as an alkane and water are immiscible and form two phases. Further, immiscible treatments are optionally combined with a detergent, either an ionic detergent or a non-ionic detergent. Exemplary detergents include Triton X-100, Tween 20, Tween 80, Nonidet P40, a pluronic, or a polyol.

Chromatography treatments

[0237] To purify spore populations, the fecal materials are subjected to one or more chromatographic treatments, either sequentially or in parallel. In a chromatographic treatment, a solution containing the fecal material is contacted with a solid medium containing a hydrophobic interaction chromatographic (HIC) medium or an affinity chromatographic medium. In an alternative embodiment, a solid medium capable of absorbing a residual habitat product present in the fecal material is contacted with a solid medium that adsorbs a residual habitat product. In certain embodiments, the HIC medium contains sepharose or a derivatized sepharose such as butyl sepharose, octyl sepharose, phenyl sepharose, or butyl-s sepharose. In other embodiments, the affinity chromatographic medium contains material derivatized with mucin type I, II, III, IV, V, or VI, or oligosaccharides derived from or similar to those of mucins type I, II, III, IV, V, or VI. Alternatively, the affinity chromatographic medium contains material derivatized with antibodies that recognize spore-forming bacteria.

Mechanical Treatments

[0238] Provided herein is the physical disruption of the fecal material, particularly by one or more mechanical treatment such as blending, mixing, shaking, vortexing, impact pulverization, and sonication. As provided herein, the mechanical disrupting treatment substantially disrupts a non-spore material present in the fecal material and does not substantially disrupt a spore present in the fecal material. Mechanical treatments optionally include filtration treatments, where the desired spore populations are retained on a filter while the undesirable (non-spore) fecal components to pass through, and the spore fraction is then recovered from the filter medium. Alternatively, undesirable particulates and eukaryotic cells may be retained on a filter while bacterial cells including spores pass through. In some embodiments the spore fraction retained on the filter medium is subjected to a diafiltration step, wherein the retained spores are contacted with a wash liquid, typically a sterile saline-containing solution or other diluent, in order to further reduce or remove the undesirable fecal components.

Thermal Treatments

[0239] Provided herein is the thermal disruption of the fecal material. Generally, the fecal material is mixed in a saline-containing solution such as phosphate-buffered saline (PBS) and subjected to a heated environment, such as a warm room, incubator, water-bath, or the like, such that efficient heat transfer occurs between the heated environment and the fecal material. Preferably the fecal material solution is mixed during the incubation to enhance thermal conductivity and disrupt particulate aggregates. Thermal treatments can be modulated by the temperature of the environment and/or the duration of the thermal treatment. For example, the fecal material or a liquid comprising the fecal material is subjected to a heated environment, e.g., a hot water bath of at least about 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 or greater than 100 degrees Celsius, for at least about 1, 5, 10, 15, 20, 30, 45 seconds, or 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, or 50 minutes, or 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more than 10 hours. In certain embodiments the thermal treatment occurs at two different temperatures, such as 30 seconds in a 100 degree Celsius environment followed by 10 minutes in a 50 degree Celsius environment. In preferred embodiments the temperature and duration of the

thermal treatment are sufficient to kill or remove pathogenic materials while not substantially damaging or reducing the germination-competency of the spores.

Irradiation Treatments

[0240] Provided are methods of treating the fecal material or separated contents of the fecal material with ionizing radiation, typically gamma irradiation, ultraviolet irradiation or electron beam irradiation provided at an energy level sufficient to kill pathogenic materials while not substantially damaging the desired spore populations. For example, ultraviolet radiation at 254nm provided at an energy level below about 22,000 microwatt seconds per cm^2 will not generally destroy desired spores.

Centrifugation and Density Separation Treatments

[0241] Provided are methods of separating desired spore populations from the other components of the fecal material by centrifugation. A solution containing the fecal material is subjected to one or more centrifugation treatments, e.g., at about 1000 x g, 2000 x g, 3000 x g, 4000 x g, 5000 x g, 6000 x g, 7000 x g, 8000 x g or greater than 8000 x g. Differential centrifugation separates desired spores from undesired non-spore material; at low forces the spores are retained in solution, while at higher forces the spores are pelleted while smaller impurities (e.g., virus particles, phage) are retained in solution. For example, a first low force centrifugation pellets fibrous materials; a second, higher force centrifugation pellets undesired eukaryotic cells, and a third, still higher force centrifugation pellets the desired spores while small contaminants remain in suspension. In some embodiments density or mobility gradients or cushions (e.g., step cushions), such as Percoll, Ficoll, Nycodenz, Histodenz or sucrose gradients, are used to separate desired spore populations from other materials in the fecal material.

[0242] Also provided herein are methods of producing spore populations that combine two or more of the treatments described herein in order to synergistically purify the desired spores while killing or removing undesired materials and/or activities from the spore population. It is generally desirable to retain the spore populations under non-germinating and non-growth promoting conditions and media, in order to minimize the growth of pathogenic bacteria present in the spore populations and to minimize the germination of spores into vegetative bacterial cells.

PHARMACEUTICAL COMPOSITIONS AND FORMULATIONS OF THE INVENTION

Formulations

[0243] Provided are formulations for administration to humans and other subjects in need thereof. Generally the bacterial compositions are combined with additional active and/or inactive materials in order to produce a final product, which may be in single dosage unit or in a multi-dose format.

[0244] In some embodiments, the composition comprises at least one carbohydrate. A "carbohydrate" refers to a sugar or polymer of sugars. The terms "saccharide," "polysaccharide," "carbohydrate," and "oligosaccharide" may be used interchangeably. Most carbohydrates are aldehydes or ketones with many hydroxyl groups, usually one on each carbon atom of the molecule. Carbohydrates generally have the molecular formula $C_nH_{2n}O_n$. A carbohydrate can be a monosaccharide, a disaccharide, trisaccharide, oligosaccharide, or polysaccharide. The most basic carbohydrate is a monosaccharide, such as glucose, sucrose, galactose, mannose, ribose, arabinose, xylose, and fructose. Disaccharides are two joined monosaccharides. Exemplary disaccharides include sucrose, maltose, cellobiose, and lactose. Typically, an oligosaccharide includes between three and six monosaccharide units (e.g., raffinose, stachyose), and polysaccharides include six or more monosaccharide units. Exemplary polysaccharides include starch, glycogen, and cellulose. Carbohydrates can contain modified saccharide units, such as 2'-deoxyribose wherein a hydroxyl group is removed, 2'-fluororibose wherein a hydroxyl group is replace with a fluorine, or N-acetylglucosamine, a nitrogen-containing form of glucose (e.g., 2'-fluororibose, deoxyribose, and hexose). Carbohydrates can exist in many different forms, for example, conformers, cyclic forms, acyclic forms, stereoisomers, tautomers, anomers, and isomers.

[0245] In some embodiments, the composition comprises at least one lipid. As used herein, a "lipid" includes fats, oils, triglycerides, cholesterol, phospholipids, fatty acids in any form including free fatty acids. Fats, oils and fatty acids can be saturated, unsaturated (cis or trans) or partially unsaturated (cis or trans). In some embodiments, the lipid comprises at least one fatty acid selected from lauric acid (12:0), myristic acid (14:0), palmitic acid (16:0), palmitoleic acid (16:1), margaric acid (17:0), heptadecenoic acid (17:1), stearic acid (18:0), oleic acid (18:1), linoleic

acid (18:2), linolenic acid (18:3), octadecatetraenoic acid (18:4), arachidic acid (20:0), eicosenoic acid (20:1), eicosadienoic acid (20:2), eicosatetraenoic acid (20:4), eicosapentaenoic acid (20:5) (EPA), docosanoic acid (22:0), docosenoic acid (22:1), docosapentaenoic acid (22:5), docosahexaenoic acid (22:6) (DHA), and tetracosanoic acid (24:0). In other embodiments, the composition comprises at least one modified lipid, for example, a lipid that has been modified by cooking.

[0246] In some embodiments, the composition comprises at least one supplemental mineral or mineral source. Examples of minerals include, without limitation: chloride, sodium, calcium, iron, chromium, copper, iodine, zinc, magnesium, manganese, molybdenum, phosphorus, potassium, and selenium. Suitable forms of any of the foregoing minerals include soluble mineral salts, slightly soluble mineral salts, insoluble mineral salts, chelated minerals, mineral complexes, non-reactive minerals such as carbonyl minerals, and reduced minerals, and combinations thereof.

[0247] In certain embodiments, the composition comprises at least one supplemental vitamin. The at least one vitamin can be fat-soluble or water soluble vitamins. Suitable vitamins include but are not limited to vitamin C, vitamin A, vitamin E, vitamin B12, vitamin K, riboflavin, niacin, vitamin D, vitamin B6, folic acid, pyridoxine, thiamine, pantothenic acid, and biotin. Suitable forms of any of the foregoing are salts of the vitamin, derivatives of the vitamin, compounds having the same or similar activity of the vitamin, and metabolites of the vitamin.

[0248] In other embodiments, the composition comprises an excipient. Non-limiting examples of suitable excipients include a buffering agent, a preservative, a stabilizer, a binder, a compaction agent, a lubricant, a dispersion enhancer, a disintegration agent, a flavoring agent, a sweetener, and a coloring agent.

[0249] In another embodiment, the excipient is a buffering agent. Non-limiting examples of suitable buffering agents include sodium citrate, magnesium carbonate, magnesium bicarbonate, calcium carbonate, and calcium bicarbonate.

[0250] In some embodiments, the excipient comprises a preservative. Non-limiting examples of suitable preservatives include antioxidants, such as alpha-tocopherol and ascorbate, and antimicrobials, such as parabens, chlorobutanol, and phenol.

[0251] In other embodiments, the composition comprises a binder as an excipient. Non-limiting examples of suitable binders include starches, pregelatinized starches, gelatin, polyvinylpyrolidone, cellulose, methylcellulose, sodium carboxymethylcellulose, ethylcellulose, polyacrylamides, polyvinyloxoazolidone, polyvinylalcohols, C_{12}-C_{18} fatty acid alcohol, polyethylene glycol, polyols, saccharides, oligosaccharides, and combinations thereof.

[0252] In another embodiment, the composition comprises a lubricant as an excipient. Non-limiting examples of suitable lubricants include magnesium stearate, calcium stearate, zinc stearate, hydrogenated vegetable oils, sterotex, polyoxyethylene monostearate, talc, polyethyleneglycol, sodium benzoate, sodium lauryl sulfate, magnesium lauryl sulfate, and light mineral oil.

[0253] In other embodiments, the composition comprises a dispersion enhancer as an excipient. Non-limiting examples of suitable dispersants include starch, alginic acid, polyvinylpyrrolidones, guar gum, kaolin, bentonite, purified wood cellulose, sodium starch glycolate, isoamorphous silicate, and microcrystalline cellulose as high HLB emulsifier surfactants.

[0254] In some embodiments, the composition comprises a disintegrant as an excipient. In other embodiments, the disintegrant is a non-effervescent disintegrant. Non-limiting examples of suitable non-effervescent disintegrants include starches such as corn starch, potato starch, pregelatinized and modified starches thereof, sweeteners, clays, such as bentonite, micro-crystalline cellulose, alginates, sodium starch glycolate, gums such as agar, guar, locust bean, karaya, pecitin, and tragacanth. In another embodiment, the disintegrant is an effervescent disintegrant. Non-limiting examples of suitable effervescent disintegrants include sodium bicarbonate in combination with citric acid, and sodium bicarbonate in combination with tartaric acid.

[0255] In another embodiment, the excipient comprises a flavoring agent. Flavoring agents can be chosen from synthetic flavor oils and flavoring aromatics; natural oils; extracts from plants, leaves, flowers, and fruits; and combinations thereof. In some embodiments the flavoring agent is selected from cinnamon oils; oil of wintergreen; peppermint oils; clover oil; hay oil; anise oil; eucalyptus; vanilla; citrus oil such as lemon oil, orange oil, grape and grapefruit oil; and fruit essences

including apple, peach, pear, strawberry, raspberry, cherry, plum, pineapple, and apricot.

[0256] In other embodiments, the excipient comprises a sweetener. Non-limiting examples of suitable sweeteners include glucose (corn syrup), dextrose, invert sugar, fructose, and mixtures thereof (when not used as a carrier); saccharin and its various salts such as the sodium salt; dipeptide sweeteners such as aspartame; dihydrochalcone compounds, glycyrrhizin; Stevia Rebaudiana (Stevioside); chloro derivatives of sucrose such as sucralose; and sugar alcohols such as sorbitol, mannitol, sylitol, and the like. Also contemplated are hydrogenated starch hydrolysates and the synthetic sweetener 3,6-dihydro-6-methyl-1,2,3-oxathiazin-4-one-2,2-dioxide, particularly the potassium salt (acesulfame-K), and sodium and calcium salts thereof.

[0257] In yet other embodiments, the composition comprises a coloring agent. Non-limiting examples of suitable color agents include food, drug and cosmetic colors (FD&C), drug and cosmetic colors (D&C), and external drug and cosmetic colors (Ext. D&C). The coloring agents can be used as dyes or their corresponding lakes.

[0258] The weight fraction of the excipient or combination of excipients in the formulation is usually about 99% or less, such as about 95% or less, about 90% or less, about 85% or less, about 80% or less, about 75% or less, about 70% or less, about 65% or less, about 60% or less, about 55% or less, 50% or less, about 45% or less, about 40% or less, about 35% or less, about 30% or less, about 25% or less, about 20% or less, about 15% or less, about 10% or less, about 5% or less, about 2% or less, or about 1% or less of the total weight of the composition.

[0259] The bacterial compositions disclosed herein can be formulated into a variety of forms and administered by a number of different means. The compositions can be administered orally, rectally, or parenterally, in formulations containing conventionally acceptable carriers, adjuvants, and vehicles as desired. The term "parenteral" as used herein includes subcutaneous, intravenous, intramuscular, or intrasternal injection and infusion techniques. In an exemplary embodiment, the bacterial composition is administered orally.

[0260] Solid dosage forms for oral administration include capsules, tablets, caplets, pills, troches, lozenges, powders, and granules. A capsule typically comprises a core material comprising a bacterial composition and a shell wall that encapsulates the core material. In some embodiments, the core material comprises at least one of a solid, a liquid, and an emulsion. In other embodiments, the shell wall material comprises at least one of a soft gelatin, a hard gelatin, and a polymer. Suitable polymers include, but are not limited to: cellulosic polymers such as hydroxypropyl cellulose, hydroxyethyl cellulose, hydroxypropyl methyl cellulose (HPMC), methyl cellulose, ethyl cellulose, cellulose acetate, cellulose acetate phthalate, cellulose acetate trimellitate, hydroxypropylmethyl cellulose phthalate, hydroxypropylmethyl cellulose succinate and carboxymethylcellulose sodium; acrylic acid polymers and copolymers, such as those formed from acrylic acid, methacrylic acid, methyl acrylate, ammonio methylacrylate, ethyl acrylate, methyl methacrylate and/or ethyl methacrylate (e.g., those copolymers sold under the trade name "Eudragit"); vinyl polymers and copolymers such as polyvinyl pyrrolidone, polyvinyl acetate, polyvinylacetate phthalate, vinylacetate crotonic acid copolymer, and ethylene-vinyl acetate copolymers; and shellac (purified lac). In yet other embodiments, at least one polymer functions as taste-masking agents.

[0261] Tablets, pills, and the like can be compressed, multiply compressed, multiply layered, and/or coated. The coating can be single or multiple. In one embodiment, the coating material comprises at least one of a saccharide, a polysaccharide, and glycoproteins extracted from at least one of a plant, a fungus, and a microbe. Non-limiting examples include corn starch, wheat starch, potato starch, tapioca starch, cellulose, hemicellulose, dextrans, maltodextrin, cyclodextrins, inulins, pectin, mannans, gum arabic, locust bean gum, mesquite gum, guar gum, gum karaya, gum ghatti, tragacanth gum, funori, carrageenans, agar, alginates, chitosans, or gellan gum. In some embodiments the coating material comprises a protein. In another embodiment, the coating material comprises at least one of a fat and an oil. In other embodiments, the at least one of a fat and an oil is high temperature melting. In yet another embodiment, the at least one of a fat and an oil is hydrogenated or partially hydrogenated. In one embodiment, the at least one of a fat and an oil is derived from a plant. In other embodiments, the at least one of a fat and an oil comprises at least one of glycerides, free fatty acids, and fatty acid esters.

In some embodiments, the coating material comprises at least one edible wax. The edible wax can be derived from animals, insects, or plants. Non-limiting examples include beeswax, lanolin, bayberry wax, carnauba wax, and rice bran wax. Tablets and pills can additionally be prepared with enteric coatings.

[0262] Alternatively, powders or granules embodying the bacterial compositions disclosed herein can be incorporated into a food product. In some embodiments, the food product is a drink for oral administration. Non-limiting examples of a suitable drink include fruit juice, a fruit drink, an artificially flavored drink, an artificially sweetened drink, a carbonated beverage, a sports drink, a liquid diary product, a shake, an alcoholic beverage, a caffeinated beverage, infant formula and so forth. Other suitable means for oral administration include aqueous and nonaqueous solutions, emulsions, suspensions and solutions and/or suspensions reconstituted from non-effervescent granules, containing at least one of suitable solvents, preservatives, emulsifying agents, suspending agents, diluents, sweeteners, coloring agents, and flavoring agents.

[0263] In some embodiments, the food product can be a solid foodstuff. Suitable examples of a solid foodstuff include without limitation a food bar, a snack bar, a cookie, a brownie, a muffin, a cracker, an ice cream bar, a frozen yogurt bar, and the like.

[0264] In other embodiments, the compositions disclosed herein are incorporated into a therapeutic food. In some embodiments, the therapeutic food is a ready-to-use food that optionally contains some or all essential macronutrients and micronutrients. In another embodiment, the compositions disclosed herein are incorporated into a supplementary food that is designed to be blended into an existing meal. In one embodiment, the supplemental food contains some or all essential macronutrients and micronutrients. In another embodiment, the bacterial compositions disclosed herein are blended with or added to an existing food to fortify the food's protein nutrition. Examples include food staples (grain, salt, sugar, cooking oil, margarine), beverages (coffee, tea, soda, beer, liquor, sports drinks), snacks, sweets and other foods.

[0265] In one embodiment, the formulations are filled into gelatin capsules for oral administration. An example of an appropriate capsule is a 250 mg gelatin

capsule containing from 10 (up to 100 mg) of lyophilized powder (10^8 to 10^{11} bacteria), 160 mg microcrystalline cellulose, 77.5 mg gelatin, and 2.5 mg magnesium stearate. In an alternative embodiment, from 10^5 to 10^{12} bacteria may be used, 10^5 to 10^7, 10^6 to 10^7, or 10^8 to 10^{10}, with attendant adjustments of the excipients if necessary. In an alternative embodiment, an enteric-coated capsule or tablet or with a buffering or protective composition can be used.

EXAMPLES

[0266] Below are examples of specific embodiments for carrying out the present invention. The examples are offered for illustrative purposes only, and are not intended to limit the scope of the present invention in any way. Efforts have been made to ensure accuracy with respect to numbers used (e.g., amounts, temperatures, etc.), but some experimental error and deviation should, of course, be allowed for.

[0267] The practice of the present invention will employ, unless otherwise indicated, conventional methods of protein chemistry, biochemistry, recombinant DNA techniques and pharmacology, within the skill of the art. Such techniques are explained fully in the literature. See, e.g., T.E. Creighton, *Proteins: Structures and Molecular Properties* (W.H. Freeman and Company, 1993); A.L. Lehninger, *Biochemistry* (Worth Publishers, Inc., current addition); Sambrook, et al., *Molecular Cloning: A Laboratory Manual* (2nd Edition, 1989); *Methods In Enzymology* (S. Colowick and N. Kaplan eds., Academic Press, Inc.); *Remington's Pharmaceutical Sciences*, 18th Edition (Easton, Pennsylvania: Mack Publishing Company, 1990); Carey and Sundberg *Advanced Organic Chemistry 3rd Ed.* (Plenum Press) Vols A and B(1992).

Example 1. Provision of fecal material.

[0268] Fresh fecal samples were obtained from healthy human donors who have been screened for general good health and for the absence of infectious diseases, and meet inclusion and exclusion criteria, inclusion criteria include being in good general health, without significant medical history, physical examination findings, or clinical laboratory abnormalities, regular bowel movements with stool appearance typically Type 2, 3, 4, 5 or 6 on the Bristol Stool Scale, and having a BMI ≥ 18 kg/m^2 and ≤ 25 kg/m^2. Exclusion criteria generally included significant chronic or acute

medical conditions including renal, hepatic, pulmonary, gastrointestinal, cardiovascular, genitourinary, endocrine, immunologic, metabolic, neurologic or hematological disease, a family history of, inflammatory bowel disease including Crohn's disease and ulcerative colitis, Irritable bowel syndrome, colon, stomach or other gastrointestinal malignancies, or gastrointestinal polyposis syndromes, or recent use of yogurt or commercial probiotic materials in which an organism(s) is a primary component. Samples were collected directly using a commode specimen collection system, which contains a plastic support placed on the toilet seat and a collection container that rests on the support. Feces were deposited into the container, and the lid was then placed on the container and sealed tightly. The sample was then delivered on ice within 1-4 hours for processing. Samples were mixed with a sterile disposable tool, and 2-4 g aliquots were weighed and placed into tubes and flash frozen in a dry ice/ethanol bath. Aliquots are frozen at -80 degrees Celsius until use.

[0269] Optionally, the fecal material was suspended in a solution, and/or fibrous and/or particulate materials were removed. A frozen aliquot containing a known weight of feces was removed from storage at -80 degrees Celsius and allowed to thaw at room temperature. Sterile 1x PBS was added to create a 10% w/v suspension, and vigorous vortexing was performed to suspend the fecal material until the material appeared homogeneous. The material was then left to sit for 10 minutes at room temperature to sediment fibrous and particulate matter. The suspension above the sediment was then carefully removed into a new tube and contains a purified spore population. Optionally, the suspension was then centrifuged at a low speed, e.g., 1000 x g, for 5 minutes to pellet particulate matter including fibers. The pellet was discarded and the supernatant, which contained vegetative organisms and spores, was removed into a new tube. The supernatant was then centrifuged at 6000 x g for 10 minutes to pellet the vegetative organisms and spores. The pellet was then resuspended in 1x PBS with vigorous vortexing until the material appears homogenous.

Example 2. Spore purification from alcohol treatment of fecal material.

[0270] A 10% w/v suspension of human fecal material in PBS was mixed with absolute ethanol in a 1:1 ratio and vortexed to mix for 1 minute. The suspension was incubated at 37 degrees Celsius for 1 hour. After incubation the suspension

was centrifuged at 13,000 rpm for 5 minutes to pellet spores. The supernatant was discarded and the pellet was resuspended in an equal volume of PBS. Glycerol was added to a final concentration of 15% and then the purified spore fraction is stored at -80 degrees Celsius.

Example 2A. Generation of a spore preparation from alcohol treatment of fecal material.

[0271] A 10% w/v suspension of human fecal material in PBS was mixed with absolute ethanol in a 1:1 ratio and vortexed to mix for 1 minute. The suspension was incubated at 37 degrees Celsius for 1 hour. After incubation the suspension is centrifuged at 13,000 rpm for 5 minutes to concentrate spores into a pellet containing a purified sprore-containing preparation. The supernatant was discarded and the pellet resuspended in an equal volume of PBS. Glycerol was added to a final concentration of 15% and then the purified spore preparation was stored at -80 degrees Celsius.

Example 3. Spore purification from thermal treatment of fecal material.

[0272] A 10% w/v suspension of human fecal material in PBS was incubated in a water bath at 80 degrees Celsius for 30 minutes. Glycerol was added to a final concentration of 15% and then the enriched spore containing material was stored at -80 degrees Celsius.

Example 4. Spore purification from alcohol treatment and thermal treatment of fecal material.

[0273] A 10% w/v suspension of human feces in PBS was mixed with absolute ethanol in a 1:1 ratio and vortexed to mix for 1 minute. The suspension was incubated in a water bath under aerobic conditions at 37 degrees Celsius for 1 hour. After incubation the suspension was centrifuged at 13,000 rpm for 5 minutes to pellet spores. The supernatant was discarded and the pellet was resuspended in equal volume PBS. The ethanol treated spore population was then incubated in a water bath at 80 degrees Celsius for 30 minutes. Glycerol was added to a final concentration of 15% and the purified spore fraction was stored at -80 C.

Example 5. Spore purification from detergent treatment of fecal material.

[0274] A 10% w/v suspension of human feces in PBS is prepared to contain a final concentration of 0.5 to 2% Triton X-100. After shaking incubation for 30 minutes at 25 to 37 degrees Celsius, the sample is centrifuged at 1000 g for 5 – 10

minutes to pellet particulate matter and large cells. The bacterial spores are recovered in the supernatant fraction, where the purified spore population is optionally further treated, such as in Example 4. Without being bound by theory, detergent addition to the fecal mixture produces better spore populations, at least in part by enhancing separation of the spores from particulates thereby resulting in higher yields of spores.

Example 6. Spore purification by chromatographic separation of fecal material.

[0275] A spore-enriched population such as obtained from Examples 1-5 above, is mixed with NaCl to a final concentration of 4M total salt and contacted with octyl Sepharose 4 Fast Flow to bind the hydrophobic spore fraction. The resin is washed with 4M NaCl to remove less hydrophobic components, and the spores are eluted with distilled water, and the desired enriched spore fraction is collected via UV absorbance.

Example 7. Spore purification by filtration of fecal material.

[0276] A spore-enriched population such as obtained from Examples 1-6 above is diluted 1:10 with PBS, and placed in the reservoir vessel of a tangential flow microfiltration system. A 0.2 um pore size mixed cellulose ester hydrophilic tangential flow filter is connected to the reservoir such as by a tubing loop. The diluted spore preparation is recirculated through the loop by pumping, and the pressure gradient across the walls of the microfilter forces the supernatant liquid through the filter pores. By appropriate selection of the filter pore size the desired bacterial spores are retained, while smaller contaminants such as cellular debris, and other contaminants in feces such as bacteriophage pass through the filter. Fresh PBS buffer is added to the reservoir periodically to enhance the washout of the contaminants. At the end of the diafiltration, the spores are concentrated approximately ten-fold to the original concentration. The purified spores are collected from the reservoir and stored as provided herein.

Example 8. Characterization of purified spore populations.

[0277] Counts of viable spores are determined by performing 10 fold serial dilutions in PBS and plating to Brucella Blood Agar Petri plates or applicable solid media. Plates are incubated at 37 degrees Celsius for 2 days. Colonies are counted from a dilution plate with 50-400 colonies and used to back-calculate the number of

viable spores in the population. The ability to germinate into vegetative bacteria is also demonstrated. Visual counts are determined by phase contrast microscopy. A spore preparation is either diluted in PBS or concentrated by centrifugation, and a 5 microliter aliquot is placed into a Petroff Hauser counting chamber for visualization at 400x magnification. Spores are counted within ten 0.05 mm x 0.05 mm grids and an average spore count per grid is determined and used to calculate a spore count per ml of preparation. Lipopolysaccharide (LPS) reduction in purified spore populations is measured using a Limulus amebocyte lysate (LAL) assay such as the commercially available ToxinSensor™ Chromogenic LAL Endotoxin Assay Kit (GenScript, Piscataway, NJ) or other standard methods known to those skilled in the art.

Example 9. Determination of bacterial pathogens in purified spore populations.

[0278] Bacterial pathogens present in a purified spore population are determined by qPCR using specific oligonucleotide primers as follows.

[0279] Standard Curve Preparation. The standard curve is generated from wells containing the pathogen of interest at a known concentration or simultaneously quantified by selective spot plating. Serial dilutions of duplicate cultures are performed in sterile phosphate-buffered saline. Genomic DNA is then extracted from the standard curve samples along with the other samples.

Genomic DNA Extraction.

[0280] Genomic DNA may be extracted from 100 µl of fecal samples, fecal-derived samples, or purified spore preparations using the Mo Bio Powersoil®-htp 96 Well Soil DNA Isolation Kit (Mo Bio Laboratories, Carlsbad, CA) according to the manufacturer's instructions with two exceptions: the beadbeating is performed for 2 x 4:40 minutes using a BioSpec Mini-Beadbeater-96 (BioSpec Products, Bartlesville, OK) and the DNA is eluted in 50 µl of Solution C6. Alternatively the genomic DNA could be isolated using the Mo Bio Powersoil® DNA Isolation Kit (Mo Bio Laboratories, Carlsbad, CA), the Sigma-Aldrich Extract-N-Amp™Plant PCR Kit, the QIAamp DNA Stool Mini Kit (QIAGEN, Valencia, CA) according to the manufacturer's instructions.

[qPCR Composition and Conditions.

[0281] The qPCR reaction to detect *C. difficile* contains 1x HotMasterMix (5PRIME, Gaithersburg, MD), 900 nM of Wr-tcdB-F (AGCAGTTGAATATAGTGGTTTAGTTAGAGTTG, IDT, Coralville, IA), 900 nM of Wr-tcdB-R (CATGCTTTTTTAGTTTCTGGATTGAA, IDT, Coralville, IA), 250 nM of We-tcdB-P (6FAM-CATCCAGTCTCAATTGTATATGTTTCTCCA-MGB, Life Technologies, Grand Island, NY), and PCR Water (Mo Bio Laboratories, Carlsbad, CA) to 18 µl (Primers adaped from: Wroblewski, D. et al. Rapid Molecular Characterization of Clostridium difficile and Assessment of Populations of C. difficile in Stool Specimens. Journal of Clinical Microbiology 47:2142–2148 (2009)). This reaction mixture is aliquoted to wells of a MicroAmp® Fast Optical 96-well Reaction Plate with Barcode (0.1mL) (Life Technologies, Grand Island, NY). To this reaction mixture, 2 µl of extracted genomic DNA is added. The qPCR is performed on a BioRad C1000™ Thermal Cycler equipped with a CFX96™ Real-Time System (BioRad, Hercules, CA). The thermocycling conditions are 95°C for 2 minutes followed by 45 cycles of 95°C for 3 seconds, 60°C for 30 seconds, and fluorescent readings of the FAM and ROX channels. Other bacterial pathogens can be detected by using primers and a probe specific for the pathogen of interest.

Data Analysis.

[0282] The Cq value for each well on the FAM channel is determined by the CFX Manager™ Software Version 2.1. The log10(cfu/ml) of each experimental sample is calculated by inputting a given sample's Cq value into linear regression model generated from the standard curve comparing the Cq values of the standard curve wells to the known log10(cfu/ml) of those samples.

[0283] [Viral pathogens present in a purified spore population are determined by qPCR as described herein and otherwise known in the art.

Example 10: Species Identification

[0284] The identity of the spore-forming species which grew up from a complex fraction can be determined in multiple ways. First, individual colonies can be picked into liquid media in a 96 well format, grown up and saved as 15% glycerol stocks at -80C. Aliquots of the cultures can be placed into cell lysis buffer and colony PCR methods can be used to amplify and sequence the 16S rDNA gene (Example 2). Alternatively, colonies may be streaked to purity in several passages on solid media.

Well separated colonies are streaked onto the fresh plates of the same kind and incubated for 48-72 hours at 37C. The process is repeated multiple times in order to ensure purity. Pure cultures can be analyzed by phenotypic- or sequence-based methods, including 16S rDNA amplification and sequencing as described in Examples 11 & 12. Sequence characterization of pure isolates or mixed communities e.g. plate scrapes and spore fractions can also include whole genome shotgun sequencing. The latter is valuable to determine the presence of genes associated with sporulation, antibiotic resistance, pathogenicity, and virulence. Colonies can also be scraped from plates en masse and sequenced using a massively parallel sequencing method as described in Examples 11 & 12 such that individual 16S signatures can be identified in a complex mixture. Optionally, the sample can be sequenced prior to germination (if appropriate DNA isolation procedures are used to lsye and release the DNA from spores) in order to compare the diversity of germinable species with the total number of species in a spore sample. As an alternative or complementary approach to 16S analysis, MALDI-TOF-mass spec can also be used for species identification (as reviewed in Anaerobe 22:123).

Example 11: 16s Sequencing to Determine Operational Taxonomic Unit (OTU)

Method for Determining 16S Sequence

[0285] OTUs may be defined either by full 16S sequencing of the rRNA gene, by sequencing of a specific hypervariable region of this gene (i.e. V1, V2, V3, V4, V5, V6, V7, V8, or V9), or by sequencing of any combination of hypervariable regions from this gene (e.g. V1-3 or V3-5). The bacterial 16S rDNA is approximately 1500 nucleotides in length and is used in reconstructing the evolutionary relationships and sequence similarity of one bacterial isolate to another using phylogenetic approaches. 16S sequences are used for phylogenetic reconstruction as they are in general highly conserved, but contain specific hypervariable regions that harbor sufficient nucleotide diversity to differentiate genera and species of most microbes.

[0286] Using well known techniques, in order to determine the full 16S sequence or the sequence of any hypervariable region of the 16S sequence, genomic DNA is extracted from a bacterial sample, the 16S rDNA (full region or specific hypervariable regions) amplified using polymerase chain reaction (PCR), the PCR products

cleaned, and nucleotide sequences delineated to determine the genetic composition of 16S gene or subdomain of the gene. If full 16S sequencing is performed, the sequencing method used may be, but is not limited to, Sanger sequencing. If one or more hypervariable regions are used, such as the V4 region, the sequencing may be, but is not limited to being, performed using the Sanger method or using a next-generation sequencing method, such as an Illumina (sequencing by synthesis) method using barcoded primers allowing for multiplex reactions.

[0287] In addition to the 16S rRNA gene, one may define an OTU by sequencing a selected set of genes that are known to be marker genes for a given species or taxonomic group of OTUs. These genes may alternatively be assayed using a PCR-based screening strategy. As example, various strains of pathogenic Escherichia coli can be distinguished using DNAs from the genes that encode heat-labile (LTI, LTIIa, and LTIIb) and heat-stable (STI and STII) toxins, verotoxin types 1, 2, and 2e (VT1, VT2, and VT2e, respectively), cytotoxic necrotizing factors (CNF1 and CNF2), attaching and effacing mechanisms (*eaeA*), enteroaggregative mechanisms (Eagg), and enteroinvasive mechanisms (Einv). The optimal genes to utilize for taxonomic assignment of OTUs by use of marker genes will be familiar to one with ordinary skill of the art of sequence based taxonomic identification.

Genomic DNA Extraction

[0288] Genomic DNA is extracted from pure microbial cultures using a hot alkaline lysis method. 1 µl of microbial culture is added to 9 µl of Lysis Buffer (25mM NaOH, 0.2 mM EDTA) and the mixture is incubated at 95°C for 30 minutes. Subsequently, the samples are cooled to 4°C and neutralized by the addition of 10 µl of Neutralization Buffer (40 mM Tris-HCl) and then diluted 10-fold in Elution Buffer (10 mM Tris-HCl). Alternatively, genomic DNA is extracted from pure microbial cultures using commercially available kits such as the Mo Bio Ultraclean® Microbial DNA Isolation Kit (Mo Bio Laboratories, Carlsbad, CA) or by standard methods known to those skilled in the art.

Amplification of 16S Sequences for downstream Sanger Sequencing

[0289] To amplify bacterial 16S rDNA (Figure 1A), 2 µl of extracted gDNA is added to a 20 µl final volume PCR reaction. For full-length 16 sequencing the PCR reaction also contains 1x HotMasterMix (5PRIME, Gaithersburg, MD), 250 nM of 27f

(AGRGTTTGATCMTGGCTCAG, IDT, Coralville, IA), and 250 nM of 1492r (TACGGYTACCTTGTTAYGACTT, IDT, Coralville, IA), with PCR Water (Mo Bio Laboratories, Carlsbad, CA) for the balance of the volume. Alternatively, other universal bacterial primers or thermostable polymerases known to those skilled in the art are used. For example primers are available to those skilled in the art for the sequencing of the the "V1-V9 regions" of the 16S rRNA (Figure 1A). These regions refer to the first through ninth hypervariable regions of the 16S rRNA gene that are used for genetic typing of bacterial samples. These regions in bacteria are defined by nucleotides 69-99, 137-242, 433-497, 576-682, 822-879, 986-1043, 1117-1173, 1243-1294 and 1435-1465 respectively using numbering based on the *E. coli* system of nomenclature. Brosius et al., Complete nucleotide sequence of a 16S ribosomal RNA gene from Escherichia coli, PNAS 75(10):4801-4805 (1978). In some embodiments, at least one of the V1, V2, V3, V4, V5, V6, V7, V8, and V9 regions are used to characterize an OTU. In one embodiment, the V1, V2, and V3 regions are used to characterize an OTU. In another embodiment, the V3, V4, and V5 regions are used to characterize an OTU. In another embodiment, the V4 region is used to characterize an OTU. A person of ordinary skill in the art can identify the specific hypervariable regions of a candidate 16S rRNA (in Figure 1A) by comparing the candidate sequence in question to the reference sequence (Figure 1B) and identifying the hypervariable regions based on similarity to the reference hypervariable regions.

[0290] The PCR is performed on commercially available thermocyclers such as a BioRad MyCycler™ Thermal Cycler (BioRad, Hercules, CA). The reactions are run at 94°C for 2 minutes followed by 30 cycles of 94°C for 30 seconds, 51°C for 30 seconds, and 68°C for 1 minute 30 seconds, followed by a 7 minute extension at 72°C and an indefinite hold at 4°C. Following PCR, gel electrophoresis of a portion of the reaction products is used to confirm successful amplification of a ~1.5 kb product.

[0291] To remove nucleotides and oligonucleotides from the PCR products, 2 µl of HT ExoSap-IT (Affymetrix, Santa Clara, CA) is added to 5 µl of PCR product followed by a 15 minute incubation at 37°C and then a 15 minute inactivation at 80°C.

Amplification of 16S Sequences for downstream characterization by massively parallel sequencing technologies

[0292] Amplification performed for downstream sequencing by short read technologies such as Illumina require amplification using primers known to those skilled in the art that additionally include a sequence-based barcoded tag. As example, to amplify the 16s hypervariable region V4 region of bacterial 16S rDNA, 2 µl of extracted gDNA is added to a 20 µl final volume PCR reaction. The PCR reaction also contains 1x HotMasterMix (5PRIME, Gaithersburg, MD), 200 nM of V4_515f_adapt (AATGATACGGCGACCACCGAGATCTACACTATGGTAATTGTGTGCCAGCMGCCGCGGTAA, IDT, Coralville, IA), and 200 nM of barcoded 806rbc (CAAGCAGAAGACGGCATACGAGAT_12bpGolayBarcode_AGTCAGTCAGCCGGACTACHVGGGTWTCTAAT, IDT, Coralville, IA), with PCR Water (Mo Bio Laboratories, Carlsbad, CA) for the balance of the volume. These primers incorporate barcoded adapters for Illumina sequencing by synthesis. Optionally, identical replicate, triplicate, or quadruplicate reactions may be performed. Alternatively other universal bacterial primers or thermostable polymerases known to those skilled in the art are used to obtain different amplification and sequencing error rates as well as results on alternative sequencing technologies.

[0293] The PCR amplification is performed on commercially available thermocyclers such as a BioRad MyCycler™ Thermal Cycler (BioRad, Hercules, CA). The reactions are run at 94°C for 3 minutes followed by 25 cycles of 94°C for 45 seconds, 50°C for 1 minute, and 72°C for 1 minute 30 seconds, followed by a 10 minute extension at 72°C and a indefinite hold at 4°C. Following PCR, gel electrophoresis of a portion of the reaction products is used to confirm successful amplification of a ~1.5 kb product. PCR cleanup is performed as specified in the previous example.

Sanger Sequencing of Target Amplicons from Pure Homogeneous Samples

[0294] To detect nucleic acids for each sample, two sequencing reactions are performed to generate a forward and reverse sequencing read. For full-length 16s sequencing primers 27f and 1492r are used.. 40 ng of ExoSap-IT-cleaned PCR products are mixed with 25 pmol of sequencing primer and Mo Bio Molecular Biology

Grade Water (Mo Bio Laboratories, Carlsbad, CA) to 15 µl total volume. This reaction is submitted to a commercial sequencing organization such as Genewiz (South Plainfield, NJ) for Sanger sequencing.

Massively Parallel Sequencing of Target Amplicons from Heterogeneous Samples

[0295] *DNA Quantification & Library Construction.* The cleaned PCR amplification products are quantified using the Quant-iT™ PicoGreen® dsDNA Assay Kit (Life Technologies, Grand Island, NY) according to the manufacturer's instructions. Following quantification, the barcoded cleaned PCR products are combined such that each distinct PCR product is at an equimolar ratio to create a prepared Illumina library.

[0296] *Nucleic Acid Detection.* The prepared library is sequenced on Illumina HiSeq or MiSeq sequencers (Illumina, San Diego, CA) with cluster generation, template hybridization, iso-thermal amplification, linearization, blocking and denaturization and hybridization of the sequencing primers performed according to the manufacturer's instructions. 16SV4SeqFw (TATGGTAATTGTGTGCCAGCMGCCGCGGTAA), 16SV4SeqRev (AGTCAGTCAGCCGGACTACHVGGGTWTCTAAT), and 16SV4Index (ATTAGAWACCCBDGTAGTCCGGCTGACTGACT) (IDT, Coralville, IA) are used for sequencing. Other sequencing technologies can be used such as but not limited to 454, Pacific Biosciences, Helicos, Ion Torrent, and Nanopore using protocols that are standard to someone skilled in the art of genomic sequencing.

Example 12: Sequence Read Annotation

[0297] Primary Read Annotation

[0298] Nucleic acid sequences are analyzed and annotations are to define taxonomic assignments using sequence similarity and phylogenetic placement methods or a combination of the two strategies. A similar approach can be used to annotate protein names, transcription factor names, and any other classification schema for nucleic acid sequences. Sequence similarity based methods include those familiar to individuals skilled in the art including, but not limited to BLAST, BLASTx, tBLASTn, tBLASTx, RDP-classifier, DNAclust, and various implementations of these algorithms such as Qiime or Mothur. These methods rely on mapping a sequence read to a reference database and selecting the match with

the best score and e-value. Common databases include, but are not limited to the Human Microbiome Project, NCBI non-redundant database, Greengenes, RDP, and Silva. Phylogenetic methods can be used in combination with sequence similarity methods to improve the calling accuracy of an annotation or taxonomic assignment. Here tree topologies and nodal structure are used to refine the resolution of the analysis. In this approach we analyze nucleic acid sequences using one of numerous sequence similarity approaches and leverage phylogenetic methods that are well known to those skilled in the art, including but not limited to maximum likelihood phylogenetic reconstruction (see e.g. Liu K, Linder CR, and Warnow T. 2011. RAxML and FastTree: Comparing Two Methods for Large-Scale Maximum Likelihood Phylogeny Estimation. PLoS ONE 6: e27731. McGuire G, Denham MC, and Balding DJ. 2001. Models of sequence evolution for DNA sequences containing gaps. Mol. Biol. Evol 18: 481–490. Wróbel B. 2008. Statistical measures of uncertainty for branches in phylogenetic trees inferred from molecular sequences by using model-based methods. J. Appl. Genet. 49: 49–67.) Sequence reads are placed into a reference phylogeny comprised of appropriate reference sequences. Annotations are made based on the placement of the read in the phylogenetic tree. The certainty or significance of the OTU annotation is defined based on the OTU's sequence similarity to a reference nucleic acid sequence and the proximity of the OTU sequence relative to one or more reference sequences in the phylogeny. As an example, the specificity of a taxonomic assignment is defined with confidence at the the level of Family, Genus, Species, or Strain with the confidence determined based on the position of bootstrap supported branches in the reference phylogenetic tree relative to the placement of the OTU sequence being interrogated.

[0299] Clade Assignments

[0300] The ability of 16S-V4 OTU identification to assign an OTU as a specific species depends in part on the resolving power of the 16S-V4 region of the 16S gene for a particular species or group of species. Both the density of available reference 16S sequences for different regions of the tree as well as the inherent variability in the 16S gene between different species will determine the definitiveness of a taxonomic annotation. Given the topological nature of a phylogenetic tree and the fact that tree represents hierarchical relationships of OTUs to one another based on their sequence similarity and an underlying evolutionary model, taxonomic

annotations of a read can be rolled up to a higher level using a clade-based assignment procedure (Table 1). Using this approach, clades are defined based on the topology of a phylogenetic tree that is constructed from full-length 16S sequences using maximum likelihood or other phylogenetic models familiar to individuals with ordinary skill in the art of phylogenetics. Clades are constructed to ensure that all OTUs in a given clade are: (i) within a specified number of bootstrap supported nodes from one another (generally, 1-5 bootstraps), and (ii) within a 5% genetic similarity. OTUs that are within the same clade can be distinguished as genetically and phylogenetically distinct from OTUs in a different clade based on 16S-V4 sequence data. OTUs falling within the same clade are evolutionarily closely related and may or may not be distinguishable from one another using 16S-V4 sequence data. The power of clade based analysis is that members of the same clade, due to their evolutionary relatedness, are likely to play similar functional roles in a microbial ecology such as that found in the human gut. Compositions substituting one species with another from the same clade are likely to have conserved ecological function and therefore are useful in the present invention.

[0301] Notably, 16S sequences of isolates of a given OTU are phylogenetically placed within their respective clades, sometimes in conflict with the microbiological-based assignment of species and genus that may have preceded 16S-based assignment. Discrepancies between taxonomic assignment based on microbiological characteristics versus genetic sequencing are known to exist from the literature.

Example 13: Germinating Spores

[0302] Germinating a spore fraction increases the number of viable spores that will grow on various media types. To germinate a population of spores, the sample is moved to the anaerobic chamber, resuspended in prereduced PBS, mixed and incubated for 1 hour at 37C to allow for germination. Germinants can include amino-acids (e.g., alanine, glycine), sugars (e.g., fructose), nucleosides (e.g., inosine), bile salts (e.g., cholate and taurocholate), metal cations (e.g., Mg2+, Ca2+), fatty acids, and long-chain alkyl amines (e.g., dodecylamine, Germination of bacterial spores with alkyl primary amines" J. Bacteriology, 1961.). Mixtures of these or more complex natural mixtures, such as rumen fluid or Oxgall, can be used to induce germination. Oxgall is dehydrated bovine bile composed of fatty acids, bile acids,

inorganic salts, sulfates, bile pigments, cholesterol, mucin, lecithin, glycuronic acids, porphyrins, and urea. The germination can also be performed in a growth medium like prereduced BHIS/oxgall germination medium, in which BHIS (Brain heart infusion powder (37 g/L), yeast extract (5 g/L), L-cysteine HCl (1 g/L)) provides peptides, amino acids, inorganic ions and sugars in the complex BHI and yeast extract mixtures and Oxgall provides additional bile acid germinants.

[0303] In addition, pressure may be used to germinate spores. The selection of germinants can vary with the microbe being sought. Different species require different germinants and different isolates of the same species can require different germinants for optimal germination. Finally, it is important to dilute the mixture prior to plating because some germinants are inhibitory to growth of the vegetative-state microorganisms. For instance, it has been shown that alkyl amines must be neutralized with anionic lipophiles in order to promote optimal growth. Bile acids can also inhibit growth of some organisms despite promoting their germination, and must be diluted away prior to plating for viable cells.

[0304] For example, BHIS/oxgall solution is used as a germinant and contains 0.5X BHIS medium with 0.25% oxgall (dehydrated bovine bile) where 1x BHIS medium contains the following per L of solution: 6g Brain Heart Infusion from solids, 7g peptic digest of animal tissue, 14.5g of pancreatic digest of casein, 5g of yeast extract, 5g sodium chloride, 2g glucose, 2.5g disodium phosphate, and 1g cysteine. Additionally, Ca-DPA is a germinant and contains 40mM CaCl2, and 40mM dipicolinic acid (DPA). Rumen fluid (Bar Diamond, Inc.) is also a germinant. Simulated gastric fluid (Ricca Chemical) is a germinant and is 0.2% (w/v) Sodium Chloride in 0.7% (v/v) Hydrochloric Acid. Mucin medium is a germinant and prepared by adding the following items to 1L of distilled sterile water: 0.4 g KH_2PO_4, 0.53 g Na_2HPO_4, 0.3 g NH_4Cl, 0.3 g NaCl, 0.1 g $MgCl_2$ x $6H_2O$, 0.11 g $CaCl_2$, 1 ml alkaline trace element solution, 1 ml acid trace element solution, 1 ml vitamin solution, 0.5 mg resazurin, 4 g $NaHCO_3$, 0.25 g Na_2S x 9 H_2O. The trace element and vitamin solutions prepared as described previously (Stams et al., 1993). All compounds were autoclaved, except the vitamins, which were filter-sterilized. The basal medium was supplemented with 0.7% (v/v) clarified, sterile rumen fluid and 0.25% (v/v) commercial hog gastric mucin (Type III; Sigma), purified by ethanol precipitation as

described previously (Miller & Hoskins, 1981). This medium is referred herein as mucin medium.

[0305] Fetal Bovine Serum (Gibco) can be used as a germinant and contains 5% FBS heat inactivated, in Phosphate Buffered Saline (PBS, Fisher Scientific) containing 0.137M Sodium Chloride, 0.0027M Potassium Chloride, 0.0119M Phosphate Buffer. Thioglycollate is a germinant as described previously (Kamiya et al Journal of Medical Microbiology 1989) and contains 0.25M (pH10) sodium thioglycollate. Dodecylamine solution containing 1mM dodecylamine in PBS is a germinant. A sugar solution can be used as a germinant and contains 0.2% fructose, 0.2% glucose, and 0.2% mannitol. Amino acid solution can also be used as a germinant and contains 5mM alanine, 1mM arginine, 1mM histidine, 1mM lysine, 1mM proline, 1mM asparagine, 1mM aspartic acid, 1mM phenylalanine. A germinant mixture referred to herein as Germix 3 can be a germinant and contains 5mM alanine, 1mM arginine, 1mM histidine, 1mM lysine, 1mM proline, 1mM asparagine, 1mM aspartic acid, 1mM phenylalanine, 0.2%taurocholate, 0.2% fructose, 0.2% mannitol, 0.2% glucose, 1mM inosine, 2.5mM Ca-DPA, and 5mM KCl. BHIS medium + DPA is a germinant mixture and contains BHIS medium and 2mM Ca-DPA. Escherichia coli spent medium supernatant referred to herein as EcSN is a germinant and is prepared by growing E. coli MG1655 in SweetB/Fos inulin medium anaerobically for 48 hr, spinning down cells at 20,000rcf for 20 minutes, collecting the supernatant and heating to 60C for 40 min. Finally, the solution is filter sterilized and used as a germinant solution.

Example 14: Selection of Media for Growth

[0306] It is important to select appropriate media to support growth, including preferred carbon sources. For example, some organisms prefer complex sugars such as cellobiose over simple sugars. Examples of media used in the isolation of sporulating organisms include EYA, BHI, BHIS, and GAM (see below for complete names and references). Multiple dilutions are plated out to ensure that some plates will have well isolated colonies on them for analysis, or alternatively plates with dense colonies may scraped and suspended in PBS to generate a mixed diverse community.

[0307] Plates are incubated anaerobically or aerobically at 37 C for 48-72 or more hours, targeting anaerobic or aerobic spore formers, respectively.

[0308] Solid plate media include:

- Gifu Anaerobic Medium (GAM, Nissui) without dextrose supplemented with fructooligosaccharides/inulin (0.4%), mannitol (0.4%), inulin (0.4%), or fructose (0.4%), or a combination thereof.
- Sweet GAM [Gifu Anaerobic Medium (GAM, Nissui)] modified, supplemented with glucose, cellobiose, maltose, L-arabinose, fructose, fructooligosaccharides/inulin, mannitol and sodium lactate)
- Brucella Blood Agar (BBA, Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010)
- PEA sheep blood (Anaerobe Systems; 5% Sheep Blood Agar with Phenylethyl Alcohol)
- Egg Yolk Agar (EYA) (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010)
- Sulfite polymyxin milk agar (Mevissen-Verhage et al., J. Clin. Microbiol. 25:285-289 (1987))
- Mucin agar (Derrien et al., IJSEM 54: 1469-1476 (2004))
- Polygalacturonate agar (Jensen & Canale-Parola, Appl. Environ. Microbiol. 52:880-997 (1986))
- M2GSC (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010)
- M2 agar (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010) supplemented with starch (1%), mannitol (0.4%), lactate (1.5g/L) or lactose (0.4%)
- Sweet B - Brain Heart Infusion agar (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010) supplemented with yeast extract (0.5%), hemin, cysteine (0.1%), maltose (0.1%), cellobiose (0.1%), soluble starch (sigma, 1%), MOPS (50mM, pH 7).
- PY-salicin (peptone-yeast extract agar supplemented with salicin) (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010).

- Modified Brain Heart Infusion (M-BHI) [[sweet and sour]] contains the following per L: 37.5g Brain Heart Infusion powder (Remel), 5g yeast extract, 2.2g meat extract, 1.2g liver extract, 1g cystein HCl, 0.3g sodium thioglycolate, 10mg hemin, 2g soluble starch, 2g FOS/Inulin, 1g cellobiose, 1g L-arabinose, 1g mannitol, 1 Na-lactate, 1mL Tween 80, 0.6g MgSO4x7H2O, 0.6g CaCl2, 6g (NH4)2SO4, 3g KH2PO4, 0.5g K2HPO4, 33mM Acetic acid, 9mM propionic acid, 1mM Isobutyric acid, 1mM isovaleric acid, 15g agar, and after autoclaving add 50mL of 8% $NaHCO_3$ solution and 50mL 1M MOPS-KOH (pH 7).
- Noack-Blaut Eubacterium agar (See Noack *et al. J. Nutr.* (1998) 128:1385-1391)
- BHIS az1/ge2 - BHIS az/ge agar (Reeves *et. al. Infect. Immun.* 80:3786-3794 (2012)) [Brain Heart Infusion agar (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010) supplemented with yeast extract 0.5%, cysteine 0.1%, 0.1% cellobiose, 0.1% inulin, 0.1% maltose, aztreonam 1 mg/L, gentamycin 2 mg/L]
- BHIS CInM az1/ge2- BHIS CInM [Brain Heart Infusion agar (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010) supplemented with yeast extract 0.5%, cysteine 0.1%, 0.1% cellobiose, 0.1% inulin, 0.1% maltose, aztreonam 1 mg/L, gentamycin 2 mg/L]

Example 15: The purification and isolation of a spore forming fraction from feces

[0309] To purify and selectively isolate efficacious spores from fecal material a donation is first blended with saline using a homogenization device (e.g., laboratory blender) to produce a 20% slurry (w/v). 100% ethanol is added for an inactivation treatment that lasts 10 seconds to 1 hour. The final alcohol concentration can range from 30-90%, preferably 50-70%. High speed centrifugation (3200 rcf for 10min) is performed to remove solvent and the pellet is retained and washed. Subsequently, once the washed pellet is resuspended, a low speed centrifugation step (200 rcf for 4 min) is performed to remove large particulate vegetative matter and the supernatant containing the spores is retained. High speed centrifugation (3200 rcf for 10 min) is performed on the supernatant to concentrate the spore material. The pellet is then washed and resuspended to generate a 20% slurry. This is the ethanol treated

spore preparation. The concentrated slurry is then separated with a density based gradient e.g. a CsCl gradient, sucrose gradient or combination of the two generating a ethanol treated, gradient-purified spore preparation. For example, a CsCl gradient is performed by loading a 20% volume of spore suspension on top a 80% volume of a stepwise CsCl gradient (w/v) containing the steps of 64%, 50%, 40% CsCl (w/v) and centrifuging for 20 min at 3200 rcf. The spore fraction is then run on a sucrose step gradient with steps of 67%, 50%, 40%, and 30% (w/v). When centrifuged in a swinging bucket rotor for 10 min at 3200 rcf. The spores run roughly in the 30% and 40% sucrose fractions. The lower spore fraction (Figure 2) is then removed and washed to produce a concentrated ethanol treated, gradient-purified spore preparation. Taking advantage of the refractive properties of spores observed by phase contrast microscopy (spores are bright and refractive while germinated spores and vegetative cells are dark) one can see an enrichment of the spore fraction from a fecal bacterial cell suspension (Figure 3, left) compared to an ethanol treated, CsCl gradient purified, spore preparation (Figure 3, center), and to an ethanol treated, CsCl gradient purified, sucrose gradient purified, spore preparation (Figure 3, right).

[0310] Furthermore, growth of spores after treatment with a germinant can also be used to quantify a viable spore population. Briefly, samples were incubated with a germinant (Oxgall, 0.25% for up to 1 hour), diluted and plated anaerobically on BBA (Brucella Blood Agar) or similar media (e.g. see Examples 4 and 5). Individual colonies were picked and DNA isolated for full-length 16S sequencing to identify the species composition (e.g. see examples 2 and 3). Analysis revealed that 22 species were observed in total (Table 2) with a vast majority present in both the material purified with the gradient and without the gradient, indicating no or inconsequential shift in the ecology as a result of gradient purification. Spore yield calculations demonstrate an efficient recovery of 38% of the spores from the initial fecal material as measured by germination and plating of spores on BBA or measuring DPA count in the sample.

Example 16: Bacterial compositions prevent C. difficile infection in a mouse model

[0311] To test the therapeutic potential of the bacterial compositions a prophylactic mouse model of *C. difficile* infection (model based on Chen, et al., A mouse model of *Clostridium difficile* associated disease, Gastroenterology

135(6):1984-1992) was used. Two cages of five mice each were tested for each arm of the experiment. All mice received an antibiotic cocktail consisting of 10% glucose, kanamycin (0.5 mg/ml), gentamicin (0.044 mg/ml), colistin (1062.5 U/ml), metronidazole (0.269 mg/ml), ciprofloxacin (0.156 mg/ml), ampicillin (0.1 mg/ml) and Vancomycin (0.056 mg/ml) in their drinking water on days -14 through -5 and a dose of 10mg/kg Clindamycin by oral gavage on day -3. On day -1, they received either the test article or vehicle control via oral gavage. On day 0 they were challenged by administration of approximately 4.5 log10 cfu of C. difficile (ATCC 43255) via oral gavage. Optionally a positive control group received vancomycin from day -1 through day 3 in addition to the antibiotic protocol and C. difficile challenge specified above. Feces were collected from the cages for analysis of bacterial carriage, mortality was assessed every day from day 0 to day 6 and the weight and subsequent weight change of the animal was assessed with weight loss being associated with C. difficile infection. Mortality and reduced weight loss of the test article compared to the vehicle were used to assess the success of the test article. Additionally, a C. difficile symptom scoring was performed each day from day -1 through day 6. Clinical Score was based on a 0-4 scale by combining scores for Appearance (0-2 pts based on normal, hunched, piloerection, or lethargic), and Clinical Signs (0-2 points based on normal, wet tail, cold-to-the-touch, or isolation from other animals).

[0312] In a naive control arm, animals were challenged with C. difficile. In the vancomycin positive control arm animals were dosed with C. difficile and treated with vancomycin from day -1 through day 3. The negative control was gavaged with PBS alone and no bacteria. The test arms of the experiment tested 1x, 0.1x, 0.01x dilutions derived from a single donor preparation of ethanol treated spores (e.g. see example 6) or the heat treated feces prepared by treating a 20% slurry for 30min at 80C. Dosing for CFU counts was determined from the final ethanol treated spores and dilutions of total spores were administered at 1x, 0.1x, 0.01x of the spore mixture for the ethanol treated fraction and a 1x dose for the heat treated fraction.

[0313] Weight loss and mortality were assessed on day 3. The negative control, treated with *C. difficile* only, exhibits 20% mortality and weight loss on Day 3, while the positive control of 10% human fecal suspension displays no mortality or weight loss on Day 3 (Table 3). EtOH-treated feces prevents mortality and weight loss at

three dilutions, while the heat-treated fraction was protective at the only dose tested. These data indicate that the spore fraction is efficacious in preventing *C. difficile* infection in the mouse.

Example 17: The prophylactic and relapse prevention hamster models

[0314] Previous studies with hamsters using toxigenic and nontoxigenic strains of C. difficile demonstrated the utility of the hamster model in examining relapse post antibiotic treatment and the effects of prophylaxis treatments with cecal flora in C. difficile infection (Wilson et al. 1981, Wilson et al. 1983, Borriello et al. 1985) and more broadly gastrointestinal infectious disease. To demonstrate prophylactic use of a test article to ameliorate C. difficile infection, the following hamster model is used. In a prophylactic model, Clindamycin (10mg/kg s.c.) is given on day -5, the test article or control is administered on day -3, and C. difficile challenge occurs on day 0. In the positive control arm, vancomycin is then administered on day 1-5 (and vehicle control is delivered on day -3). Feces are collected on day -5, -4, -1, 1, 3, 5, 7, 9 and fecal samples are assessed for pathogen carriage and reduction by microbiological methods, 16S sequencing approaches or other methods utilized by one skilled in the art. Mortality is assessed throughout the experiment through 21 days post C. difficile challenge. The percentage survival curves show that ethanol treated spores and ethanol treated, gradient-purified spores better protect the hamsters compared to the Vancomycin control, and vehicle control.

[0315] See Figure 4: Prophylaxis model with the ethanol treated spore preparation and the ethanol treated, gradient-purified spore preparation.

[0316] In the relapse prevention model, hamsters are challenged with toxigenic C. difficile strains on day 0, and treated with clindamycin by oral gavage on day 1, and vancomycin dosing day 2-6. Test or control treatment was then administered on day 7, 8, and 9. The groups of hamsters for each arm consist of 8 hamsters per group. Fecal material is collected on day -1, 1, 3, 5, 7, 10 and 13 and hamster mortality is assessed throughout. Survival curves are used to assess the success of the test article e.g. ethanol treated or ethanol treated, gradient purified spores versus the control treatment in preventing hamster death. The survival curves demonstrate maximum efficacy for the ethanol treated, gradient-purified spores followed by the ethanol treated spores. Both treatments improved survival percentage over vancomycin treatment alone.

[0317] See Figure 5: Relapse prevention model with ethanol treated spores and ethanol treated, gradient purified spores

Example 18: Clinical treatment of recurrent C. difficile in patients

[0318] To assess the efficacy of a test article (e.g., ethanol treated spore preparations, see Example 15) to treat recurrent C. difficile in human patients, the following procedure was performed to take feces from a healthy donor, inactivate via the ethanol treated spore preparation protocol described below, and treat recurrent C. difficile in patients presenting with this indication. Non-related donors were screened for general health history for absence of chronic medical conditions (including inflammatory bowel disease; irritable bowel syndrome; Celiac disease; or any history of gastrointestinal malignancy or polyposis), absence of risk factors for transmissible infections, antibiotic non-use in the previous 6 months, and negative results in laboratory assays for blood-borne pathogens (HIV, HTLV, HCV, HBV, CMV, HAV and Treponema pallidum) and fecal bacterial pathogens (Salmonella, Shigella, Yersinia, Campylobacter, E. coli 0157), ova and parasites, and other infectious agents (Giardia, Cryptosporidium Cyclospora, Isospora) prior to stool donation.

[0319] Donor stool was frozen shortly after donation and sampled for testing. At the time of use, approximately 75 g of donor stool was thawed and resuspended in 500 mL of non-bacteriostatic normal saline and mixed in a single use glass or plastic blender. The resulting slurry was sequentially passed through sterile, disposable mesh screens that remove particles of size 600, 300 and 200 microns. The slurry was then centrifuged briefly (200 rcf for 4 min) to separate fibrous and particulate materials, and the supernatant (containing bacterial cells and spores) was transferred to a fresh container. Ethanol was added to a final concentration of 50% and the resulting ~1500 ml slurry was incubated at room temperature for 1 hr with continuous mixing to inactivate vegetative bacterial cells. Midway through inactivation the slurry was transferred to a new bottle to ensure complete contact with the ethanol. The solid matter was pelleted in a centrifuge and washed 3 times with normal saline to remove residual ethanol. The final pellet was resuspended in 100% sterile, USP glycerol at a minimum volume, and filled into approximately 30 size 0 delayed release capsules (hypromellose DRcaps, Capsugel, Inc.) at 0.65 mL suspension each. The capsules were immediately capped and placed onto an

aluminum freezing block held at -80° C via dry ice to freeze. The frozen capsules were in turn over-capsulated with size 00 DRcaps to enhance capsule stability, labeled, and placed into < -65° C storage immediately. The final product was stored at < -65° C until the day and time of use. Encapsulated product may be stored for indefinitely at < -65° C. On the day of dosing capsules were warmed on wet ice for 1 to 2 hours to improve tolerability, and were then dosed with water ad libitium.

[0320] Patient 1 is a 45-year old woman with a history of C. difficile infection and diarrhea for at least 1 year prior to treatment. She has been previously treated with multiple courses of antibiotics followed each time by recurrence of C. difficile-associated diarrhea.

[0321] Patient 2 is an 81-year old female who has experienced recurrent C. difficile infection for 6 months prior to treatment despite adequate antibiotic therapy following each recurrence.

[0322] 24 hours prior to starting oral treatment, CDAD antibiotic therapy was discontinued. Each patient received a colon preparation procedure intended to reduce the competing microbial burden in the gastrointestinal tract and to facilitate repopulation by the spore forming organisms in the investigational product.

[0323] On the morning of the first treatment day, the patients received a dose of delayed release capsules containing the investigational product with water ad libitum. Patients were requested to avoid food for 1 hour thereafter. The next day, the patient returned to the clinic to receive an additional dose. Patients were asked to avoid food for 4 hours prior to receiving their second dose and for 1 hour following dosing.

[0324] Both patients were followed closely for evidence of relapse or adverse symptoms following treatment. Patients were contacted by phone on Day 2, Day 4, and Weeks 1, 2 and 4 and each was queried about her general status and the condition of her CDAD and related symptoms. Stool samples were collected at baseline and Weeks 1, 2, 4 and 8 post-treatment to assess changes in the gut microbiota via 16S sequencing and spore count with methods explained previously (e.g. see Examples 11 and 12). Through 4 weeks post treatment, each patient has gradually improved with no evidence of C. difficile recurrence.

[0325] Six other patients with recurrent C. difficile-associated diarrhea were treated in a similar fashion, with no CDI recurrence and no requirement for resumption of antibiotics (total of 8 patients). Additionally, there were no treatment-related serious adverse events.

Example 19: Treatment of fecal suspensions with ethanol or heat drastically reduces vegetative cell numbers and results in an enrichment of spore forming species

[0326] Treatment of a sample, preferably a human fecal sample, in a manner to inactivate or kill substantially all of the vegetative forms of bacteria present in the sample results in selection and enrichment of the spore fraction. Methods for inactivation can include heating, sonication, detergent lysis, enzymatic digestion (such as lysozyme and/or proteinase K), ethanol or acid treatment, exposure to solvents (Tetrahydrofuran, 1-butanol, 2-butanol, 1,2 propanediol, 1,3 propanediol, butanoate, propanoate, chloroform, dimethyl ether and a detergent like triton X-100, diethyl ether), or a combination of these methods. To demonstrate the efficacy of ethanol induced inactivation of vegetative cells, a 10% fecal suspension was mixed with absolute ethanol in a 1:1 ratio and vortexed to mix for 1 min. The suspension was incubated at room temperature for 30 min, 1 h, 4 h or 24 h. After incubation the suspension was centrifuged at 13,000 rpm for 5 min to pellet spores. The supernatant is discarded and the pellet is resuspended in equal volume of PBS. Viable cells were measured as described below.

[0327] To demonstrate the efficacy of heat treatment on vegetative cell inactivation a 10-20% fecal suspension was incubated at 70C, 80C, 90C or 100C for 10 min or 1 h.

[0328] After ethanol or heat treatment, remaining viable cells were measured after 24 h incubation on plates by determining the bacterial titer on Brucella blood agar (BBA) as a function of treatment and time (See Figure 6). Ethanol treatment for 1 h and 25 h have similar effects, reducing the number of viable cells by approximately 4 logs, while increasing temperature and time at high temperature leads to higher losses in viable cell number, with no colonies detectable at 100°C at either 10 min or 1 h. In this experiment no germinants were used. After several days of additional growth on plates, a number of colonies were picked from these treated samples and identified by 16S rDNA analysis (e.g. see Examples 11 and 12).

These included known spore forming Clostridium spp. as well as species not previously reported to be spore formers including Ruminococcus bromii, and Anaerotruncus colihominis (Lawson, et al 2004), and a Eubacterium sp. (Table 4). See Figure 6: Heat and ethanol treatments reduce cell viability

[0329] To demonstrate that vegetative cells are greatly reduced by ethanol treatment, known non-spore forming bacteria are ethanol treated as described previously (e.g. see Example 15) and viability was determined by plating on BBA in anaerobic conditions (e.g. see Example 14). Fecal material from four independent donors was exposed to 60C for 5 min and subsequently plated on three types of selective media under either aerobic (+ O_2) or anaerobic conditions (- O_2) (BBA+aerobic, MacConkey lactose+aerobic, Bacteroides Bile esculin+anaerobic) to identify known nonsporeforming *Enterobacteria* (survivors on MacConkey agar) and *Bacteroides fragilis* group species (survivors on Bacteroides Bile Esculin plates). The detectable limit for these assays was roughly 20 cfu/mL. Germinants were not used in this experiment (Figure 7). Both ethanol and heat inactivation greatly reduces the cell viability from fecal material to the limit of detection under using MacConkey lactose agar and BBE agar. The remaining cells identified on BBA media grown in anaerobic conditions comprise the non-germinant dependent spore forming species. See Figure 7: Reduction in non-spore forming vegetative cells by treatment at 60°C for 5 min

[0330] Additionally, the ethanol treatment was shown to rapidly kill both aerobic and non-spore forming anaerobic colony forming units in 10% fecal suspensions as determined by plating on rich (BBA) media. The reduction of plated CFUs decreases four orders of magnitude in seconds as shown in Figure 8.

[0331] See Figure 8: Time course demonstrates ethanol reduces both anaerobic and aerobic bacterial CFUs

Example 20: Species identified and isolated as spore formers by ethanol treatment

[0332] To demonstrate that spore-forming species are enriched by heat or ethanol treatment methods, a comparison of >7000 colony isolates was performed to identify species in a repeatable fashion (e.g., identified independently in multiple preparations, see examples 1, 2, and 3) only isolated from fecal suspensions treated with 50% ethanol or heat treatment and not from untreated fecal suspensions (Table

5). These data demonstrate the ability to select for spore forming species from fecal material, and identify organisms as spore formers not previously described as such in the literature. In each case, organisms were picked as an isolated colony, grown anaerobically, and then subjected to full-length 16S sequencing in order to assign species identity.

[0333] To further identify spore formers, ethanol treated fecal samples from donors A, B, C, D, E and F were plated to a variety of solid media types, single colonies were picked and grown up in broth in a 96 well format (Table 6-11). The 16S rRNA gene was then amplified by PCR and direct cycle sequencing was performed (See examples 11 and 12). The ID is based on the forward read from direct cycle sequencing of the 16S rRNA gene.

[0334] There is surprising heterogeneity in the microbiome from one individual to another (Clemente et al., 2012) and this has consequences for determining the potential efficacy of various donors to generate useful spore compositions. The method described below is useful for screening donors when, for instance, a particular quantity or diversity of spore forming organisms is useful or desired for repopulating the microbiome following antibiotic treatment or treating a particular disease or condition. Further, such screening is useful when there is a need to screen donors for the purpose of isolating microorganisms capable of spore formation, or when a purified preparation of spore forming organisms is desired from a particular donor.

[0335] Total spore count is also a measure of potency of a particular donation or purified spore preparation and is vital to determine the quantity of material required to achieve a desired dose level. To understand the variability in total spore counts, donor samples were collected and processed as described in prior examples. Donor spore counts in CFU/g were then determined by growth on media plates at various titrations to determine the spore content of the donation. Furthermore, DPA assays were used to assess spore content (expressed as spore equivalents) as described in Example 21. As seen in Figure 9, there is as much as two logs difference in an individual donor over time and can be up to three logs difference between donors. One possible reason for the difference in spore content measures is that nonviable spores and non-germinable spores will not be observed by plating but will have measurable DPA content. Another possibility is the variability between species of

DPA content in spores making some complex mixtures containing high DPA spores while other mixtures contain low DPA content spores. Selecting donors with high spore counts is important in determining productivity of isolating spores from fecal donations by identifying preferred donors.

[0336] See Figure 9: Donation Spore concentrations from clinical donors

[0337] A fresh fecal sample from donor F was treated as described in Example 15 to generate an ethanol treated spore fraction, germinated with BHIS/Oxgall for 1h as a described (e.g. see Example 13), then plated to a variety of media (e.g. See example 14). Colonies were picked with a focus on picking several of each type of morphologically distinct colony on each plate to capture as much diversity as possible. Colonies are counted on a plate of each media type with well isolated colonies such that the number of colony forming units per ml can be calculated (Table 12). Colonies were picked into one of several liquid media and the 16S rDNA sequences (e.g. see Examples 11 and 12) were determined and analyzed as described above. The number of unique OTUs for each media type is shown below with the media with the most unique OTUs at the top (Table 12). Combinations of 3 to 5 of the top 5 media types capture diversity, and some other can be chosen to target specific species of interest. Colony forming units can be calculated for a given species using the 16S data, and could be used to determine whether a sufficient level of a given organism is present. The spore complement from Donor F as determined in this experiment includes these 52 species as determined by 16S sequencing (Table 12).

[0338] To screen human donors for the presence of a diversity of spore forming bacteria and/or for specific spore-forming bacteria, fecal samples were prepared using germinants and selective plating conditions and colonies were picked (e.g. see Examples 13 and 14) and analyzed for 16S diversity as described previously (see Examples 11 and 12). An assessment of donor diversity could include the cfu/ml of ethanol resistant cells on a given media type, or cfu/ml of a given species using the 16S analysis of colonies picked from that media to determine the level of spores of a given species of interest. This type of culture-based analysis could be complemented by culture-independent methods such as qPCR with probes specific to species or genera of interest or metagenomic sequencing of spore preparations,

or 16S profiling of spore preparations using Illumina 16S variable region sequencing approaches (e.g. see Examples 11 and 12).

Example 21: Quantification of Spore Concentrations using DPA assay

[0339] Methods to assess spore concentration in complex mixtures typically require the separation and selection of spores and subsequent growth of individual species to determine the colony forming units. The art does not teach how to quantitatively germinate all the spores in a complex mixture as there are many species for which appropriate germinants have not been identified. Furthermore, sporulation is thought to be a stochastic process as a result of evolutionary selection, meaning that not all spores from a single species germinate with same response to germinant concentration, time and other environmental conditions. Alternatively, a key metabolite of bacterial spores, dipicolinic acid (DPA) has been developed to quantify spores particles in a sample and avoid interference from fecal contaminants. The assay utilizes the fact that DPA chelates Terbium 3+ to form a luminescent complex (Fichtel et al, FEMS Microbiology Ecology, 2007; Kort et al, Applied and Environmental Microbiology, 2005; Shafaat and Ponce, Applied and Environmental Microbiology, 2006; Yang and Ponce, International Journal of Food Microbiology, 2009; Hindle and Hall, Analyst, 1999). A time-resolved fluorescence assay detects terbium luminescence in the presence of DPA giving a quantitative measurement of DPA concentration in a solution.

[0340] To perform the assay 1mL of the spore standard to be measured was transferred to a 2mL microcentrifuge tube. The samples were centrifuged at 13000 RCF for 10 min and the sample is washed in 1mL sterile deionized H_2O. Wash an additional time by repeating the centrifugation. Transfer the 1mL solution to hungate tubes and autoclave samples on a steam cycle for 30 min at 250C. Add 100uL of 30uM $TbCl_3$ solution (400mM sodium acetate, pH 5.0, 30μM $TbCl_3$) to the sample. Make serial dilutions of of the autoclaved material and measure the fluorescence of each sample by exciting with 275nm light and measuring the emission wavelength of 543nm for an integration time of 1.25ms and a 0.1ms delay.

[0341] Purified spores are produced as described previously (e.g. see http://www.epa.gov/pesticides/methods/MB-28-00.pdf). Serial dilutions of purified spores from C. bifermentans, C. sporogenes, and C. butyricum cultures were prepared and measured by plating on BBA media and incubating overnight at 37C to

determine CFU/ml. Figure 10 shows the linear correspondence across different spore producing bacteria across several logs demonstrating the DPA assay as means to assess spore content.

[0342] See Figure 10: Linear range of DPA assay compared to CFU counts/ml

[0343] The discrepancy for complex spore populations between spore counts measured by germinable spore CFU and by DPA has important implications for determining the potency of an ethanol treated spore preparation for clinical use. Table AC shows spore content data from 3 different ethanol treated spore preparations used to successfully treat 3 patients suffering from recurrent C. difficile infection. The spore content of each spore preparation is characterized using the two described methods.

Table AC. Spore quantitation for ethanol treated spore preparations using spore CFU (SCFU) assay and DPA assay

Preparation	SCFU / 30 capsules	DPA SEq / 30 capsules	Ratio SCFU / DPA
Preparation 1	4.0 x 105	6.8 x 107	5.9 x 10-3
Preparation 2	2.1 x 107	9.2 x 108	0.023
Preparation 3	6.9 x 109	9.6 x 109	0.72

[0344] What is immediately apparent is that spore content varies greatly per 30 capsules. As measured by germinable SCFU, spore content varies by greater than 10,000-fold. As measured by DPA, spore content varies by greater than 100-fold. In the absence of the DPA assay, it would be difficult to set a minimum dose for administration to a patient. For instance, without data from the DPA assay, one would conclude that a minimum effective dose of spores is 4×10^5 or less using the SCFU assay (e.g. Preparation 1, Table AC). If that SCFU dose was used to normalize dosing in a clinical setting, however, then the actual spore doses given to patients would be much lower for other ethanol treated spore preparations as measured as by the DPA assay (Table AD).

Table AD. DPA doses in Table AC when normalized to 4×10^5 SCFU per dose

Preparation	SCFU / 30 capsules	DPA SEq / 30 capsules	Fraction of Preparation 1 Dose

Preparation 1	4.0 x 105	6.8 x 107	1.0
Preparation 2	4.0 x 105	1.8 x 107	0.26
Preparation 3	4.0 x 105	5.6 x 105	0.0082

[0345] It becomes clear from the variability of SCFU and DPA counts across various donations that using SCFU as the measure of potency would lead to significant underdosing in certain cases. For instance, setting a dose specification of 4×10^5 SCFU (the apparent effective dose from donor Preparation 1) for product Preparation 3 would lead to a potential underdosing of more than 100-fold. This can be rectified only by setting potency specifications based on the DPA assay, which better reflects total spore counts in an ethanol treated spore preparation. The unexpected finding of this work is that the DPA assay is uniquely suited to set potency and determine dosing for an ethanol treated spore preparation.

Example 22: Demonstration of enhanced growth with a germinant

[0346] To enhance the ethanol treated spores germination capability and demonstrate spore viability, spores from three different donors were germinated by various treatments and plated on various media. Germination with BHIS/oxgall (BHIS ox), Ca-DPA, rumen fluid (RF), simulated gastric fluid (SGF), mucin medium (Muc), fetal bovine serum (FBS), or thioglycollate (Thi) for 1 hour at 37C in anaerobic conditions was performed as described previously (e.g. see Examples 13 and 14) with samples derived from two independent donors (Figure 11). The spore-germinant mixture was serially diluted and plated on different plate media including BBA, Sweet B, Sweet B + lysozyme (2ug/ml), M2GSC and M2GSC + lysozyme (2ug/ml) as previously described (e.g. see Examples 13 and 14) to determine spore germination. Colony forming units were tallied and titers were determined using standard techniques by one skilled in the art. As Figure 11 shows, maximum colony forming units are derived from BHI-oxgall treatment. This germination treatment also greatly increases the diversity as measured by the number of OTUs identified when samples were submitted for 16S sequencing (e.g. see Examples 11 and 12) compared to plating without a germination step (Figure 12). As shown in Figure 11: Different germinant treatments have variable effects on CFU counts from donor A (upper left) and donor B (lower right). The Y-Axes are spore CFU per ml. As shown

in Figure 12: Germinates greatly increase the diversity of cultured spore forming OTUs.

[0347] To test the effect of heat activation to promote germination, ethanol treated fecal samples were treated for 15 min at room temperature, 55C, 65C, 75C or 85C from three different donors and germinated subsequently with BHIS+ Oxgall for 1hr at 37C then plated on BBA media (Figure 13) as previously described (e.g. see Examples 13 and 14). Pretreatment at room temperature produced equal if not more spores than the elevated temperatures in all three donors. The temperature of germinating was also examined by incubating samples at room temperature or 37C for 1 hr in anaerobic conditions before plating on BBA. No difference in the number of CFUs was observed between the two conditions. Lysozyme addition to the plates (2ug/ml) was also tested on a single donor sample by the testing of various activation temperature followed by an incubation in the presence or absence of lysozyme. The addition of lysozyme had a small effect when plated on Sweet B or M2GSC media but less so than treatment with BHIS oxgall without lysozyme for 1hr (Figure 14).

[0348] As shown in Figure 13: Heat Activation as a germination treatment with BHIS+oxgall. As shown in Figure 14: Effect of lysozyme slightly enhances germination.

[0349] Germination time was also tested by treating a 10% suspension of a single donor ethanol treated feces (e.g. see Example 15) incubated in either BHIS, taurocholate, oxgall, or germix for 0, 15, 30, or 60 minutes and subsequently plated on BHIS, EYA, or BBA media (e.g. see Examples 13 and 14). 60 minutes resulted in the most CFU units across all various combinations germinates and plate media tested.

Example 23: Demonstrating efficacy of germinable and sporulatable fractions of ethanol treated spores

[0350] To define methods for characterization and purification, and to improve (e.g., such as by modulating the diversity of the compositions) the active spore forming ecology derived from fecal donations, the ethanol treated spore population (as described in Example 15) was further fractionated. A "germinable fraction" was derived by treating the ethanol-treated spore preparation with oxgall, plating to various solid media, and then, after 2 days or 7 days of growth, scraping all the

bacterial growth from the plates into 5 mL of PBS per plate to generate a bacterial suspension. A "sporulatable fraction" was derived as above except that the cells were allowed to grow on solid media for 2 days or 7 days (the time was extended to allow sporulation, as is typical in sporulation protocols), and the resulting bacterial suspension was treated with 50% ethanol to derive a population of "sporulatable" spores, or species that were capable of forming spores. In preparing these fractions, fecal material from donor A was used to generate an ethanol treated spore preparation as previously described in Example 15; then spore content was determined by DPA assay and CFU/ml grown on various media (Figure 15) as previously described (see Example 21). See Figure 15: Spores initially present in ethanol treated spore preparation as measured by DPA and CFU/ml grown on specified media.

[0351] To characterize the fraction that is sporulatable, the 2 day and 7 day "germinable" fractions were assessed for CFU and DPA content before and after ethanol treatment to generate a spore fraction. Bacterial suspensions were treated with ethanol, germinated with Oxgall, and plated on the same types of media that the "germinable" fraction was grown on. DPA data showed that growth on plates for 2 and 7 days produced the same amount of total spores. Colonies on the several types of media were picked for 16S sequence analysis to identify the spore forming bacteria present (Table 13).

[0352] A 2 day "germinable" fraction and a 7 day "sporulatable" fraction were used as a treatment in the mouse prophylaxis assay as described (e.g. see Example 16). As a control, a 10% fecal suspension prepared from a donor (Donor B) was also administered to mice to model fecal microbiota transplant (FMT). Weight loss and mortality of the various test and control arms of the study are plotted in Figure 17 and summarized in Table 15 which also contains the dosing information. The data clearly shows both the "germinable" and "sporulatable" fractions are efficacious in providing protection against C. difficile challenge in a prophylaxis mouse model (e.g. see Example 16). The efficacy of these fractions further demonstrates that the species present are responsible for the efficacy of the spore fraction, as the fractionation further dilutes any potential contaminant from the original spore preparation.

[0353] See Figure 16: Titer of "germinable" fraction after 2 days (left) and Sporulatable fraction (right) by DPA and CFU/ml. The "sporulatable" fraction made following 7 days of growth was measured as previously described using germination and growth assays or DPA content as previously described (see Example 21).

[0354] The species present in the "germinable" and "sporulatable" fractions were determined by full length 16S sequencing of colony picks and by 16S NGS sequencing of the fractions themselves. The colony pick data indicate Clostridium species are very abundant in both fractions, while the NGS data reveal other spore forming organisms that are typically found in ethanol treated spore preparations are present.

[0355] Results are shown in the following: See Table 13. Species identified as "germinable" and "sporulatable" by colony picking approach. See Table YYY. Species identified as "germinable" using 16S-V4 NGS approach. See Table ZZZ. Species identified as "sporulatable" using 16s-V4 NGS approach. See Figure 17: Mouse prophylaxis model demonstrates "germinable" and "sporulatable" preparations are protective against C. difficile challenge. Each plot tracks the change in the individual mouse's weight relative to day -1 over the course of the experiment. The number of deaths over the course of the experiment is indicated at the top of the chart and demonstrated by a line termination prior to day 6. The top panels (from left to right) are the vehicle control arm, the fecal suspension arm, and the untreated naive control arm, while the bottom panels are the ethanol treated, gradient purified spore preparation; the ethanol treated, gradient purified, "germinable" preparation, and ethanol treated, gradient purified, "sporulatable" preparation. See Table 15: Results of the prophylaxis mouse model and dosing information

Example 24: Donor pooling efficacy in prophylaxis mouse

[0356] To test the efficacy and dosing of pooled donor samples the C. difficile prophylaxis mouse model (e.g., see Example 16) is used with donations mixed from two or more donor samples as previously described. Weight loss and mortality with the mixed spore product versus the spore product derived from a single donor at the various dosing is determine whether the two treatment schemes are equivalent or one is significantly better than the other.

[0357] Dosing of the spore product derived from a single or multiple donors is between 1E4 to 1E10 CFU/ml. The spore product is mixed from product derived from any number of donors ranging from 1-10 at either equal concentrations or different known concentrations.

[0358] Additionally, this method can be used to expand the spore fraction for production purposes. For production purposes, an enriched spore fraction (e.g. – a purified and EtOH treated fraction of a fecal sample) is preserved in multiple aliquots to form a bank of viable spore-forming organisms. An aliquot of this bank is then recovered by germinant treatment followed by cultivation in a medium, and under conditions, that are broadly permissive for spore-forming organisms and encourage sporulation. After a suitable amplification time, the amplified bacteria including spores are harvested, and this preparation is solvent or heat-treated to isolate the spore fraction. This fraction may be further purified away from non-spore forms and culture constituents. The process of amplification, spore isolation and optional purification may be repeated at increasing scales to generate large quantities for further use. When enough germinable/sporulatable material has been accumulated by amplification, it may be further purified, concentrated or diluted, and/or preserved to a state suitable for further use, e.g. – clinical dosing.

[0359] Features may be incorporated into the above process to make it suitable for further utility, especially for product applications such as clinical use. The production of the initial spore fraction may be conducted under controlled conditions (cGMP's) and validated to remove non-spore organisms to a high degree. The germination may be conducted using reagents that are more standardizable than natural products such as oxgall, *e.g.* – synthetic mixtures of bile salts. Amplification may be done using media with components that are preferred for clinical safety, *e.g.* – sourced from qualified animals, or non-animal sourced. Conditions may be arranged so as to ensure consistent compositions of sporulated organisms, are less prone to contamination, and are more amenable to scale-up, *e.g.* – closed stirred fermenters with feedback control loops. Sporulated organisms from the process may be isolated using procedures that alone or combined stringently eliminate non-spores and other process residuals, *e.g.* – solvent treatment, aqueous two-phase extraction, and/or 60° C long-time heat treatment. Preservation may involve addition of excipients and/or adjustment of conditions to enable conversion to a preferred

dosage form amenable to long-term shelf storage, *e.g.* – addition of trehalose, followed by lyophilization or spray drying, further blending of the powder with microcrystalline cellulose, and encapsulation in a gelatin capsule to form an orally dosable product.

Example 25: Engraftment, Augmentation and reduction of Pathogen Carriage in Patients Treated with Spore Compositions

[0360] Complementary genomic and microbiological methods were used to characterize the composition of the microbiota from Patient 1, 2, 3, 4, and 5, 6, 7, 8, 9, and 10 at pretreatment (pretreatment) and on up to 4 weeks post-treatment.

[0361] To determine the OTUs that engraft from treatment with an ethanol treated spore preparation in the patients and how their microbiome changed in response, the microbiome was characterized by 16S-V4 sequencing prior to treatment (pretreatment) with an ethanol treated spore preparation and up to 25 days after receiving treatment. As example, the treatment of patient 1 with an ethanol treated spore preparation led to the engraftment of OTUs from the spore treatment and augmentation in the microbiome of the patient (Figure 18 and Figure 19). By day 25 following treatment, the total microbial carriage was dominated by species of the following taxonomic groups: Bacteroides, Sutterella, Ruminococcus, Blautia, Eubacterium, Gemmiger/Faecalibacterium, and the non-sporeforming Lactobacillus (see Table 16 and Table 2 for specific OTUs). The first two genera represent OTUs that do not form spores while the latter taxonomic groups represent OTUs that are believed to form spores.

[0362] Patient treatment with the ethanol treated spore preparation leads to the establishment of a microbial ecology that has greater diversity than prior to treatment (Figure 18). Genomic-based microbiome characterization confirmed engraftment of a range of OTUs that were absent in the patient pretreatment (Table 16). These OTUs comprised both bacterial species that were capable and not capable of forming spores, and OTUs that represent multiple phylogenetic clades. Organisms absent in Patient 1 pre-treatment either engraft directly from the ethanol treated spore fraction or are augmented by the creation of a gut environment favoring a healthy, diverse microbiota. Furthermore, Bacteroides fragilis group species were increased by 4 and 6 logs in patients 1 and 2 (Figure 20).

[0363] OTUs that comprise an augmented ecology are not present in the patient prior to treatment and/or exist at extremely low frequencies such that they do not comprise a significant fraction of the total microbial carriage and are not detectable by genomic and/or microbiological assay methods. OTUs that are members of the engrafting and augmented ecologies were identified by characterizing the OTUs that increase in their relative abundance post treatment and that respectively are: (i) present in the ethanol treated spore preparation and absent in the patient pretreatment, or (ii) absent in the ethanol treated spore preparation, but increase in their relative abundance through time post treatment with the preparation due to the formation of favorable growth conditions by the treatment. Notably, the latter OTUs can grow from low frequency reservoirs in the patient, or be introduced from exogenous sources such as diet. OTUs that comprise a "core" augmented or engrafted ecology can be defined by the percentage of total patients in which they are observed to engraft and/or augment; the greater this percentage the more likely they are to be part of a core ecology responsible for catalyzing a shift away from a dysbiotic ecology. The dominant OTUs in an ecology can be identified using several methods including but not limited to defining the OTUs that have the greatest relative abundance in either the augmented or engrafted ecologies and defining a total relative abundance threshold. As example, the dominant OTUs in the augmented ecology of Patient-1 were identified by defining the OTUs with the greatest relative abundance, which together comprise 60% of the microbial carriage in this patient's augmented ecology.

[0364] See Figure 18: Microbial diversity measured in the ethanol treated spore treatment sample and patient pre- and post-treatment samples. Total microbial diversity is defined using the Chao1 Alpha-Diversity Index and is measured at different genomic sampling depths to confirm adequate sequence coverage to assay the microbiome in the target samples. The patient pretreatment (purple) harbored a microbiome that was significantly reduced in total diversity as compared to the ethanol treated spore treatment (red) and patient post treatment at days 5 (blue), 14 (orange), and 25 (green).

[0365] See Figure 19: Patient microbial ecology is shifted by treatment with an ethanol treated spore treatment from a dysbiotic state to a state of health. Principle Coordinates Analysis based on the total diversity and structure of the microbiome

(Bray-Curtis Beta-Diversity) of the patient pre- and post-treatment delineates that the engraftment of OTUs from the spore treatment and the augmentation of the patient microbial ecology leads to a microbial ecology that is distinct from both the pretreatment microbiome and the ecology of the ethanol treated spore treatment (Table 16).

[0366] See Figure 20: Augmentation of Bacteroides species in patients. Comparing the number of Bacteroides fragilis groups species per cfu/g of feces pre-treatment and in week 4 post treatment reveals an increase of 4 logs or greater. The ability of 16S-V4 OTU identification to assign an OTU as a specific species depends in part on the resolution of the 16S-V4 region of the 16S gene for a particular species or group of species. Both the density of available reference 16S sequences for different regions of the tree as well as the inherent variability in the 16S gene between different species will determine the definitiveness of a taxonomic annotation to a given sequence read. Given the topological nature of a phylogenetic tree and that the tree represents hierarchical relationships of OTUs to one another based on their sequence similarity and an underlying evolutionary model, taxonomic annotations of a read can be rolled up to a higher level using a clade-based assignment procedure (Table 1). Using this approach, clades are defined based on the topology of a phylogenetic tree that is constructed from full-length 16S sequences using maximum likelihood or other phylogenetic models familiar to individuals with ordinary skill in the art of phylogenetics. Clades are constructed to ensure that all OTUs in a given clade are: (i) within a specified number of bootstrap supported nodes from one another (generally, 1-5 bootstraps), and (ii) within a 5% genetic similarity. OTUs that are within the same clade can be distinguished as genetically and phylogenetically distinct from OTUs in a different clade based on 16S-V4 sequence data. OTUs falling within the same clade are evolutionarily closely related and may or may not be distinguishable from one another using 16S-V4 sequence data. The power of clade based analysis is that members of the same clade, due to their evolutionary relatedness, play similar functional roles in a microbial ecology such as that found in the human gut. Compositions substituting one species with another from the same clade are likely to have conserved ecological function and therefore are useful in the present invention.

[0367] Stool samples were aliquoted and resuspended 10x vol/wt in either 100% ethanol (for genomic characterization) or PBS containing 15% glycerol (for isolation of microbes) and then stored at -80°C until needed for use. For genomic 16S sequence analysis colonies picked from plate isolates had their full-length 16S sequence characterized as described in Examples 11 and 12, and primary stool samples were prepared targeting the 16S-V4 region using the method for heterogeneous samples in Example 10.

[0368] Notably, 16S sequences of isolates of a given OTU are phylogenetically placed within their respective clades despite that the actual taxonomic assignment of species and genus may suggest they are taxonomically distinct from other members of the clades in which they fall. Discrepancies between taxonomic names given to an OTU is based on microbiological characteristics versus genetic sequencing are known to exist from the literature. The OTUs footnoted in this table are known to be discrepant between the different methods for assigning a taxonomic name.

[0369] Engraftment of OTUs from the ethanol treated spore preparation treatment into the patient as well as the resulting augmentation of the resident microbiome led to a significant decrease in and elimination of the carriage of pathogenic species other than *C. difficile* in the patient. 16S-V4 sequencing of primary stool samples demonstrated that at pretreatment, 20% of reads were from the genus Klebsiella and an additional 19% were assigned to the genus Fusobacterium. These striking data are evidence of a profoundly dysbiotic microbiota associated with recurrent *C. difficile* infection and chronic antibiotic use. In healthy individuals, Klebsiella is a resident of the human microbiome in only about 2% of subjects based on an analysis of HMP database (www.hmpdacc.org), and the mean relative abundance of Klebsiella is only about 0.09% in the stool of these people. It's surprising presence at 20% relative abundance in Patient 1 before treatment is an indicator of a proinflammatory gut environment enabling a "pathobiont" to overgrow and outcompete the commensal organisms normally found in the gut. Similarly, the dramatic overgrowth of Fusobacterium indicates a profoundly dysbiotic gut microbiota. One species of Fusobacterium, *F. nucleatum* (an OTU phylogenetically indistinguishable from Fusobacterium sp. 3_1_33 based on 16S-V4), has been termed "an emerging gut pathogen" based on its association with IBD, Crohn's disease, and colorectal cancer in humans and its demonstrated

causative role in the development of colorectal cancer in animal models [Allen-Vercoe, Gut Microbes (2011) 2:294-8]. Importantly, neither Klebsiella nor Fusobacterium was detected in the 16S-V4 reads by Day 25 (Table 18).

[0370] To further characterize the colonization of the gut by Klebsiella and other Enterobacteriaceae and to speciate these organisms, pretreatment and Day 25 fecal samples stored at -80C as PBS-glycerol suspensions were plated on a variety of selective media including MacConkey lactose media (selective for gram negative enterobacteria) and Simmons Citrate Inositol media (selective for Klebsiella spp) [Van Cregten et al, J. Clin. Microbiol. (1984) 20: 936-41]. Enterobacteria identified in the patient samples included K. pneumoniae, Klebsiella sp. Co_9935 and E. coli. Strikingly, each Klebsiella species was reduced by 2-4 logs whereas E. coli, a normal commensal organism present in a healthy microbiota, was reduced by less than 1 log (Table 19). This decrease in Klebsiella spp. carriage is consistent across multiple patients (Table 19). Four separate patients were evaluated for the presence of Klebsiella spp. pre treatment and 4 weeks post treatment. Klebsiella spp. were detected by growth on selective Simmons Citrate Inositol media as previously described. Serial dilution and plating, followed by determining cfu/mL titers of morphologically distinct species and 16S full length sequence identification of representatives of those distinct morphological classes, allowed calculation of titers of specific species.

[0371] The genus Bacteroides is an important member of the gastrointestinal microbiota; 100% of stool samples from the Human Microbiome Project contain at least one species of Bacteroides with total relative abundance in these samples ranging from 0.96% to 93.92% with a median relative abundance of 52.67% (www.hmpdacc.org reference data set HMSMCP). Bacteroides in the gut has been associated with amino acid fermentation and degradation of complex polysaccharides. Its presence in the gut is enhanced by diets rich in animal-derived products as found in the typical western diet [David, L. A. et al, *Nature* (2013) doi:10.1038/nature12820]. Strikingly, prior to treatment, fewer than 0.008% of the 16S-V4 reads from Patient 1 mapped to the genus Bacteroides strongly suggesting that Bacteroides species were absent or that viable Bacteroides were reduced to an extremely minor component of the patient's gut microbiome. Post treatment, ≥42% of the 16S-V4 reads could be assigned to the genus Bacteroides within 5 days of

treatment and by Day 25 post treatment 59.48% of the patients gut microbiome was comprised of Bacteroides. These results were confirmed microbiologically by the absence of detectable Bacteroides in the pretreatment sample plated on two different Bacteroides selective media: Bacteroides Bile Esculin (BBE) agar which is selective for Bacteroides fragilis group species [Livingston, S.J.et al *J. Clin. Microbiol* (1978). 7: 448-453] and Polyamine Free Arabinose (PFA) agar [Noack et al. *J. Nutr.* (1998) 128: 1385-1391; modified by replacing glucose with arabinose]. The highly selective BBE agar had a limit of detection of $<2x10^3$ cfu/g, while the limit of detection for Bacteroides on PFA agar was approximately $2x10^7$ cfu/g due to the growth of multiple non-Bacteroides species in the pretreatment sample on that medium. Colony counts of Bacteroides species on Day 25 were up to $2x10^{10}$ cfu/g, consistent with the 16S-V4 sequencing, demonstrating a profound reconstitution of the gut microbiota in Patient 1 (Table 20).

[0372] The significant abundance of Bacteroides in Patient 1 on Day 25 (and as early as Day 5 as shown by 16S-V4 sequencing) is remarkable. Viable Bacteroides fragilis group species were not present in the ethanol treated spore population based on microbiological plating (limit of detection of 10 cfu/ml). Thus, administration of the ethanol treated spore population to Patient 1 resulted not only in the engraftment of spore-forming species, but also the restoration of high levels of non-spore forming species commonly found in healthy individuals through the creation of a niche that allowed for the repopulation of Bacteroides species. These organisms were most likely either present at extremely low abundance in the GI tract of Patient 1, or present in a reservoir in the GI tract from which they could rebound to high titer. Those species may also be reinoculated via oral uptake from food following treatment. We term this healthy repopulation of the gut with OTUs that are not present in the ethanol treated spore population "Augmentation." Augmentation is an important phenomenon in that it shows the ability to use an ethanol treated spore ecology to restore a healthy microbiota by seeding a diverse array or commensal organisms beyond the actual component organisms in the ethanol treated spore population itself; specifically the spore treatment itself and the engraftment of OTUs from the spore composition create a niche that enables the outgrowth of OTUs required to shift a dysbiotic microbiome to a microbial ecology that is associated with health. The diversity of Bacteroides species and their approximate relative

abundance in the gut of Patient 1 is shown in Table 21, comprising at least 8 different species.

[0373] See Figure 21: Species Engrafting versus Species Augmenting in patients microbiomes after treatment with an ethanol-treated spore population. Relative abundance of species that engrafted or augmented as described were determined based on the number of 16S sequence reads. Each plot is from a different patient treated with the ethanol-treated spore population for recurrent C. difficile.

[0374] The impact of ethanol treated spore population treatment on carriage of imipenem resistant Enterobacteriaceae was assessed by plating pretreatment and Day 28 clinical samples from Patients 2, 4 and 5 on MacConkey lactose plus 1 ug/mL of imipenem. Resistant organisms were scored by morphology, enumerated and DNA was submitted for full length 16S rDNA sequencing as described above. Isolates were identified as *Morganella morganii*, *Providencia rettgeri* and *Proteus pennerii*. Each of these are gut commensal organisms; overgrowth can lead to bacteremia and/or urinary tract infections requiring aggressive antibiotic treatment and, in some cases, hospitalization [Kim, B-N, et al *Scan J. Inf Dis* (2003) **35:** 98-103; Lee, I-K and Liu, J-W *J. Microbiol Immunol Infect* (2006) 39: 328-334; O'Hara et al, *Clin Microbiol Rev* (2000) **13:** 534]. The titer of organisms at pretreatment and Day 28 by patient is shown in Table 22. Importantly, administration of the ethanol treated spore preparation resulted in greater than 100-fold reduction in 4 of 5 cases of Enterobacteriaceae carriage with multiple imipenem resistant organisms (Table 22).

[0375] In addition to speciation and enumeration, multiple isolates of each organism from Patient 4 were grown overnight in 96-well trays containing a 2-fold dilution series of imipenem in order to quantitatively determine the minimum inhibitory concentration (MIC) of antibiotic. Growth of organisms was detected by light scattering at 600 nm on a SpectraMax M5e plate reader. In the clinical setting, these species are considered resistant to imipenem if they have an MIC of 1 ug/mL or greater. *M. morganii* isolates from pretreatment samples from Patient D had MICs of 2-4 ug/mL and *P. pennerii* isolates had MICs of 4-8 ug/mL. Thus the ethanol treated spore population administered to Patient 4 caused the clearance of 2 imipenem resistant organisms (Table 16).

Example 26. Enrichment and Purification of bacteria.

[0376] To purify individual bacterial strains, dilution plates were selected in which the density enables distinct separation of single colonies. Colonies were picked with a sterile implement (either a sterile loop or toothpick) and re-streaked to BBA or other solid media. Plates were incubated at 37°C for 3-7 days. One or more well-isolated single colonies of the major morphology type were re-streaked. This process was repeated at least three times until a single, stable colony morphology is observed. The isolated microbe was then cultured anaerobically in liquid media for 24 hours or longer to obtain a pure culture of 10^6-10^{10} cfu/ml. Liquid growth medium might include Brain Heart Infusion-based medium (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010) supplemented with yeast extract, hemin, cysteine, and carbohydrates (for example, maltose, cellobiose, soluble starch) or other media described previously (e.g. see example 14). The culture was centrifuged at 10,000 x g for 5 min to pellet the bacteria, the spent culture media was removed, and the bacteria were resuspended in sterile PBS. Sterile 75% glycerol was added to a final concentration of 20%. An aliquot of glycerol stock was titered by serial dilution and plating. The remainder of the stock was frozen on dry ice for 10-15 min and then placed at -80C for long term storage.

Example 27. Cell Bank Preparation.

[0377] Cell banks (RCBs) of bacterial strains were prepared as follows. Bacterial strains were struck from -80°C frozen glycerol stocks to Brucella blood agar with Hemin or Vitamin K (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010), M2GSC (Atlas, Handbook of Microbiological Media, 4th ed, ASM Press, 2010) or other solid growth media and incubated for 24 to 48 h at 37°C in an anaerobic chamber with a gas mixture of H_2:CO_2:N_2 of 10:10:80. Single colonies were then picked and used to inoculate 250 ml to 1 L of Wilkins-Chalgren broth, Brain-Heart Infusion broth, M2GSC broth or other growth media, and grown to mid to late exponential phase or into the stationary phase of growth. Alternatively, the single colonies may be used to inoculate a pilot culture of 10 ml, which were then used to inoculate a large volume culture. The growth media and the growth phase at harvest were selected to enhance cell titer, sporulation (if desired) and phenotypes that might be associated desired in vitro or in vivo. Optionally, Cultures were grown static or shaking, depending which yielded maximal cell titer. The cultures were then

concentrated 10 fold or more by centrifugation at 5000 rpm for 20 min, and resuspended in sterile phosphate buffered saline (PBS) plus 15% glycerol. 1 ml aliquots were transferred into 1.8 ml cryovials which were then frozen on dry ice and stored at -80C. The identity of a given cell bank was confirmed by PCR amplification of the 16S rDNA gene, followed by Sanger direct cycle sequencing, and comparison to a curated rDNA database to determine a taxonomic ID. Each bank was confirmed to yield colonies of a single morphology upon streaking to Brucella blood agar or M2GSC agar. When more than one morphology was observed, colonies were confirmed to be the expected species by PCR and sequencing analysis of the 16S rDNA gene. Variant colony morphologies can be observed within pure cultures, and in a variety of bacteria the mechanisms of varying colony morphologies have been well described (van der Woude, Clinical Microbiology Reviews, 17:518, 2004), including in Clostridium species (Wadsworth-KTL Anaerobic Bacteriology Manual, 6th Ed, Jousimie-Somer, et al 2002). For obligate anaerobes, RCBs were confirmed to lack aerobic colony forming units at a limit of detection of 10 cfu/ml.

Example 28. Titer Determination.

[0378] The number of viable cells per ml was determined on the freshly harvested, washed and concentrated culture by plating serial dilutions of the RCB to Brucella blood agar or other solid media, and varied from 10^6 to 10^{10} cfu/ml. The impact of freezing on viability was determined by titering the banks after one or two freeze-thaw cycles on dry ice or at -80°C, followed by thawing in an anaerobic chamber at room temperature. Some strains displayed a 1-3 log drop in viable cfu/ml after the 1st and/or 2nd freeze thaw, while the viability of others were unaffected.

Example 29. Preparation of bacterial compositions.

[0379] Individual strains were typically thawed on ice and combined in an anaerobic chamber to create mixtures, followed by a second freeze at -80°C to preserve the mixed samples. When making combinations of strains for in vitro or in vivo assays, the cfu in the final mixture was estimated based on the second freeze-thaw titer of the individual strains. For experiments in rodents, strains may be combined at equal counts in order to deliver between 1e4 and 1e10 per strain. Additionally, some bacteria may not grow to sufficient titer to yield cell banks that allowed the production of compositions where all bacteria were present at 1e10.

Example 30. Identification of Keystone OTUs and Functions

[0380] The human body is an ecosystem in which the microbiota, and the microbiome, play a significant role in the basic healthy function of human systems (e.g. metabolic, immunological, and neurological). The microbiota and resulting microbiome comprise an ecology of microorganisms that co-exist within single subjects interacting with one another and their host (i.e., the mammalian subject) to form a dynamic unit with inherent biodiversity and functional characteristics. Within these networks of interacting microbes (i.e. ecologies), particular members can contribute more significantly than others; as such these members are also found in many different ecologies, and the loss of these microbes from the ecology can have a significant impact on the functional capabilities of the specific ecology. Robert Paine coined the concept "Keystone Species" in 1969 (see Paine RT. 1969. A note on trophic complexity and community stability. The American Naturalist 103: 91–93.) to describe the existence of such lynchpin species that are integral to a given ecosystem regardless of their abundance in the ecological community. Paine originally describe the role of the starfish Pisaster ochraceus in marine systems and since the concept has been experimentally validated in numerous ecosystems.

[0381] Keystone OTUs and/or Functions are computationally-derived by analysis of network ecologies elucidated from a defined set of samples that share a specific phenotype. Keystone OTUs and/or Functions are defined as all Nodes within a defined set of networks that meet two or more of the following criteria. Using Criterion 1, the node is frequently observed in networks, and the networks in which the node is observed are found in a large number of individual subjects; the frequency of occurrence of these Nodes in networks and the pervasiveness of the networks in individuals indicates these Nodes perform an important biological function in many individuals. Using Criterion 2, the node is frequently observed in networks, and each the networks in which the node is observed contain a large number of Nodes -- these Nodes are thus "super-connectors", meaning that they form a nucleus of a majority of networks and as such have high biological significance with respect to their functional contributions to a given ecology. Using Criterion 3, the node is found in networks containing a large number of Nodes (i.e. they are large networks), and the networks in which the node is found occur in a large number of subjects; these networks are potentially of high interest as it is

unlikely that large networks occurring in many individuals would occur by chance alone strongly suggesting biological relevance. Optionally, the required thresholds for the frequency at which a node is observed in network ecologies, the frequency at which a given network is observed across subject samples, and the size of a given network to be considered a Keystone node are defined by the 50th, 70th, 80th, or 90th percentiles of the distribution of these variables. Optionally, the required thresholds are defined by the value for a given variable that is significantly different from the mean or median value for a given variable using standard parametric or non-parametric measures of statistical significance. In another embodiment a Keystone node is defined as one that occurs in a sample phenotype of interest such as but not limited to "health" and simultaneously does not occur in a sample phenotype that is not of interest such as but not limited to "disease." Optionally, a Keystone Node is defined as one that is shown to be significantly different from what is observed using permuted test datasets to measure significance.

Example 31. Identifying the Core Ecology from the Ethanol Treated Spore Preparation

[0382] Ten different ethanol treated spore preparations were made from 6 different donors (as described in Example 15). The spore preparations were used to treat 10 patients, each suffering from recurrent C. difficile infection. Patients were identified using the inclusion/exclusion criteria described in Example 18, and donors were identified using the criteria described in Example 1. None of the patients experienced a relapse of C. difficile in the 4 weeks of follow up after treatment, whereas the literature would predict that 70-80% of subjects would experience a relapse following cessation of antibiotic [Van Nood, et al, *NEJM* (2013)]. Thus, the ethanol treated spore preparations derived from multiple different donors and donations showed remarkable clinical efficacy.

[0383] To define the Core Ecology underlying the remarkable clinical efficacy of the ethanol treated spore preparation, the following analysis was carried out. The OTU composition of the spore preparation was determined by 16S-V4 rDNA sequencing and computational assignment of OTUs per Example 12. A requirement to detect at least ten sequence reads in the ethanol treated spore preparation was set as a conservative threshold to define only OTUs that were highly unlikely to arise from errors during amplification or sequencing. Methods routinely employed by

those familiar to the art of genomic-based microbiome characterization use a read relative abundance threshold of 0.005% (see e.g. Bokulich, A. et al. 2013. Quality-filtering vastly improves diversity estimates from Illumina amplicon sequencing. Nature Methods 10: 57-59), which would equate to ≥2 reads given the sequencing depth obtained for the samples analyzed in this example, as cut-off which is substantially lower than the ≥10 reads used in this analysis . All taxonomic and clade assignments were made for each OTU as described in Examples 12. The resulting list of OTUs, clade assignments, and frequency of detection in the spore preparations are shown in Table GB. OTUs that engraft in a treated patients and the percentage of patients in which they engraft are denoted, as are the clades, spore forming status, and Keystone OTU status. Starred OTUs occur in ≥80% of the ethanol preps and engraft in ≥50% of the treated patients.

Table GB. OTUs detected by a minimum of ten 16S-V4 sequence reads in at least a one ethanol treated spore preparation (pan-microbiome).

OTU	Clade	% of Spore Preps with OTU	% of Patients OTU Engrafts	Spore Former	Keystone OTU
Prevotella_maculosa	clade_104	10%	0%	N	N
Prevotella_copri	clade_168	20%	0%	N	N
Bacteroides_caccae	clade_170	30%	0%	N	Y
Bifidobacterium_sp_TM_7*	clade_172	90%	60%	N	N
Bifidobacterium_gallicum	clade_172	70%	20%	N	N
Bifidobacterium_dentium	clade_172	50%	0%	N	N
Lactobacillus_casei	clade_198	20%	10%	N	N
Actinomyces_odontolyticus	clade_212	20%	30%	N	N
Clostridium_colicanis	clade_223	10%	10%	Y	N
Clostridiales_sp_SS3_4*	clade_246	100%	70%	Y	N
Clostridium_sporogenes	clade_252	40%	40%	Y	N
Clostridium_butyricum	clade_252	20%	20%	Y	N
Clostridium_disporicum	clade_253	40%	30%	Y	N

Clostridium_hylemonae*	clade_260	100%	50%	Y	N
Clostridium_scindens	clade_260	10%	60%	Y	N
Coprococcus_comes*	clade_262	90%	80%	Y	Y
Lachnospiraceae_bacterium_1_4_56FAA*	clade_262	90%	80%	Y	Y
Ruminococcus_torques	clade_262	30%	70%	Y	Y
Parabacteroides_merdae	clade_286	30%	20%	N	Y
Bifidobacterium_bifidum	clade_293	10%	0%	N	N
Johnsonella_ignava	clade_298	10%	10%	N	N
Blautia_glucerasea*	clade_309	100%	80%	Y	N
Blautia_sp_M25*	clade_309	100%	70%	Y	Y
Lachnospiraceae_bacterium_6_1_63FAA*	clade_309	100%	60%	Y	N
Eubacterium_cellulosolvens	clade_309	10%	30%	Y	Y
Lactobacillus_fermentum	clade_313	10%	0%	N	N
Sarcina_ventriculi	clade_353	10%	10%	Y	N
Clostridium_bartlettii*	clade_354	90%	70%	Y	N
Clostridium_bifermentans	clade_354	70%	70%	Y	N
Clostridium_mayombei	clade_354	50%	50%	Y	N
Dorea_longicatena*	clade_360	100%	60%	Y	Y
Lachnospiraceae_bacterium_9_1_43BFAA	clade_360	100%	30%	Y	N
Lachnospiraceae_bacterium_2_1_58FAA*	clade_360	80%	80%	Y	N
Lachnospiraceae_bacterium_2_1_46FAA	clade_360	50%	50%	Y	N
Lactobacillus_perolens	clade_373	10%	0%	N	N
Bacteroides_dorei	clade_378	60%	50%	N	Y
Eubacterium_biforme	clade_385	10%	0%	Y	N
Peptoniphilus_sp_gpac077	clade_389	10%	20%	N	N

Coprococcus_catus*	clade_393	100%	70%	Y	Y
Eubacterium_hallii*	clade_396	90%	60%	Y	Y
Anaerosporobacter_mobilis	clade_396	40%	60%	Y	N
Bacteroides_pectinophilus	clade_396	10%	60%	Y	N
Lactobacillus_hominis	clade_398	10%	0%	N	N
Lactococcus_lactis	clade_401	40%	40%	N	N
Ruminococcus_champanellensis*	clade_406	80%	50%	Y	N
Ruminococcus_callidus	clade_406	10%	10%	Y	N
Clostridium_clostridioforme*	clade_408	100%	60%	Y	Y
Eubacterium_hadrum*	clade_408	100%	90%	Y	Y
Clostridium_symbiosum	clade_408	30%	50%	Y	Y
Anaerostipes_caccae	clade_408	10%	50%	Y	N
Parasutterella_excrementihominis	clade_432	10%	0%	N	N
Sutterella_stercoricanis	clade_432	10%	0%	N	N
Eubacterium_rectale*	clade_444	100%	80%	Y	Y
Lachnobacterium_bovis*	clade_444	100%	80%	Y	N
Desulfovibrio_desulfuricans	clade_445	10%	0%	N	Y
Eubacterium_sp_oral_clone_JS001*	clade_476	80%	70%	Y	N
Faecalibacterium_prausnitzii*	clade_478	100%	60%	Y	Y
Subdoligranulum_variabile*	clade_478	100%	80%	Y	Y
Coprobacillus_sp_D7*	clade_481	90%	60%	Y	N
Clostridium_cocleatum	clade_481	60%	20%	Y	N
Clostridium_spiroforme	clade_481	40%	50%	Y	N
Eubacterium_ramulus*	clade_482	80%	60%	Y	N
Flavonifractor_plautii	clade_494	70%	60%	Y	Y
Pseudoflavonifractor_capillosu	clade_494	60%	60%	Y	Y

s					
Ruminococcaceae_bacterium_D16	clade_494	30%	50%	Y	Y
Acetivibrio_cellulolyticus*	clade_495	70%	80%	Y	N
Clostridium_stercorarium	clade_495	40%	50%	Y	N
Enterococcus_durans	clade_497	10%	10%	N	N
Enterococcus_faecium	clade_497	10%	10%	N	N
Dialister_invisus	clade_506	50%	10%	N	N
Eubacterium_limosum	clade_512	20%	0%	Y	N
Ruminococcus_flavefaciens	clade_516	60%	60%	Y	N
Eubacterium_ventriosum	clade_519	30%	60%	Y	Y
Bilophila_wadsworthia	clade_521	90%	0%	N	Y
Lachnospira_pectinoschiza	clade_522	40%	60%	Y	N
Eubacterium_eligens	clade_522	30%	50%	Y	Y
Catonella_morbi	clade_534	20%	0%	N	N
Clostridium_sporosphaeroides*	clade_537	100%	80%	Y	N
Ruminococcus_bromii	clade_537	60%	30%	Y	Y
Clostridium_leptum	clade_537	40%	70%	Y	Y
Clostridium_sp_YIT_12069	clade_537	40%	60%	Y	N
Clostridium_viride	clade_540	10%	10%	Y	N
Megamonas_funiformis	clade_542	50%	0%	N	N
Eubacterium_ruminantium*	clade_543	80%	90%	Y	N
Coprococcus_eutactus	clade_543	20%	20%	Y	N
Collinsella_aerofaciens	clade_553	50%	10%	Y	Y
Alkaliphilus_metalliredigenes	clade_554	40%	10%	Y	N
Turicibacter_sanguinis	clade_555	80%	40%	Y	N
Phascolarctobacterium_faecium	clade_556	20%	0%	N	N
Clostridiales_bacterium_oral_cl	clade_558	80%	50%	N	N

one_P4PA*					
Lutispora_thermophila	clade_564	100%	0%	Y	N
Coriobacteriaceae_bacterium_JC110	clade_566	70%	0%	N	N
Eggerthella_sp_1_3_56FAA	clade_566	70%	30%	N	N
Adlercreutzia_equolifaciens	clade_566	40%	0%	N	N
Gordonibacter_pamelaeae	clade_566	30%	0%	N	Y
Slackia_isoflavoniconvertens	clade_566	10%	0%	N	N
Eubacterium_desmolans*	clade_572	90%	70%	Y	N
Papillibacter_cinnamivorans*	clade_572	90%	80%	Y	N
Clostridium_colinum	clade_576	30%	30%	Y	N
Akkermansia_muciniphila	clade_583	60%	10%	N	Y
Clostridiales_bacterium_oral_taxon_F32	clade_584	60%	30%	N	N
Prochlorococcus_marinus	clade_592	30%	0%	N	N
Methanobrevibacter_wolinii	clade_595	30%	0%	N	N
Bacteroides_fragilis	clade_65	20%	30%	N	Y
Lactobacillus_delbrueckii	clade_72	10%	0%	N	N
Escherichia_coli	clade_92	50%	0%	N	Y
Clostridium_sp_D5	clade_96	80%	60%	Y	N
Streptococcus_thermophilus	clade_98	90%	20%	N	Y
Streptococcus_sp_CM6	clade_98	20%	10%	N	N
Streptococcus_sp_oral_clone_ASCE05	clade_98	10%	0%	N	N

[0384] Next, it was reasoned that for an OTU to be considered a member of the Core Ecology of the spore preparation, that OTU must be shown to engraft in a patient. Engraftment is important for two reasons. First, engraftment is a sine qua non of the mechanism to reshape the microbiome and eliminate C. difficile colonization. OTUs that engraft with higher frequency are highly likely to be a

component of the Core Ecology of the spore preparation. Second, OTUs detected by sequencing the spore preparation (as in Table GB) may include non-viable spores or other contaminant DNA molecules not associated with spores. The requirement that an OTU must be shown to engraft in the patient eliminates OTUs that represent non-viable spores or contaminating sequences. Table GB also identifies all OTUs detected in the spore preparation that also were shown to engraft in at least one patient post-treatment. OTUs that are present in a large percentage of the ethanol spore preparations analyzed and that engraft in a large number of patients represent a subset of the Core Ecology that are highly likely to catalyze the shift from a dysbiotic disease ecology to a healthy microbiome.

[0385] A third lens was applied to further refine insights into the Core Ecology of the spore preparation. Computational-based, network analysis has enabled the description of microbial ecologies that are present in the microbiota of a broad population of healthy individuals. These network ecologies are comprised of multiple OTUs, some of which are defined as Keystone OTUs. Keystone OTUs are computationally defined as described in Example 30. Keystone OTUs form a foundation to the microbially ecologies in that they are found and as such are central to the function of network ecologies in healthy subjects. Keystone OTUs associated with microbial ecologies associated with healthy subjects are often are missing or exist at reduced levels in subjects with disease. Keystone OTUs may exist in low, moderate, or high abundance in subjects. Table GB further notes which of the OTUs in the spore preparation are Keystone OTUs exclusively associated with individuals that are healthy and do not harbor disease.

[0386] There are several important findings from this data. A relatively small number of species, 16 in total, are detected in all of the spore preparations from 6 donors and 10 donations. This is surprising because the HMP database (www.hmpdacc.org) describes the enormous variability of commensal species across healthy individuals. The presence of a small number of consistent OTUs lends support to the concept of a Core Ecology. The engraftment data further supports this conclusion. A regression analysis shows a significant correlation between frequency of detection in a spore preparation and frequency of engraftment in a donor: $R = 0.43$ ($p < 0.001$). There is no a priori requirement that an OTU detected frequently in the spore preparation will or should engraft. For instance,

Lutispora thermophila, a spore former found in all ten spore preparations, did not engraft in any of the patients. *Bilophila wadsworthia*, a gram negative anaerobe, is present in 9 of 10 donations, yet it does not engraft in any patient, indicating that it is likely a non-viable contaminant in the ethanol treated spore preparation. Finally, it is worth noting the high preponderance of previously defined Keystone OTUs among the most frequent OTUs in the spore preparations.

[0387] These three factors--prevalence in the spore preparation, frequency of engraftment, and designation as a Keystone OTUs--enabled the creation of a "Core Ecology Score" (CES) to rank individual OTUs. CES was defined as follows:

- 40% weighting for presence of OTU in spore preparation
- multiplier of 1 for presence in 1-3 spore preparations
- multiplier of 2.5 for presence in 4-8 spore preparations
- multiplier of 5 for presences in ≥ 9 spore preparations
- 40% weighting for engraftment in a patient
- multiplier of 1 for engraftment in 1-4 patients
- multiplier of 2.5 for engraftment in 5-6 patients
- multiplier of 5 for engraftment in ≥ 7 patients
- 20% weighting to Keystone OTUs
- multiplier of 1 for a Keystone OTU
- multiplier of 0 for a non-Keystone OTU

[0388] Using this guide, the CES has a maximum possible score of 5 and a minimum possible score of 0.8. As an example, an OTU found in 8 of the 10 spore preparations that engrafted in 3 patients and was a Keystone OTU would be assigned the follow CES:

$$CES = (0.4 \times 2.5) + (0.4 \times 1) + (0.2 \times 1) = 1.6$$

[0389] Table GC ranks the top 20 OTUs by CES with the further requirement that an OTU must be shown to engraft to be a considered an element of a core ecology.

Table GC. Top 20 OTUs ranked by CES

OTU	Clade	CES	Spore Former	Keystone OTU
Eubacterium_hadrum	clade_408	4.2	Y	Y
Eubacterium_rectale	clade_444	4.2	Y	Y
Subdoligranulum_variabile	clade_478	4.2	Y	Y
Blautia_sp_M25	clade_309	4.2	Y	Y
Coprococcus_catus	clade_393	4.2	Y	Y
Lachnospiraceae_bacterium_1_4_56FAA	clade_262	4.2	Y	Y
Coprococcus_comes	clade_262	4.2	Y	Y
Blautia_glucerasea	clade_309	4.0	Y	N
Lachnobacterium_bovis	clade_444	4.0	Y	N
Clostridium_sporosphaeroides	clade_537	4.0	Y	N
Clostridiales_sp_SS3_4	clade_246	4.0	Y	N
Papillibacter_cinnamivorans	clade_572	4.0	Y	N
Clostridium_bartlettii	clade_354	4.0	Y	N
Eubacterium_desmolans	clade_572	4.0	Y	N
Clostridium_clostridioforme	clade_408	3.2	Y	Y
Dorea_longicatena	clade_360	3.2	Y	Y
Faecalibacterium_prausnitzii	clade_478	3.2	Y	Y
Eubacterium_hallii	clade_396	3.2	Y	Y
Clostridium_leptum	clade_537	3.2	Y	Y
Lachnospiraceae_bacterium_6_1_63FAA	clade_309	3.0	Y	N

Example 32. Defining Efficacious Subsets of the Core Ecology

[0390] The number of organisms in the human gastrointestinal tract, as well as the diversity between healthy individuals, is indicative of the functional redundancy of a healthy gut microbiome ecology (see The Human Microbiome Consortia. 2012.

Structure, function and diversity of the healthy human microbiome. Nature 486: 207-214). This redundancy makes it highly likely that subsets of the Core Ecology describe therapeutically beneficial components of the ethanol treated spore preparation and that such subsets may themselves be useful compositions for the treatment of *C. difficile* infection given the ecologies functional characteristics. Using the CES, individual OTUs can be prioritized for evaluation as an efficacious subset of the Core Ecology.

[0391] Another aspect of functional redundancy is that evolutionarily related organisms (i.e. those close to one another on the phylogenetic tree, e.g. those grouped into a single clade) will also be effective substitutes in the Core Ecology or a subset thereof for treating C. difficile.

[0392] To one skilled in the art, the selection of appropriate OTU subsets for testing in vitro (e.g. see Example 33 below) or in vivo (e.g. see Examples 16 or 17) is straightforward. Subsets may be selected by picking any 2, 3, 4, 5, 6, 7, 8, 9, 10, or more than 10 OTUs from Table GB, with a particular emphasis on those with higher CES, such as the OTUs described in Table GC. In addition, using the clade relationships defined in Example 12 and Table 1 above, related OTUs can be selected as substitutes for OTUs with acceptable CES values. These organisms can be cultured anaerobically in vitro using the appropriate media (selected from those described in Example 14 above), and then combined in a desired ratio. A typical experiment in the mouse C. difficile model utilizes at least 10^4 and preferably at least 10^5, 10^6, 10^7, 10^8, 10^9 or more than 10^9 colony forming units of a each microbe in the composition. Variations in the culture yields may sometimes mean that organisms are combined in unequal ratios, e.g. 1:10, 1:100, 1:1,000, 1:10,000, 1:100,000, or greater than 1:100,000. What is important in these compositions is that each strain be provided in a minimum amount so that the strain's contribution to the efficacy of the Core Ecology subset can be measured. Using the principles and instructions described here, it is straightforward for one of skill in the art to make clade-based substitutions to test the efficacy of subsets of the Core Ecology. Table GB describes the clades for each OTU detected in a spore preparation and Table 1 describes the OTUs that can be used for substitutions based on clade relationships.

Example 33. Testing Subsets of the Core Ecology in the Mouse Model

[0393] Several subsets of the Core Ecology were tested in the C. difficile mouse model. The negative control was phosphate buffered saline and the positive control was a 10% human fecal suspension. The subsets are described in Table GD.

Table GD: Subsets of the Core Ecology tested in the C. difficile mouse model

Subset	OTU	Substitute For OTU in Table 1 (Clade)
Subset 1	Collinsella aerofaciens	none (Clade_553)
	Clostridium tertium	C. sporogenes (Clade_252)
	Clostridium disporicum	none (Clade_253)
	Clostridium innocuum	Clostridium_sp_HGF2 (Clade_351)
	Clostridium mayombei	none (Clade_354)
	Clostridium butyricum	none (Clade_252)
	Coprococcus comes	none (Clade_262)
	Clostridium hylemonae	none (Clade_260)
	Clostridium bolteae	E. hadrum (Clade_408)
	Clostridium symbiosum	C. clostridioforme (Clade_408)
	Clostridium orbiscindens	R._bacterium_D16 (Clade_494)
	Lachnospiraceae bacterium_5_1_57FAA	C. scindens (Clade_260)
	Blautia producta	Blautia_sp_M25 (Clade_309)
	Ruminococcus gnavus	D. longicatena(Clade_360)
	Ruminococcus bromii	none (Clade_537)
Subset 2	Collinsella aerofaciens	none (Clade_553)
	Clostridium butyricum	none (Clade_252)
	Clostridium hylemonae	none (Clade_260)
	Blautia producta	Blautia_sp_M25 (Clade_309)
Subset 3	Collinsella aerofaciens	none (Clade_553)

	Clostridium innocuum	Clostridium_sp_HGF2 (Clade_351)
	Coprococcus comes	none (Clade_262)
	Ruminococcus bromii	none (Clade_537)
Subset 4	Clostridium butyricum	none (Clade_252)
	Clostridium hylemonae	none (Clade_260)
	Blautia producta	Blautia_sp_M25 (Clade_309)
Subset 5	Clostridium butyricum	none (Clade_252)
	Clostridium hylemonae	none (Clade_260)
Subset 6	Blautia producta	Blautia_sp_M25 (Clade_309)
	Clostridium butyricum	none (Clade_252)
Subset 7	Clostridium orbiscindens	R._bacterium_D16 (Clade_494)
	Lachnospiraceae bacterium_5_1_57FAA	C. scindens (Clade_260)
	Eubacterium rectale	none (Clade_444)

[0394] Two cages of five mice each were tested for each arm of the experiment. All mice received an antibiotic cocktail consisting of 10% glucose, kanamycin (0.5 mg/ml), gentamicin (0.044 mg/ml), colistin (1062.5 U/ml), metronidazole (0.269 mg/ml), ciprofloxacin (0.156 mg/ml), ampicillin (0.1 mg/ml) and Vancomycin (0.056 mg/ml) in their drinking water on days -14 through -5 and a dose of 10mg/kg Clindamycin by oral gavage on day -3. On day -1, they received either the test articles or control articles via oral gavage. On day 0 they were challenged by administration of approximately 4.5 log10 cfu of C. difficile (ATCC 43255) via oral gavage. Mortality was assessed every day from day 0 to day 6 and the weight and subsequent weight change of the animal was assessed with weight loss being associated with C. difficile infection. Mortality and reduced weight loss of the test article compared to the empty vehicle was used to assess the success of the test article. Additionally, a C. difficile symptom scoring was performed each day from day -1 through day 6. Symptom scoring was based on Appearance (0-2 pts based on normal, hunched, piloerection, or lethargic), Respiration (0-2 pts based on normal,

rapid or shallow, with abdominal breathing), Clinical Signs (0-2 points based on normal, wet tail, cold-to-the-touch, or isolation from other animals).

[0395] In addition to compiling the cumulative mortality for each arm, the average minimum relative weight is calculated as the mean of each mouse's minimum weight relative to Day -1 and the average maximum clinical score is calculated as the mean of each mouse's maximum combined clinical score with a score of 4 assigned in the case of death. The results are reported in Table GE.

Table GE: Results of bacterial compositions tested in a C. difficile mouse model.

Group	Dose	Cumulative Mortality (%)	Avg. Minimum Relative Weight	Avg. Maximum Clinical Score (Death = 4)
Vehicle Control	-	40	0.87	2.8
Feces Control	5.8e8 cfu total	0	0.99	0
Subset 1	1e8 cfu/OTU	0	0.98	0
Subset 2	1e8 cfu/OTU	10	0.84	2.1
Subset 3	1e8 cfu/OTU	10	0.84	2.2
Subset 4	1e8 cfu/OTU	0	0.87	2
Subset 5	1e8 cfu/OTU	20	0.91	1.7
Subset 6	1e8 cfu/OTU	40	0.82	2.8
Subset 7	1e8 cfu/OTU	0	0.90	1

Example 34. Defining Subsets of the Core Ecology in the in vitro C. difficile inhibition assay

[0396] Vials of -80 °C glycerol stock banks were thawed and diluted to 1e8 CFU/mL. Selected strains and their clade assignment are given in Table GF. Each strain was then diluted 10x (to a final concentration of 1e7 CFU/mL of each strain) into 200 uL of PBS + 15% glycerol in the wells of a 96-well plate. Plates were then frozen at -80 °C. When needed for the assay, plates were removed from -80 °C and thawed at room temperature under anaerobic conditions when testing in a in vitro C. difficile inhibition assay (CivSim).

[0397] An overnight culture of Clostridium difficile is grown under anaerobic conditions in SweetB-FosIn or other suitable media for the growth of C. difficile. SweetB-FosIn is a complex media composed of brain heart infusion, yeast extract, cysteine, cellobiose, maltose, soluble starch, and fructooligosaccharides/inulin, and hemin, and is buffered with MOPs. After 24 hr of growth the culture is diluted 100,000 fold into a complex media such as SweetB-FosIn which is suitable for the growth of a wide variety of anaerobic bacterial species. The diluted C. difficile mixture is then aliquoted to wells of a 96-well plate (180 uL to each well). 20 uL of a subset Core Ecology is then added to each well at a final concentration of 1e6 CFU/mL of each species. Alternatively the assay can be tested each species at different initial concentrations (1e9 CFU/mL, 1e8 CFU/mL, 1e7 CFU/mL, 1e5 CFU/mL, 1e4 CFU/mL, 1e3 CFU/mL, 1e2 CFU/mL). Control wells only inoculated with C. difficile are included for a comparison to the growth of C. difficile without inhibition. Additional wells are used for controls that either inhibit or do not inhibit the growth of C. difficile. One example of a positive control that inhibits growth is a combination of Blautia producta, Clostridium bifermentans and Escherichia coli. One example of a control that shows reduced inhibition of *C. difficile* growth is a combination of Bacteroides thetaiotaomicron, Bacteroides ovatus and Bacteroides vulgatus. Plates are wrapped with parafilm and incubated for 24 hr at 37 °C under anaerobic conditions. After 24 hr the wells containing C. difficile alone are serially diluted and plated to determine titer. The 96-well plate is then frozen at -80C before quantifying C. difficile by qPCR assay.

[0398] A standard curve is generated from a well on each assay plate containing only pathogenic *C. difficile* grown in SweetB + FosIn media and quantified by selective spot plating. Serial dilutions of the culture are performed in sterile phosphate-buffered saline. Genomic DNA is extracted from the standard curve samples along with the other wells.

[0399] Genomic DNA is extracted from 5 µl of each sample using a dilution, freeze/thaw, and heat lysis protocol. 5 µL of thawed samples is added to 45 µL of UltraPure water (Life Technologies, Carlsbad, CA) and mixed by pipetting. The plates with diluted samples are frozen at -20 °C until use for qPCR which includes a heated lysis step prior to amplification. Alternatively the genomic DNA is isolated using the Mo Bio Powersoil®-htp 96 Well Soil DNA Isolation Kit (Mo Bio Laboratories,

Carlsbad, CA), Mo Bio Powersoil® DNA Isolation Kit (Mo Bio Laboratories, Carlsbad, CA), or the QIAamp DNA Stool Mini Kit (QIAGEN, Valencia, CA) according to the manufacturer's instructions.

[0400] The qPCR reaction mixture contains 1x SsoAdvanced Universal Probes Supermix, 900 nM of Wr-tcdB-F primer (AGCAGTTGAATATAGTGGTTTAGTTAGAGTTG, IDT, Coralville, IA), 900 nM of Wr-tcdB-R primer (CATGCTTTTTTAGTTTCTGGATTGAA, IDT, Coralville, IA), 250 nM of Wr-tcdB-P probe (6FAM-CATCCAGTCTCAATTGTATATGTTTCTCCA-MGB, Life Technologies, Grand Island, NY), and Molecular Biology Grade Water (Mo Bio Laboratories, Carlsbad, CA) to 18 µl (Primers adapted from: Wroblewski, D. et al., Rapid Molecular Characterization of Clostridium difficile and Assessment of Populations of C. difficile in Stool Specimens, Journal of Clinical Microbiology 47:2142–2148 (2009)). This reaction mixture is aliquoted to wells of a Hard-shell Low-Profile Thin Wall 96-well Skirted PCR Plate (BioRad, Hercules, CA). To this reaction mixture, 2 µl of diluted, frozen, and thawed samples are added and the plate sealed with a Microseal 'B' Adhesive Seal (BioRad, Hercules, CA). The qPCR is performed on a BioRad C1000™ Thermal Cycler equipped with a CFX96™ Real-Time System (BioRad, Hercules, CA). The thermocycling conditions are 95°C for 15 minutes followed by 45 cycles of 95°C for 5 seconds, 60°C for 30 seconds, and fluorescent readings of the FAM channel. Alternatively, the qPCR is performed with other standard methods known to those skilled in the art.

[0401] The Cq value for each well on the FAM channel is determined by the CFX Manager™ 3.0 software. The $\log_{10}$(cfu/mL) of C. difficile each experimental sample is calculated by inputting a given sample's Cq value into a linear regression model generated from the standard curve comparing the Cq values of the standard curve wells to the known $\log_{10}$(cfu/mL) of those samples. The log inhibition is calculated for each sample by subtracting the $\log_{10}$(cfu/mL) of C. difficile in the sample from the $\log_{10}$(cfu/mL) of C. difficile in the sample on each assay plate used for the generation of the standard curve that has no additional bacteria added. The mean log inhibition is calculated for all replicates for each composition.

[0402] A histogram of the range and standard deviation of each composition is plotted. Ranges or standard deviations of the log inhibitions that are distinct from the overall distribution are examined as possible outliers. If the removal of a single log

inhibition datum from one of the binary pairs that is identified in the histograms would bring the range or standard deviation in line with those from the majority of the samples, that datum is removed as an outlier, and the mean log inhibition is recalculated.

[0403] The pooled variance of all samples evaluated in the assay is estimated as the average of the sample variances weighted by the sample's degrees of freedom. The pooled standard error is then calculated as the square root of the pooled variance divided by the square root of the number of samples. Confidence intervals for the null hypothesis are determined by multiplying the pooled standard error to the z score corresponding to a given percentage threshold. Mean log inhibitions outside the confidence interval are considered to be inhibitory if positive or stimulatory if negative with the percent confidence corresponding to the interval used. Ternary combinations with mean log inhibition greater than 0.312 are reported as ++++ (≥ 99% confidence interval (C.I.) of the null hypothesis), those with mean log inhibition between 0.221 and 0. 312 as +++ (95% < C.I. <99%), those with mean log inhibition between 0.171 and 0. 221as ++ (90% < C.I. <95%), those with mean log inhibition between 0.113 and 0. 171 as + (80% < C.I. <90%), those with mean log inhibition between −0.113 and −0. 171 as − (80% < C.I. <90%), those with mean log inhibition between −0. 171 and −0. 221 as −− (90% < C.I. <95%), those with mean log inhibition between −0. 221and −0. 312 as −−− (95% < C.I. <99%), and those with mean log inhibition less than −0. 312 as −−−− (99% < C.I.).

Table GF. OTUs and their clade assignments tested in ternary combinations with results in the in vitro inhibition assay

OTU1	Clade1	OTU2	Clade2	OTU3	Clade3	Results
Clostridium_boltea e	clade_4 08	Blautia_producta	clade_3 09	Eubacterium_rectale	clade_4 44	+++ +
Clostridium_boltea e	clade_4 08	Clostridium_symbi osum	clade_4 08	Blautia_producta	clade_3 09	+++ +
Clostridium_boltea e	clade_4 08	Clostridium_symbi osum	clade_4 08	Eubacterium_rectale	clade_4 44	-
Clostridium_boltea e	clade_4 08	Clostridium_symbi osum	clade_4 08	Faecalibacterium_pr ausnitzii	clade_4 78	-

Clostridium_boltea e	clade_4 08	Clostridium_symbi osum	clade_4 08	Lachnospiraceae_ba cterium_5_1_57FA A	clade_2 60	
Clostridium_boltea e	clade_4 08	Faecalibacterium_p rausnitzii	clade_4 78	Blautia_producta	clade_3 09	+++ +
Clostridium_boltea e	clade_4 08	Faecalibacterium_p rausnitzii	clade_4 78	Eubacterium_rectale	clade_4 44	
Clostridium_boltea e	clade_4 08	Faecalibacterium_p rausnitzii	clade_4 78	Lachnospiraceae_ba cterium_5_1_57FA A	clade_2 60	+++ +
Clostridium_boltea e	clade_4 08	Lachnospiraceae_b acterium_5_1_57F AA	clade_2 60	Blautia_producta	clade_3 09	+++ +
Clostridium_boltea e	clade_4 08	Lachnospiraceae_b acterium_5_1_57F AA	clade_2 60	Eubacterium_rectale	clade_4 44	+
Clostridium_symbi osum	clade_4 08	Blautia_producta	clade_3 09	Eubacterium_rectale	clade_4 44	+++ +
Clostridium_symbi osum	clade_4 08	Faecalibacterium_p rausnitzii	clade_4 78	Blautia_producta	clade_3 09	+++ +
Clostridium_symbi osum	clade_4 08	Faecalibacterium_p rausnitzii	clade_4 78	Eubacterium_rectale	clade_4 44	
Clostridium_symbi osum	clade_4 08	Faecalibacterium_p rausnitzii	clade_4 78	Lachnospiraceae_ba cterium_5_1_57FA A	clade_2 60	+
Clostridium_symbi osum	clade_4 08	Lachnospiraceae_b acterium_5_1_57F AA	clade_2 60	Blautia_producta	clade_3 09	+++ +
Clostridium_symbi osum	clade_4 08	Lachnospiraceae_b acterium_5_1_57F AA	clade_2 60	Eubacterium_rectale	clade_4 44	
Collinsella_aerofaci ens	clade_5 53	Blautia_producta	clade_3 09	Eubacterium_rectale	clade_4 44	+++ +
Collinsella_aerofaci ens	clade_5 53	Clostridium_boltea e	clade_4 08	Blautia_producta	clade_3 09	+++ +
Collinsella_aerofaci ens	clade_5 53	Clostridium_boltea e	clade_4 08	Clostridium_symbio sum	clade_4 08	+++ +

Collinsella_aerofaciens	clade_553	Clostridium_boltea e	clade_408	Eubacterium_rectale	clade_444	+++ +
Collinsella_aerofaciens	clade_553	Clostridium_boltea e	clade_408	Faecalibacterium_prausnitzii	clade_478	+++ +
Collinsella_aerofaciens	clade_553	Clostridium_boltea e	clade_408	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	+++ +
Collinsella_aerofaciens	clade_553	Clostridium_symbiosum	clade_408	Blautia_producta	clade_309	+++ +
Collinsella_aerofaciens	clade_553	Clostridium_symbiosum	clade_408	Eubacterium_rectale	clade_444	
Collinsella_aerofaciens	clade_553	Clostridium_symbiosum	clade_408	Faecalibacterium_prausnitzii	clade_478	
Collinsella_aerofaciens	clade_553	Clostridium_symbiosum	clade_408	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	+
Collinsella_aerofaciens	clade_553	Coprococcus_comes	clade_262	Blautia_producta	clade_309	+++ +
Collinsella_aerofaciens	clade_553	Coprococcus_comes	clade_262	Clostridium_bolteae	clade_408	+++ +
Collinsella_aerofaciens	clade_553	Coprococcus_comes	clade_262	Clostridium_symbiosum	clade_408	+++
Collinsella_aerofaciens	clade_553	Coprococcus_comes	clade_262	Eubacterium_rectale	clade_444	+++
Collinsella_aerofaciens	clade_553	Coprococcus_comes	clade_262	Faecalibacterium_prausnitzii	clade_478	+++ +
Collinsella_aerofaciens	clade_553	Coprococcus_comes	clade_262	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	+++
Collinsella_aerofaciens	clade_553	Faecalibacterium_prausnitzii	clade_478	Blautia_producta	clade_309	+++ +
Collinsella_aerofaciens	clade_553	Faecalibacterium_prausnitzii	clade_478	Eubacterium_rectale	clade_444	+++
Collinsella_aerofaciens	clade_553	Faecalibacterium_prausnitzii	clade_478	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	+++

Collinsella_aerofaciens	clade_553	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	Blautia_producta	clade_309	++++
Collinsella_aerofaciens	clade_553	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	Eubacterium_rectale	clade_444	++++
Coprococcus_comes	clade_262	Blautia_producta	clade_309	Eubacterium_rectale	clade_444	++++
Coprococcus_comes	clade_262	Clostridium_boltae	clade_408	Blautia_producta	clade_309	++++
Coprococcus_comes	clade_262	Clostridium_boltae	clade_408	Clostridium_symbiosum	clade_408	
Coprococcus_comes	clade_262	Clostridium_boltae	clade_408	Eubacterium_rectale	clade_444	--
Coprococcus_comes	clade_262	Clostridium_boltae	clade_408	Faecalibacterium_prausnitzii	clade_478	+++
Coprococcus_comes	clade_262	Clostridium_boltae	clade_408	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	+++
Coprococcus_comes	clade_262	Clostridium_symbiosum	clade_408	Blautia_producta	clade_309	++++
Coprococcus_comes	clade_262	Clostridium_symbiosum	clade_408	Eubacterium_rectale	clade_444	---
Coprococcus_comes	clade_262	Clostridium_symbiosum	clade_408	Faecalibacterium_prausnitzii	clade_478	
Coprococcus_comes	clade_262	Clostridium_symbiosum	clade_408	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	
Coprococcus_comes	clade_262	Faecalibacterium_prausnitzii	clade_478	Blautia_producta	clade_309	++++
Coprococcus_comes	clade_262	Faecalibacterium_prausnitzii	clade_478	Eubacterium_rectale	clade_444	-
Coprococcus_comes	clade_262	Faecalibacterium_prausnitzii	clade_478	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	
Coprococcus_comes	clade_262	Lachnospiraceae_bacterium_5_1_57F	clade_260	Blautia_producta	clade_309	++++

		AA				
Coprococcus_comes	clade_262	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	Eubacterium_rectale	clade_444	
Faecalibacterium_prausnitzii	clade_478	Blautia_producta	clade_309	Eubacterium_rectale	clade_444	++++
Faecalibacterium_prausnitzii	clade_478	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	Blautia_producta	clade_309	++++
Faecalibacterium_prausnitzii	clade_478	Lachnospiraceae_bacterium_5_1_57FAA	clade_260	Eubacterium_rectale	clade_444	
Lachnospiraceae_bacterium_5_1_57FAA	clade_260	Blautia_producta	clade_309	Eubacterium_rectale	clade_444	++++

[0404] The CivSim shows that many ternary combinations inhibit *C. difficile*. 39 of 56 combinations show inhibition with a confidence interval >80%; 36 of 56 with a C.I. > 90%; 36 of 56 with a C.I. > 95%; 29 of 56 with a C.I. of >99%. Non-limiting but exemplary ternary combinations include those with mean log reduction greater than 0.171, e.g. any combination shown in Table 6 with a score of ++++, such as *Colinsella aerofaciens*, *Coprococcus comes*, and *Blautia producta*. Equally important, the CivSim assay describes ternary combinations that do not effectively inhibit *C. difficile.* 5 of 56 combinations promote growth with >80% confidence; 2 of 56 promote growth with >90% confidence; 1 of 56, *Coprococcus comes, Clostridium symbiosum* and *Eubacterium rectale*, promote growth with >95% confidence. 12 of 56 combinations are neutral in the assay, meaning they neither promote nor inhibit *C. difficile* growth to the limit of measurement.

[0405] It is straightforward for one of skill in the art to use the CivSim method to determine efficacious subsets of the Core Ecology derived from the ethanol treated spore fraction shown to be efficacious in treating C. difficile in humans.

Example AAZA: Bacterial compositions populating the gut in a mouse model.

[0406] Two bacterial compositions were evaluated in a mouse model to demonstrate the ability to populate the gastrointestinal tract. Bacteria were grown as

described in ***Example 14. Compositions were pre-made under anaerobic conditions and suspended in PBS + 15% glycerol and stored at ≥ -70°C prior to

[0407] Groups of mice (10 females/group; 5 per cage) were pre-treated on Days -14 to -5 with an antibiotic cocktail consisting of 10% glucose, kanamycin (0.5 mg/ml), gentamicin (0.044 mg/ml), colistin (1062.5 U/ml), metronidazole (0.269 mg/ml), ciprofloxacin (0.156 mg/ml), ampicillin (0.1 mg/ml) and vancomycin (0.056 mg/ml) in their drinking water. On Day -3 they received 10 mg/kg Clindamycin by oral gavage. On Day -1, they were dosed with a microbial compositions by oral gavage in a volume of 0.2 mL (Table ZA). Microbial compositions comprised approximately equal numbers of each OTU and were dosed at approximately $1x10^9$, $1x10^8$ and $1x10^7$ per OTU for each composition (e.g. microbial composition 1, comprising 15 strains, was dosed at approximately $1.5x10^{10}$, $1.5x10^9$, and $1.5x10^8$ total CFU). Fecal samples were collected from each cage on Day -1 (approximately 1 hour before dosing) and on Days 2, 3 and 4 post-dosing. Feces were stored frozen prior to processing and sequencing. Weight gain of mice treated with either microbial compositions was similar to that of naive, control mice.

[0408] In parallel, groups of animals treated with the same microbial compositions on Day -1 were challenged on Day 0 with approximately $10^{4.5}$ spores of Clostridium difficile (ATCC 43255) via oral gavage. Mortality for C. difficile challenged animals was assessed every day from Day 0 to Day 6 and the weight and subsequent weight change of the animal was assessed with weight loss being associated with C. difficile infection. Mortality and reduced weight loss of the test article compared to the empty vehicle was used to assess the success of the test article.

Table ZA. Microbial compositions administered via oral gavage on Day -1

	OTU	Clade
Microbial Composition 1	Clostridium_butyricum	clade_252
	Clostridium_disporicum	clade_253
	Clostridium_hylemonae	clade_260

	Clostridium_orbiscindens	clade_494
	Clostridium_symbiosum	clade_408
	Collinsella_aerofaciens	clade_553
	Coprococcus_comes	clade_262
	Lachnospiraceae_bacterium_5_1_57FAA	clade_260
	Ruminococcus_bromii	clade_537
	Blautia_producta	clade_309
	Clostridium_bolteae	clade_408
	Clostridium_innocuum	clade_351
	Clostridium_mayombei	clade_354
	Clostridium_tertium	clade_252
	Ruminococcus_gnavus	clade_360
Microbial Composition 2	Clostridium_disporicum	clade_253
	Clostridium_orbiscindens	clade_494
	Clostridium_symbiosum	clade_408
	Collinsella_aerofaciens	clade_553
	Eubacterium_rectale	clade_444
	Lachnospiraceae_bacterium_5_1_57FAA	clade_260
	Blautia_producta	clade_309

	Clostridium_innocuum	clade_351
	Clostridium_mayombei	clade_354

[0409] Fecal samples were processed by isolating and sequencing DNA according to ***Example 11 and 12. The OTU assignment of fecal samples from Days -1, 2, 3 and 4 was determined by analyzing 16S-V4 sequence reads and assigning OTUs as described in ***Example 11. Clades were assigned as described in ***Example 11. Total read counts were determined for each OTU or each clade by summing the results from cages of the same experimental group. Samples with 10 or fewer sequence reads for a given OTU or clade were considered to be below background and were not included in the summation process. Results are shown by OTU (Table TAB) and by clade (Table TAC).

Table TAB. Population of OTUs on Days 2, 3 and 4 following dosing with Microbial Compositions

	$1x10^9$ per OTU				$1x10^8$ per OTU				$1x10^7$ per OTU			
Microbial comp 1	-1	2	3	4	-1	2	3	4	-1	2	3	4
Cl_butyricum	0	106	51	32	0	10	0	34	195	0	0	0
Cl_disporicum	10	1746	1190	887	0	1746	769	1011	201	11175	1531	1152
Cl_hylemonae	0	258	258	84	0	203	164	77	0	265	214	90
Cl_orbiscindens	0	188	192	471	0	188	138	276	0	221	174	341
Cl_symbiosum	0	485	482	486	0	444	379	447	0	562	427	775
Co_aerofaciens	0	0	0	0	0	0	0	0	0	0	0	0
C_comes	0	0	0	0	0	0	0	0	0	0	0	0
L_bacterium_5_1_57FAA	0	341	336	354	0	351	182	356	0	256	240	300
R_bromii	0	0	0	0	0	0	0	0	0	0	0	0
B_producta	0	0	0	0	0	0	0	0	0	0	0	0
Cl_bolteae	0	0	0	0	0	0	0	0	0	0	0	0

Cl_innocuum	0	0	0	0	0	0	0	0	0	0	0	0
Cl_mayombei	0	0	0	0	0	0	0	0	0	0	0	0
Cl_tertium	0	0	0	0	0	0	0	0	0	0	0	0
R_gnavus	0	0	0	0	0	0	0	0	0	0	0	0
Microbial comp 2	-1	2	3	4	-1	2	3	4	-1	2	3	4
Cl_disporicum	29	11810	10948	14672	0	11349	13978	3942	0	11995	7005	6268
Cl_orbiscindens	0	510	408	764	0	332	545	544	0	310	319	432
Cl_symbiosum	0	559	508	375	0	665	494	450	0	396	639	650
Co_aerofaciens	0	0	0	0	0	0	1172	0	0	0	247	0
E_rectale	0	0	0	0	0	0	0	12	0	0	0	261
L_bacterium_5_1_57FAA	0	972	801	596	0	860	962	844	0	636	1901	1269
B_producta	0	0	0	0	0	0	0	0	0	0	0	0
Cl_innocuum	0	0	0	0	0	0	0	0	0	0	0	0
Cl_mayombei	0	0	0	0	0	0	0	0	0	0	0	0

Table TAC. Population of Clades on Days 2, 3 and 4 following dosing with Microbial Compositions

	$1x10^9$ per OTU				$1x10^8$ per OTU				$1x10^7$ per OTU			
Microbial comp 1	-1	2	3	4	-1	2	3	4	-1	2	3	4
clade_252	0	444	252	87	0	198	122	125	209	394	231	88
clade_253	10	1746	1190	887	0	1746	769	1011	201	11175	1531	1152
clade_260	0	599	594	438	0	554	346	433	0	521	454	390
clade_262	0	14	151	51	0	0	0	0	0	12	21	57
clade_309	0	11093	9750	4023	0	9991	5208	5145	19	9311	6369	4951

clade_351	0	9064	10647	7751	0	6528	7259	8213	0	8903	10049	8701
clade_354	0	0	0	0	0	0	0	31	173	0	0	0
clade_360	0	14300	10220	11036	0	12553	12989	6889	0	9308	13483	9292
clade_408	13	8892	12985	12101	23	3952	7260	10652	43	4079	8581	14929
clade_494	0	226	227	565	0	188	184	411	0	221	200	351
clade_537	0	0	68	225	0	0	0	0	0	0	0	55
clade_553	0	0	0	0	0	0	0	0	0	0	0	0
Microbial comp 2	-1	2	3	4	-1	2	3	4	-1	2	3	4
clade_253	29	11810	10948	14672	0	11349	13978	3942	0	11995	7005	6268
clade_260	0	1125	1312	854	0	1049	1295	1250	0	792	2121	1637
clade_309	54	12513	13731	7849	0	11610	12004	12672	0	7407	14111	10858
clade_351	0	7651	9939	5936	0	8495	9724	9207	0	6005	9833	7655
clade_354	149	0	127	429	0	0	0	39	12	0	0	0
clade_408	18	2242	4989	10480	12	1688	5580	3789	0	1068	1561	6281
clade_444	41	0	49	202	0	18	0	12	0	14	82	1578
clade_494	0	510	465	1054	0	332	565	596	0	310	319	476
clade_553	0	0	0	0	0	0	1172	0	0	0	247	0

[0410] Upon examining the OTU data in Table TAB, several patterns emerge. First, there are a group of OTUs with no sequence reads on Day -1 that show subsequent and large numbers of sequence reads on Days 2, 3, or 4; this group includes Cl. butyricum, Cl. hylemonae, Cl. orbiscindens, Cl. symbiosum, and L. bacterium_5_1_57FAA. Cl. disporicum is comparable to this group as it has sequence reads on Day -1 that are very close to background (10 and 29 in compositions 1 and 2, respectively), which subsequently increase by as much as 1000-fold on Days 2, 3 or 4. Second, there are OTUs such as Co. aerofaciens, C.

comes, R. bromii, B. producta, Cl. bolteae, Cl. mayombei, Cl. innocuum, Cl. tertium and R. gnavus which are not detectable at the OTU level in either the Day -1 sample or in subsequent samples. In composition 2, Co. aerofaciens is detected transiently on Day 2 in the $1x10^8$ and $1x10^7$ dose groups; E. rectale in the same experimental groups is detected on Day 3, suggesting a possible relationship between transient population by Co. aerofaciens followed by E. rectale in these groups of mice. A striking observation is that the observed number of OTU sequence reads is not highly dose dependent. Overall, the data is consistent with a model whereby OTUs populate rapidly following oral administration.

[0411] The clade-based analysis in Table TAC was performed to more thoroughly evaluate the population of the GI tract. Clade-based analysis obscures some of the details afforded by an OTU analysis. For instance, Cl. tertium and Cl. butyricum are members of the same clade and thus a clade-based analysis cannot distinguish the dynamics of these individual OTUs. However, clade-based analysis has the compensatory benefit that it is sensitive to measuring population changes that can be missed by an OTU-based analysis. The ability of 16S-V4 OTU identification to assign an OTU as a specific species depends in part on the resolving power of the 16S-V4 region for a particular species or group of species. Both the density of available reference 16S sequences for different regions of the tree as well as the inherent variability in the 16S gene between different species will determine the definitiveness of a taxonomic annotation. So in some cases, the population of a species can be followed using clade-based assignments when OTU based-detection is insensitive in a complex population. For instance, the clade-based analysis in Table 2B supports the case that R. bromii, B. producta, Cl. innocuum, and R. gnavus were able to populate since each OTU is a sole member of a clade in the microbial compositions and sequence reads went from undetectable on Day -1 to well above background on Days 2, 3 or 4. 16S V4 sequencing and clade-based analysis could not determine whether Cl. tertium or Cl. bolteae populated due to the fact that other members of their clades (Cl. butyricum and Cl. symbiosum, respectively) were present and shown to populate at the OTU level in the mice.

[0412] In the mice challenged in parallel with C. difficile, animals were significantly protected as shown in Table TAD. Mice gavaged with vehicle (phosphate buffered saline) experienced 100% mortality while microbial

compositions 1 and 2 protected at all dose levels with between 0 and 10% mortality by Day 6, the last day of the experiment. In addition, weight loss in animals treated with microbial compositions 1 and 2 was minimal compared to animals receiving the vehicle gavage. These data confirm that population of the gastrointestinal tract with microbial compositions confers a clinical benefit by restoring a state of dysbiosis so that animals can resist infection by a pathogen.

Table TAD. Mortality by experimental group in mice challenged with $10^{4.5}$ C. difficile spores on Day 0

Group	Dose (CFU per OTU)	Deaths (% mortality)
Vehicle control	N/A	10 (100%)
Microbial composition 1	109	1 (10%)
	108	1 (10%)
	107	0 (0%)
Microbial composition 2	109	0 (0%)
	108	1 (10%)
	107	1 (10%)

Example 36: Prophylactic use and treatment in a Mouse model of vancomycin resistant enterococcus (VRE) colonization.

[0413] The emergence and spread of highly antibiotic-resistant bacteria represent a major clinical challenge (Snitkin et al Science Translational Medicine, 2012). In recent years, the numbers of infections caused by organisms such as methicillin- resistant Staphylococcus aureus, carbapenem-resistant Enterobacteriaceae, vancomycin-resistant Enterococcus (VRE), and Clostridium difficile have increased markedly, and many of these strains are acquiring resistance to the few remaining active antibiotics. Most infections produced by highly antibiotic-resistant bacteria are acquired during hospitalizations, and preventing patient- to-patient transmission of these pathogens is one of the major challenges confronting hospitals and clinics. Most highly antibiotic-resistant bacterial strains belong to genera that colonize mucosal surfaces, usually at low densities. The highly complex

microbiota that normally colonizes mucosal surfaces inhibits expansion of and domination by bacteria such as Enterobacteriaceae and Enterococcaceae. Destruction of the normal flora by antibiotic administration, however, disinhibition antibiotic-resistant members of these bacterial families, leading to their expansion to very high densities (Ubeda et al Journal of Clinical Investigation 2010). High-density colonization by these organisms can be calamitous for the susceptible patient, resulting in bacteremia and sepsis (Taur et al, Clinical Infectious Disease, 2012).

[0414] To test prophylactic use and treatment of a bacterial composition test article e.g. spore population, a VRE infection mouse model is used as previously described (Ubeda et al, Infectious Immunity 2013, Ubeda et al, Journal of clinical investigation, 2010). Briefly, experiments are done with 7-week-old C57BL/6J female mice purchased from Jackson Laboratory, housed with irradiated food, and provided with acidified water. Mice are individually housed to avoid contamination between mice due to coprophagia. For experimental infections with VRE, mice are treated with ampicillin (0.5 g/liter) in their drinking water, which is changed every 3 days.

[0415] In the treatment model, on day 1, mice are infected by means of oral gavage with 10^8 CFU of the vancomycin-resistant Enterococcus faecium strain purchased from ATCC (ATCC 700221). One day after infection (day 1), antibiotic treatment is stopped and VRE levels are determined at different time points by plating serial dilutions of fecal pellets on Enterococcosel agar plates (Difco) with vancomycin (8 ug/ml; Sigma). VRE colonies are identified by appearance and confirmed by Gram staining or other methods previously described (e.g. see example 1, 2 and 3). In addition, as previously described (Ubeda et al Journal of Clinical Investigation 2010), PCR of the vanA gene, which confers resistance to vancomycin, confirms the presence of VRE in infected mice. The test article e.g. bacterial composition, or ethanol treated, gradient purified spore preparation (as described herein), fecal suspension, or antibiotic treatment is delivered in PBS on days 1-3 while the negative control contains only PBS and is also delivered on days 1-3 by oral gavage. Fresh fecal stool pellets are obtained daily for the duration of the experiment from days -7 to day 10. The samples are immediately frozen and stored at -80°C. DNA was extracted using standard techniques and analyzed with 16S or comparable methods (e.g. see example 2 and 3).

[0416] In the colonization model, ampicillin is administered as described above for day -7 to day 1, treatment with the test article or vehicle control is administered on day 0-2 and the VRE resistant bacteria at 10^8 CFU are administered on day 14. Fecal samples are taken throughout the experiment daily from -7 to day 21 and submitted for 16S sequencing as previously described (e.g. see examples 2 and 3).

[0417] In both models titers of VRE in feces are used to evaluate the success of the test article versus the negative control. Furthermore, microbiota composition is assessed for the ability of the test article to induce a healthy microbiome.

Example 37: Prophylactic use and treatment of a Mouse model of Carbapenem resistant klebsiella (CRKB) colonization

[0418] The emergence of Klebsiella pneumoniae strains with decreased susceptibility to carbapenems is a significant threat to hospitalized patients. Resistance to carbapenems in these organisms is most frequently mediated by K. pneumoniae carbapenemase (KPC), a class A beta-lactamase that also confers resistance to broad-spectrum cephalosporins and commercially available beta-lactam/beta-lactamase inhibitor combinations (Queenan et al, Clinical Microbiology Review, 2007). KPC-producing K. pneumoniae (KPC-Kp) strains often harbor resistance determinants against several other classes of antimicrobials, including aminoglycosides and fluoroquinolones, resulting in truly multidrug-resistant (MDR) organisms (Hirsch et al, Journal of Antimicrobial Chemotherapy, 2009). Considering the limited antimicrobial options, infections caused by KPC-Kp pose a tremendous therapeutic challenge and are associated with poor clinical outcomes

[0419] A treatment protocol in a mouse model as previously described (e.g. Perez et al, Antimicrobial Agents Chemotherapy, 2011) is used to evaluate the test article e.g. bacterial composition for treating carbapenem resistant Klebsiella and reducing carriage in the GI tract. Female CF1 mice (Harlan Sprague-Dawley, Indianapolis, IN) are used and are individually housed and weighed between 25 and 30 g.

[0420] The thoroughly characterized strain of K. pneumoniae, VA-367 (8, 9, 25) is used in this study. This clinical isolate is genetically related to the KPC-Kp strain circulating in the Eastern United States. Characterization of the resistance mechanisms in K. pneumoniae VA-367 with PCR and DNA sequence analysis revealed the presence of bla_{KPC-3}, bla_{TEM-1}, bla_{SHV-11}, and bla_{SHV-12} as well as qnrB19

and aac(6')-Ib. Additionally, PCR and DNA sequencing revealed disruptions in the coding sequences of the following outer membrane protein genes: ompK35, ompK36, and ompK37. Antibiotic susceptibility testing (AST) was performed with the agar dilution method and interpreted according to current recommendations from the Clinical and Laboratory Standards Institute (CLSI). A modified Hodge test was performed, according to a method described previously (e.g. see Anderson et al, Journal of Clinical Microbiology, 2007) with ertapenem, meropenem, and imipenem. Tigecycline and polymyxin E were evaluated by Etest susceptibility assays (AB bioM´erieux, Solna, Sweden). Results for tigecycline were interpreted as suggested by the U.S. Food and Drug Administration (FDA) and according to CLSI recommendations (criteria for Pseudomonas) for polymyxin E.

[0421] Mice (10 per group) are assigned to either a test article e.g. bacterial composition, ethanol treated, spore preparation (e.g. see example 6), antibiotic clindamycin, piperacillin-tazobactam, tigecycline, ertapenem, cefepime, ciprofloxacin, or combination thereof or control group receiving only the vehicle. They are administered the test article daily from day -10 to day 0, On day 0, 10^3 CFU of KPC-Kp VA-367 diluted in 0.5 ml phosphate-buffered saline (PBS) was administered by oral gavage using a stainless-steel feeding tube (Perfektum; Popper & Sons, New Hyde Park, NY). Stool samples were collected 1, 4, 6, and 11 days after the administration of KPC-Kp in order to measure the concentration of carbapenem-resistant K. pneumoniae. Stool samples (100 mg diluted in 800 ml of PBS) are plated onto MacConkey agar with and without 0.5 ug/ml of imipenem, and the number of CFU per gram of stool was determined. Alternatively other methods may be used to measure the levels of carbapenem-resistant K. pneumoniae e.g. pcr, antigen testing, as one who's skilled in the art could perform.

[0422] Stool samples were collected after 5 days of treatment to assess the effects of the antibiotics on the stool microflora and to measure antibiotic levels in stool. To assess the effects on the microflora, fresh stool samples as previously described (e.g. see examples 2 and 3). Additional experiments are performed to examine whether the administration the test article e.g. bacterial composition resulted in the elimination or persistence of colonization with KPC-Kp VA-367.

[0423] Mice are treated with subcutaneous clindamycin to reduce the normal intestinal flora 1 day before receiving 10^4 CFU of KPC-Kp VA-367 by oral gavage,

and the mice continued to receive subcutaneous clindamycin every other day for 7 days. Concurrently, for 7 days after oral gavage with KPC-Kp, mice received oral gavage of normal saline (control group), or the bacterial composition as specified. An additional dose of subcutaneous clindamycin was administered 20 days after the administration of KPC-Kp VA-367 to assess whether low levels of carbapenem-resistant K. pneumoniae were present that could be augmented by the elimination of the anaerobic microflora. Stool samples were collected at baseline and at 3, 6, 8, 11, 16, and 21 days after KPC-Kp VA-367 was given by gavage. The bacterial composition will be examined by the reduction of CRKB in feces.

[0424] Unless otherwise indicated, all numbers expressing quantities of ingredients, reaction conditions, and so forth used in the specification, including claims, are to be understood as being modified in all instances by the term "about." Accordingly, unless otherwise indicated to the contrary, the numerical parameters are approximations and may vary depending upon the desired properties sought to be obtained. At the very least, and not as an attempt to limit the application of the doctrine of equivalents to the scope of the claims, each numerical parameter should be construed in light of the number of significant digits and ordinary rounding approaches.

[0425] Unless otherwise indicated, the term "at least" preceding a series of elements is to be understood to refer to every element in the series.

[0426] While the invention has been particularly shown and described with reference to a preferred embodiment and various alternate embodiments, it will be understood by persons skilled in the relevant art that various changes in form and details can be made therein without departing from the spirit and scope of the invention.

[0427] All references, issued patents and patent applications cited within the body of the instant specification are hereby incorporated by reference in their entirety, for all purposes.

ADDITIONAL TABLES

Table 1: List of Operational Taxonomic Units (OTU) with taxonomic assignments made to Genus, Species, and Phylogenetic Clade

[0428] Clade membership of bacterial OTUs is based on 16S sequence data. Clades are defined based on the topology of a phylogenetic tree that is constructed from full-length 16S sequences using maximum likelihood methods familiar to individuals with ordinary skill in the art of phylogenetics. Clades are constructed to ensure that all OTUs in a given clade are: (i) within a specified number of bootstrap supported nodes from one another, and (ii) within 5% genetic similarity. OTUs that are within the same clade can be distinguished as genetically and phylogenetically distinct from OTUs in a different clade based on 16S-V4 sequence data, while OTUs falling within the same clade are closely related. OTUs falling within the same clade are evolutionarily closely related and may or may not be distinguishable from one another using 16S-V4 sequence data. Members of the same clade, due to their evolutionary relatedness, play similar functional roles in a microbial ecology such as that found in the human gut. Compositions substituting one species with another from the same clade are likely to have conserved ecological function and therefore are useful in the present invention. All OTUs are denoted as to their putative capacity to form spores and whether they are a Pathogen or Pathobiont (see Definitions for description of "Pathobiont"). NIAID Priority Pathogens are denoted as 'Category-A', 'Category-B', or 'Category-C', and Opportunistic Pathogens are denoted as 'OP'. OTUs that are not pathogenic or for which their ability to exist as a pathogen is unknown are denoted as 'N'. The 'SEQ ID Number' denotes the identifier of the OTU in the Sequence Listing File and 'Public DB Accession' denotes the identifier of the OTU in a public sequence repository.

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Eubacterium saburreum	858	AB525414	clade_178	Y	N
Eubacterium sp. oral clone IR009	866	AY349376	clade_178	Y	N
Lachnospiraceae bacterium ICM62	1061	HQ616401	clade_178	Y	N
Lachnospiraceae bacterium MSX33	1062	HQ616384	clade_178	Y	N
Lachnospiraceae bacterium oral taxon 107	1063	ADDS01000069	clade_178	Y	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Alicyclobacillus acidocaldarius	122	NR_074721	clade_179	Y	N
Clostridium baratii	555	NR_029229	clade_223	Y	N
Clostridium colicanis	576	FJ957863	clade_223	Y	N
Clostridium paraputrificum	611	AB536771	clade_223	Y	N
Clostridium sardiniense	621	NR_041006	clade_223	Y	N
Eubacterium budayi	837	NR_024682	clade_223	Y	N
Eubacterium moniliforme	851	HF558373	clade_223	Y	N
Eubacterium multiforme	852	NR_024683	clade_223	Y	N
Eubacterium nitritogenes	853	NR_024684	clade_223	Y	N
Anoxybacillus flavithermus	173	NR_074667	clade_238	Y	N
Bacillus aerophilus	196	NR_042339	clade_238	Y	N
Bacillus aestuarii	197	GQ980243	clade_238	Y	N
Bacillus amyloliquefaciens	199	NR_075005	clade_238	Y	N
Bacillus anthracis	200	AAEN01000020	clade_238	Y	Category -A
Bacillus atrophaeus	201	NR_075016	clade_238	Y	OP
Bacillus badius	202	NR_036893	clade_238	Y	OP
Bacillus cereus	203	ABDJ01000015	clade_238	Y	OP
Bacillus circulans	204	AB271747	clade_238	Y	OP
Bacillus firmus	207	NR_025842	clade_238	Y	OP
Bacillus flexus	208	NR_024691	clade_238	Y	OP
Bacillus fordii	209	NR_025786	clade_238	Y	OP
Bacillus halmapalus	211	NR_026144	clade_238	Y	OP
Bacillus herbersteinensis	213	NR_042286	clade_238	Y	OP
Bacillus idriensis	215	NR_043268	clade_238	Y	OP
Bacillus lentus	216	NR_040792	clade_238	Y	OP
Bacillus licheniformis	217	NC_006270	clade_238	Y	OP
Bacillus megaterium	218	GU252124	clade_238	Y	OP
Bacillus nealsonii	219	NR_044546	clade_238	Y	OP
Bacillus niabensis	220	NR_043334	clade_238	Y	OP
Bacillus niacini	221	NR_024695	clade_238	Y	OP
Bacillus pocheonensis	222	NR_041377	clade_238	Y	OP
Bacillus pumilus	223	NR_074977	clade_238	Y	OP
Bacillus safensis	224	JQ624766	clade_238	Y	OP
Bacillus simplex	225	NR_042136	clade_238	Y	OP
Bacillus sonorensis	226	NR_025130	clade_238	Y	OP
Bacillus sp. 10403023 MM10403188	227	CAET01000089	clade_238	Y	OP
Bacillus sp. 2_A_57_CT2	230	ACWD01000095	clade_238	Y	OP
Bacillus sp. 2008724126	228	GU252108	clade_238	Y	OP
Bacillus sp. 2008724139	229	GU252111	clade_238	Y	OP
Bacillus sp. 7_16AIA	231	FN397518	clade_238	Y	OP
Bacillus sp. AP8	233	JX101689	clade_238	Y	OP
Bacillus sp. B27(2008)	234	EU362173	clade_238	Y	OP
Bacillus sp. BT1B_CT2	235	ACWC01000034	clade_238	Y	OP
Bacillus sp. GB1.1	236	FJ897765	clade_238	Y	OP
Bacillus sp. GB9	237	FJ897766	clade_238	Y	OP
Bacillus sp. HU19.1	238	FJ897769	clade_238	Y	OP
Bacillus sp. HU29	239	FJ897771	clade_238	Y	OP
Bacillus sp. HU33.1	240	FJ897772	clade_238	Y	OP
Bacillus sp. JC6	241	JF824800	clade_238	Y	OP
Bacillus sp. oral taxon F79	248	HM099654	clade_238	Y	OP
Bacillus sp. SRC_DSF1	243	GU797283	clade_238	Y	OP
Bacillus sp. SRC_DSF10	242	GU797292	clade_238	Y	OP

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Bacillus sp. SRC_DSF2	244	GU797284	clade_238	Y	OP
Bacillus sp. SRC_DSF6	245	GU797288	clade_238	Y	OP
Bacillus sp. tc09	249	HQ844242	clade_238	Y	OP
Bacillus sp. zh168	250	FJ851424	clade_238	Y	OP
Bacillus sphaericus	251	DQ286318	clade_238	Y	OP
Bacillus sporothermodurans	252	NR_026010	clade_238	Y	OP
Bacillus subtilis	253	EU627588	clade_238	Y	OP
Bacillus thermoamylovorans	254	NR_029151	clade_238	Y	OP
Bacillus thuringiensis	255	NC_008600	clade_238	Y	OP
Bacillus weihenstephanensis	256	NR_074926	clade_238	Y	OP
Geobacillus kaustophilus	933	NR_074989	clade_238	Y	N
Geobacillus stearothermophilus	936	NR_040794	clade_238	Y	N
Geobacillus thermodenitrificans	938	NR_074976	clade_238	Y	N
Geobacillus thermoglucosidasius	939	NR_043022	clade_238	Y	N
Lysinibacillus sphaericus	1193	NR_074883	clade_238	Y	N
Clostridiales sp. SS3_4	543	AY305316	clade_246	Y	N
Clostridium beijerinckii	557	NR_074434	clade_252	Y	N
Clostridium botulinum	560	NC_010723	clade_252	Y	Category -A
Clostridium butyricum	561	ABDT01000017	clade_252	Y	N
Clostridium chauvoei	568	EU106372	clade_252	Y	N
Clostridium favososporum	582	X76749	clade_252	Y	N
Clostridium histolyticum	592	HF558362	clade_252	Y	N
Clostridium isatidis	597	NR_026347	clade_252	Y	N
Clostridium limosum	602	FR870444	clade_252	Y	N
Clostridium sartagoforme	622	NR_026490	clade_252	Y	N
Clostridium septicum	624	NR_026020	clade_252	Y	N
Clostridium sp. 7_2_43FAA	626	ACDK01000101	clade_252	Y	N
Clostridium sporogenes	645	ABKW02000003	clade_252	Y	N
Clostridium tertium	653	Y18174	clade_252	Y	N
Clostridium carnis	564	NR_044716	clade_253	Y	N
Clostridium celatum	565	X77844	clade_253	Y	N
Clostridium disporicum	579	NR_026491	clade_253	Y	N
Clostridium gasigenes	585	NR_024945	clade_253	Y	N
Clostridium quinii	616	NR_026149	clade_253	Y	N
Clostridium hylemonae	593	AB023973	clade_260	Y	N
Clostridium scindens	623	AF262238	clade_260	Y	N
Lachnospiraceae bacterium 5_1_57FAA	1054	ACTR01000020	clade_260	Y	N
Clostridium glycyrrhizinilyticum	588	AB233029	clade_262	Y	N
Clostridium nexile	607	X73443	clade_262	Y	N
Coprococcus comes	674	ABVR01000038	clade_262	Y	N
Lachnospiraceae bacterium 1_1_57FAA	1048	ACTM01000065	clade_262	Y	N
Lachnospiraceae bacterium 1_4_56FAA	1049	ACTN01000028	clade_262	Y	N
Lachnospiraceae bacterium 8_1_57FAA	1057	ACWQ01000079	clade_262	Y	N
Ruminococcus lactaris	1663	ABOU02000049	clade_262	Y	N
Ruminococcus torques	1670	AAVP02000002	clade_262	Y	N
Paenibacillus lautus	1397	NR_040882	clade_270	Y	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Paenibacillus polymyxa	1399	NR_037006	clade_270	Y	N
Paenibacillus sp. HGF5	1402	AEXS01000095	clade_270	Y	N
Paenibacillus sp. HGF7	1403	AFDH01000147	clade_270	Y	N
Eubacterium sp. oral clone JI012	868	AY349379	clade_298	Y	N
Alicyclobacillus contaminans	124	NR_041475	clade_301	Y	N
Alicyclobacillus herbarius	126	NR_024753	clade_301	Y	N
Alicyclobacillus pomorum	127	NR_024801	clade_301	Y	N
Blautia coccoides	373	AB571656	clade_309	Y	N
Blautia glucerasea	374	AB588023	clade_309	Y	N
Blautia glucerasei	375	AB439724	clade_309	Y	N
Blautia hansenii	376	ABYU02000037	clade_309	Y	N
Blautia luti	378	AB691576	clade_309	Y	N
Blautia producta	379	AB600998	clade_309	Y	N
Blautia schinkii	380	NR_026312	clade_309	Y	N
Blautia sp. M25	381	HM626178	clade_309	Y	N
Blautia stercoris	382	HM626177	clade_309	Y	N
Blautia wexlerae	383	EF036467	clade_309	Y	N
Bryantella formatexigens	439	ACCL02000018	clade_309	Y	N
Clostridium coccoides	573	EF025906	clade_309	Y	N
Eubacterium cellulosolvens	839	AY178842	clade_309	Y	N
Lachnospiraceae bacterium 6_1_63FAA	1056	ACTV01000014	clade_309	Y	N
Ruminococcus hansenii	1662	M59114	clade_309	Y	N
Ruminococcus obeum	1664	AY169419	clade_309	Y	N
Ruminococcus sp. 5_1_39BFAA	1666	ACII01000172	clade_309	Y	N
Ruminococcus sp. K_1	1669	AB222208	clade_309	Y	N
Syntrophococcus sucromutans	1911	NR_036869	clade_309	Y	N
Bacillus alcalophilus	198	X76436	clade_327	Y	N
Bacillus clausii	205	FN397477	clade_327	Y	OP
Bacillus gelatini	210	NR_025595	clade_327	Y	OP
Bacillus halodurans	212	AY144582	clade_327	Y	OP
Bacillus sp. oral taxon F26	246	HM099642	clade_327	Y	OP
Clostridium innocuum	595	M23732	clade_351	Y	N
Clostridium sp. HGF2	628	AENW01000022	clade_351	Y	N
Clostridium perfringens	612	ABDW01000023	clade_353	Y	Category -B
Sarcina ventriculi	1687	NR_026146	clade_353	Y	N
Clostridium bartlettii	556	ABEZ02000012	clade_354	Y	N
Clostridium bifermentans	558	X73437	clade_354	Y	N
Clostridium ghonii	586	AB542933	clade_354	Y	N
Clostridium glycolicum	587	FJ384385	clade_354	Y	N
Clostridium mayombei	605	FR733682	clade_354	Y	N
Clostridium sordellii	625	AB448946	clade_354	Y	N
Clostridium sp. MT4 E	635	FJ159523	clade_354	Y	N
Eubacterium tenue	872	M59118	clade_354	Y	N
Clostridium argentinense	553	NR_029232	clade_355	Y	N
Clostridium sp. JC122	630	CAEV01000127	clade_355	Y	N
Clostridium sp. NMBHI_1	636	JN093130	clade_355	Y	N
Clostridium subterminale	650	NR_041795	clade_355	Y	N
Clostridium sulfidigenes	651	NR_044161	clade_355	Y	N
Dorea formicigenerans	773	AAXA02000006	clade_360	Y	N
Dorea longicatena	774	AJ132842	clade_360	Y	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Lachnospiraceae bacterium 2_1_46FAA	1050	ADLB01000035	clade_360	Y	N
Lachnospiraceae bacterium 2_1_58FAA	1051	ACTO01000052	clade_360	Y	N
Lachnospiraceae bacterium 4_1_37FAA	1053	ADCR01000030	clade_360	Y	N
Lachnospiraceae bacterium 9_1_43BFAA	1058	ACTX01000023	clade_360	Y	N
Ruminococcus gnavus	1661	X94967	clade_360	Y	N
Ruminococcus sp. ID8	1668	AY960564	clade_360	Y	N
Blautia hydrogenotrophica	377	ACBZ01000217	clade_368	Y	N
Lactonifactor longoviformis	1147	DQ100449	clade_368	Y	N
Robinsoniella peoriensis	1633	AF445258	clade_368	Y	N
Eubacterium infirmum	849	U13039	clade_384	Y	N
Eubacterium sp. WAL 14571	864	FJ687606	clade_384	Y	N
Erysipelotrichaceae bacterium 5_2_54FAA	823	ACZW01000054	clade_385	Y	N
Eubacterium biforme	835	ABYT01000002	clade_385	Y	N
Eubacterium cylindroides	842	FP929041	clade_385	Y	N
Eubacterium dolichum	844	L34682	clade_385	Y	N
Eubacterium sp. 3_1_31	861	ACTL01000045	clade_385	Y	N
Eubacterium tortuosum	873	NR_044648	clade_385	Y	N
Bulleidia extructa	441	ADFR01000011	clade_388	Y	N
Solobacterium moorei	1739	AECQ01000039	clade_388	Y	N
Coprococcus catus	673	EU266552	clade_393	Y	N
Lachnospiraceae bacterium oral taxon F15	1064	HM099641	clade_393	Y	N
Clostridium cochlearium	574	NR_044717	clade_395	Y	N
Clostridium malenominatum	604	FR749893	clade_395	Y	N
Clostridium tetani	654	NC_004557	clade_395	Y	N
Acetivibrio ethanolgignens	6	FR749897	clade_396	Y	N
Anaerosporobacter mobilis	161	NR_042953	clade_396	Y	N
Bacteroides pectinophilus	288	ABVQ01000036	clade_396	Y	N
Clostridium aminovalericum	551	NR_029245	clade_396	Y	N
Clostridium phytofermentans	613	NR_074652	clade_396	Y	N
Eubacterium hallii	848	L34621	clade_396	Y	N
Eubacterium xylanophilum	875	L34628	clade_396	Y	N
Ruminococcus callidus	1658	NR_029160	clade_406	Y	N
Ruminococcus champanellensis	1659	FP929052	clade_406	Y	N
Ruminococcus sp. 18P13	1665	AJ515913	clade_406	Y	N
Ruminococcus sp. 9SE51	1667	FM954974	clade_406	Y	N
Anaerostipes caccae	162	ABAX03000023	clade_408	Y	N
Anaerostipes sp. 3_2_56FAA	163	ACWB01000002	clade_408	Y	N
Clostridiales bacterium 1_7_47FAA	541	ABQR01000074	clade_408	Y	N
Clostridiales sp. SM4_1	542	FP929060	clade_408	Y	N
Clostridiales sp. SSC_2	544	FP929061	clade_408	Y	N
Clostridium aerotolerans	546	X76163	clade_408	Y	N
Clostridium aldenense	547	NR_043680	clade_408	Y	N
Clostridium algidixylanolyticum	550	NR_028726	clade_408	Y	N
Clostridium amygdalinum	552	AY353957	clade_408	Y	N
Clostridium asparagiforme	554	ACCJ01000522	clade_408	Y	N
Clostridium bolteae	559	ABCC02000039	clade_408	Y	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Clostridium celerecrescens	566	JQ246092	clade_408	Y	N
Clostridium citroniae	569	ADLJ01000059	clade_408	Y	N
Clostridium clostridiiformes	571	M59089	clade_408	Y	N
Clostridium clostridioforme	572	NR_044715	clade_408	Y	N
Clostridium hathewayi	590	AY552788	clade_408	Y	N
Clostridium indolis	594	AF028351	clade_408	Y	N
Clostridium lavalense	600	EF564277	clade_408	Y	N
Clostridium saccharolyticum	620	CP002109	clade_408	Y	N
Clostridium sp. M62_1	633	ACFX02000046	clade_408	Y	N
Clostridium sp. SS2_1	638	ABGC03000041	clade_408	Y	N
Clostridium sphenoides	643	X73449	clade_408	Y	N
Clostridium symbiosum	652	ADLQ01000114	clade_408	Y	N
Clostridium xylanolyticum	658	NR_037068	clade_408	Y	N
Eubacterium hadrum	847	FR749933	clade_408	Y	N
Lachnospiraceae bacterium 3_1_57FAA_CT1	1052	ACTP01000124	clade_408	Y	N
Lachnospiraceae bacterium 5_1_63FAA	1055	ACTS01000081	clade_408	Y	N
Lachnospiraceae bacterium A4	1059	DQ789118	clade_408	Y	N
Lachnospiraceae bacterium DJF VP30	1060	EU728771	clade_408	Y	N
Lachnospiraceae genomosp. C1	1065	AY278618	clade_408	Y	N
Clostridium difficile	578	NC_013315	clade_409	Y	OP
Eubacterium sp. AS15b	862	HQ616364	clade_428	Y	N
Eubacterium sp. OBRC9	863	HQ616354	clade_428	Y	N
Eubacterium sp. oral clone OH3A	871	AY947497	clade_428	Y	N
Eubacterium yurii	876	AEES01000073	clade_428	Y	N
Clostridium acetobutylicum	545	NR_074511	clade_430	Y	N
Clostridium algidicarnis	549	NR_041746	clade_430	Y	N
Clostridium cadaveris	562	AB542932	clade_430	Y	N
Clostridium carboxidivorans	563	FR733710	clade_430	Y	N
Clostridium estertheticum	580	NR_042153	clade_430	Y	N
Clostridium fallax	581	NR_044714	clade_430	Y	N
Clostridium felsineum	583	AF270502	clade_430	Y	N
Clostridium frigidicarnis	584	NR_024919	clade_430	Y	N
Clostridium kluyveri	598	NR_074165	clade_430	Y	N
Clostridium magnum	603	X77835	clade_430	Y	N
Clostridium putrefaciens	615	NR_024995	clade_430	Y	N
Clostridium sp. HPB_46	629	AY862516	clade_430	Y	N
Clostridium tyrobutyricum	656	NR_044718	clade_430	Y	N
Sutterella parvirubra	1899	AB300989	clade_432	Y	N
Acetanaerobacterium elongatum	4	NR_042930	clade_439	Y	N
Clostridium cellulosi	567	NR_044624	clade_439	Y	N
Ethanoligenens harbinense	832	AY675965	clade_439	Y	N
Eubacterium rectale	856	FP929042	clade_444	Y	N
Eubacterium sp. oral clone GI038	865	AY349374	clade_444	Y	N
Lachnobacterium bovis	1045	GU324407	clade_444	Y	N
Roseburia cecicola	1634	GU233441	clade_444	Y	N
Roseburia faecalis	1635	AY804149	clade_444	Y	N
Roseburia faecis	1636	AY305310	clade_444	Y	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Roseburia hominis	1637	AJ270482	clade_444	Y	N
Roseburia intestinalis	1638	FP929050	clade_444	Y	N
Roseburia inulinivorans	1639	AJ270473	clade_444	Y	N
Brevibacillus brevis	410	NR_041524	clade_448	Y	N
Brevibacillus laterosporus	414	NR_037005	clade_448	Y	N
Bacillus coagulans	206	DQ297928	clade_451	Y	OP
Sporolactobacillus inulinus	1752	NR_040962	clade_451	Y	N
Kocuria palustris	1041	EU333884	clade_453	Y	N
Nocardia farcinica	1353	NC_006361	clade_455	Y	N
Bacillus sp. oral taxon F28	247	HM099650	clade_456	Y	OP
Catenibacterium mitsuokai	495	AB030224	clade_469	Y	N
Clostridium sp. TM_40	640	AB249652	clade_469	Y	N
Coprobacillus cateniformis	670	AB030218	clade_469	Y	N
Coprobacillus sp. 29_1	671	ADKX01000057	clade_469	Y	N
Clostridium rectum	618	NR_029271	clade_470	Y	N
Eubacterium nodatum	854	U13041	clade_476	Y	N
Eubacterium saphenum	859	NR_026031	clade_476	Y	N
Eubacterium sp. oral clone JH012	867	AY349373	clade_476	Y	N
Eubacterium sp. oral clone JS001	870	AY349378	clade_476	Y	N
Faecalibacterium prausnitzii	880	ACOP02000011	clade_478	Y	N
Gemmiger formicilis	932	GU562446	clade_478	Y	N
Subdoligranulum variabile	1896	AJ518869	clade_478	Y	N
Clostridiaceae bacterium JC13	532	JF824807	clade_479	Y	N
Clostridium sp. MLG055	634	AF304435	clade_479	Y	N
Erysipelotrichaceae bacterium 3_1_53	822	ACTJ01000113	clade_479	Y	N
Clostridium cocleatum	575	NR_026495	clade_481	Y	N
Clostridium ramosum	617	M23731	clade_481	Y	N
Clostridium saccharogumia	619	DQ100445	clade_481	Y	N
Clostridium spiroforme	644	X73441	clade_481	Y	N
Coprobacillus sp. D7	672	ACDT01000199	clade_481	Y	N
Clostridiales bacterium SY8519	535	AB477431	clade_482	Y	N
Clostridium sp. SY8519	639	AP012212	clade_482	Y	N
Eubacterium ramulus	855	AJ011522	clade_482	Y	N
Erysipelothrix inopinata	819	NR_025594	clade_485	Y	N
Erysipelothrix rhusiopathiae	820	ACLK01000021	clade_485	Y	N
Erysipelothrix tonsillarum	821	NR_040871	clade_485	Y	N
Holdemania filiformis	1004	Y11466	clade_485	Y	N
Mollicutes bacterium pACH93	1258	AY297808	clade_485	Y	N
Coxiella burnetii	736	CP000890	clade_486	Y	Category -B
Clostridium hiranonis	591	AB023970	clade_487	Y	N
Clostridium irregulare	596	NR_029249	clade_487	Y	N
Clostridium orbiscindens	609	Y18187	clade_494	Y	N
Clostridium sp. NML 04A032	637	EU815224	clade_494	Y	N
Flavonifractor plautii	886	AY724678	clade_494	Y	N
Pseudoflavonifractor capillosus	1591	AY136666	clade_494	Y	N
Ruminococcaceae bacterium D16	1655	ADDX01000083	clade_494	Y	N
Acetivibrio cellulolyticus	5	NR_025917	clade_495	Y	N
Clostridium aldrichii	548	NR_026099	clade_495	Y	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Clostridium clariflavum	570	NR_041235	clade_495	Y	N
Clostridium stercorarium	647	NR_025100	clade_495	Y	N
Clostridium straminisolvens	649	NR_024829	clade_495	Y	N
Clostridium thermocellum	655	NR_074629	clade_495	Y	N
Fusobacterium nucleatum	901	ADVK01000034	clade_497	Y	N
Eubacterium barkeri	834	NR_044661	clade_512	Y	N
Eubacterium callanderi	838	NR_026330	clade_512	Y	N
Eubacterium limosum	850	CP002273	clade_512	Y	N
Anaerotruncus colihominis	164	ABGD02000021	clade_516	Y	N
Clostridium methylpentosum	606	ACEC01000059	clade_516	Y	N
Clostridium sp. YIT 12070	642	AB491208	clade_516	Y	N
Hydrogenoanaerobacterium saccharovorans	1005	NR_044425	clade_516	Y	N
Ruminococcus albus	1656	AY445600	clade_516	Y	N
Ruminococcus flavefaciens	1660	NR_025931	clade_516	Y	N
Clostridium haemolyticum	589	NR_024749	clade_517	Y	N
Clostridium novyi	608	NR_074343	clade_517	Y	N
Clostridium sp. LMG 16094	632	X95274	clade_517	Y	N
Eubacterium ventriosum	874	L34421	clade_519	Y	N
Bacteroides galacturonicus	280	DQ497994	clade_522	Y	N
Eubacterium eligens	845	CP001104	clade_522	Y	N
Lachnospira multipara	1046	FR733699	clade_522	Y	N
Lachnospira pectinoschiza	1047	L14675	clade_522	Y	N
Lactobacillus rogosae	1114	GU269544	clade_522	Y	N
Bacillus horti	214	NR_036860	clade_527	Y	OP
Bacillus sp. 9_3AIA	232	FN397519	clade_527	Y	OP
Eubacterium brachy	836	U13038	clade_533	Y	N
Filifactor alocis	881	CP002390	clade_533	Y	N
Filifactor villosus	882	NR_041928	clade_533	Y	N
Clostridium leptum	601	AJ305238	clade_537	Y	N
Clostridium sp. YIT 12069	641	AB491207	clade_537	Y	N
Clostridium sporosphaeroides	646	NR_044835	clade_537	Y	N
Eubacterium coprostanoligenes	841	HM037995	clade_537	Y	N
Ruminococcus bromii	1657	EU266549	clade_537	Y	N
Eubacterium siraeum	860	ABCA03000054	clade_538	Y	N
Clostridium viride	657	NR_026204	clade_540	Y	N
Oscillibacter sp. G2	1386	HM626173	clade_540	Y	N
Oscillibacter valericigenes	1387	NR_074793	clade_540	Y	N
Oscillospira guilliermondii	1388	AB040495	clade_540	Y	N
Butyrivibrio crossotus	455	ABWN01000012	clade_543	Y	N
Clostridium sp. L2_50	631	AAYW02000018	clade_543	Y	N
Coprococcus eutactus	675	EF031543	clade_543	Y	N
Coprococcus sp. ART55_1	676	AY350746	clade_543	Y	N
Eubacterium ruminantium	857	NR_024661	clade_543	Y	N
Collinsella aerofaciens	659	AAVN02000007	clade_553	Y	N
Alkaliphilus metalliredigenes	137	AY137848	clade_554	Y	N
Alkaliphilus oremlandii	138	NR_043674	clade_554	Y	N
Clostridium sticklandii	648	L04167	clade_554	Y	N
Turicibacter sanguinis	1965	AF349724	clade_555	Y	N
Fulvimonas sp. NML 060897	892	EF589680	clade_557	Y	N
Desulfitobacterium frappieri	753	AJ276701	clade_560	Y	N
Desulfitobacterium hafniense	754	NR_074996	clade_560	Y	N
Desulfotomaculum nigrificans	756	NR_044832	clade_560	Y	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Lutispora thermophila	1191	NR_041236	clade_564	Y	N
Brachyspira pilosicoli	405	NR_075069	clade_565	Y	N
Eggerthella lenta	778	AF292375	clade_566	Y	N
Streptomyces albus	1888	AJ697941	clade_566	Y	N
Chlamydiales bacterium NS11	505	JN606074	clade_567	Y	N
Anaerofustis stercorihominis	159	ABIL02000005	clade_570	Y	N
Butyricicoccus pullicaecorum	453	HH793440	clade_572	Y	N
Eubacterium desmolans	843	NR_044644	clade_572	Y	N
Papillibacter cinnamivorans	1415	NR_025025	clade_572	Y	N
Sporobacter termitidis	1751	NR_044972	clade_572	Y	N
Deferribacteres sp. oral clone JV006	744	AY349371	clade_575	Y	N
Clostridium colinum	577	NR_026151	clade_576	Y	N
Clostridium lactatifermentans	599	NR_025651	clade_576	Y	N
Clostridium piliforme	614	D14639	clade_576	Y	N
Saccharomonospora viridis	1671	X54286	clade_579	Y	N
Thermobifida fusca	1921	NC_007333	clade_579	Y	N
Leptospira licerasiae	1164	EF612284	clade_585	Y	OP
Moorella thermoacetica	1259	NR_075001	clade_590	Y	N
Thermoanaerobacter pseudethanolicus	1920	CP000924	clade_590	Y	N
Flexistipes sinusarabici	888	NR_074881	clade_591	Y	N
Gloeobacter violaceus	942	NR_074282	clade_596	Y	N
Eubacterium sp. oral clone JN088	869	AY349377	clade_90	Y	N
Clostridium oroticum	610	FR749922	clade_96	Y	N
Clostridium sp. D5	627	ADBG01000142	clade_96	Y	N
Eubacterium contortum	840	FR749946	clade_96	Y	N
Eubacterium fissicatena	846	FR749935	clade_96	Y	N
Corynebacterium coyleae	692	X96497	clade_100	N	N
Corynebacterium mucifaciens	711	NR_026396	clade_100	N	N
Corynebacterium ureicelerivorans	733	AM397636	clade_100	N	N
Corynebacterium appendicis	684	NR_028951	clade_102	N	N
Corynebacterium genitalium	698	ACLJ01000031	clade_102	N	N
Corynebacterium glaucum	699	NR_028971	clade_102	N	N
Corynebacterium imitans	703	AF537597	clade_102	N	N
Corynebacterium riegelii	719	EU848548	clade_102	N	N
Corynebacterium sp. L_2012475	723	HE575405	clade_102	N	N
Corynebacterium sp. NML 93_0481	724	GU238409	clade_102	N	N
Corynebacterium sundsvallense	728	Y09655	clade_102	N	N
Corynebacterium tuscaniae	730	AY677186	clade_102	N	N
Prevotella maculosa	1504	AGEK01000035	clade_104	N	N
Prevotella oris	1513	ADDV01000091	clade_104	N	N
Prevotella salivae	1517	AB108826	clade_104	N	N
Prevotella sp. ICM55	1521	HQ616399	clade_104	N	N
Prevotella sp. oral clone AA020	1528	AY005057	clade_104	N	N
Prevotella sp. oral clone GI032	1538	AY349396	clade_104	N	N
Prevotella sp. oral taxon G70	1558	GU432179	clade_104	N	N
Prevotella corporis	1491	L16465	clade_105	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Bacteroides sp. 4_1_36	312	ACTC01000133	clade_110	N	N
Bacteroides sp. AR20	315	AF139524	clade_110	N	N
Bacteroides sp. D20	319	ACPT01000052	clade_110	N	N
Bacteroides sp. F_4	322	AB470322	clade_110	N	N
Bacteroides uniformis	329	AB050110	clade_110	N	N
Prevotella nanceiensis	1510	JN867228	clade_127	N	N
Prevotella sp. oral taxon 299	1548	ACWZ01000026	clade_127	N	N
Prevotella bergensis	1485	ACKS01000100	clade_128	N	N
Prevotella buccalis	1489	JN867261	clade_129	N	N
Prevotella timonensis	1564	ADEF01000012	clade_129	N	N
Prevotella oralis	1512	AEPE01000021	clade_130	N	N
Prevotella sp. SEQ072	1525	JN867238	clade_130	N	N
Leuconostoc carnosum	1177	NR_040811	clade_135	N	N
Leuconostoc gasicomitatum	1179	FN822744	clade_135	N	N
Leuconostoc inhae	1180	NR_025204	clade_135	N	N
Leuconostoc kimchii	1181	NR_075014	clade_135	N	N
Edwardsiella tarda	777	CP002154	clade_139	N	N
Photorhabdus asymbiotica	1466	Z76752	clade_139	N	N
Psychrobacter arcticus	1607	CP000082	clade_141	N	N
Psychrobacter cibarius	1608	HQ698586	clade_141	N	N
Psychrobacter cryohalolentis	1609	CP000323	clade_141	N	N
Psychrobacter faecalis	1610	HQ698566	clade_141	N	N
Psychrobacter nivimaris	1611	HQ698587	clade_141	N	N
Psychrobacter pulmonis	1612	HQ698582	clade_141	N	N
Pseudomonas aeruginosa	1592	AABQ07000001	clade_154	N	N
Pseudomonas sp. 2_1_26	1600	ACWU01000257	clade_154	N	N
Corynebacterium confusum	691	Y15886	clade_158	N	N
Corynebacterium propinquum	712	NR_037038	clade_158	N	N
Corynebacterium pseudodiphtheriticum	713	X84258	clade_158	N	N
Bartonella bacilliformis	338	NC_008783	clade_159	N	N
Bartonella grahamii	339	CP001562	clade_159	N	N
Bartonella henselae	340	NC_005956	clade_159	N	N
Bartonella quintana	341	BX897700	clade_159	N	N
Bartonella tamiae	342	EF672728	clade_159	N	N
Bartonella washoensis	343	FJ719017	clade_159	N	N
Brucella abortus	430	ACBJ01000075	clade_159	N	Category -B
Brucella canis	431	NR_044652	clade_159	N	Category -B
Brucella ceti	432	ACJD01000006	clade_159	N	Category -B
Brucella melitensis	433	AE009462	clade_159	N	Category -B
Brucella microti	434	NR_042549	clade_159	N	Category -B
Brucella ovis	435	NC_009504	clade_159	N	Category -B
Brucella sp. 83_13	436	ACBQ01000040	clade_159	N	Category -B
Brucella sp. BO1	437	EU053207	clade_159	N	Category -B
Brucella suis	438	ACBK01000034	clade_159	N	Category -B
Ochrobactrum anthropi	1360	NC_009667	clade_159	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Ochrobactrum intermedium	1361	ACQA01000001	clade_159	N	N
Ochrobactrum pseudintermedium	1362	DQ365921	clade_159	N	N
Prevotella genomosp. C2	1496	AY278625	clade_164	N	N
Prevotella multisaccharivorax	1509	AFJE01000016	clade_164	N	N
Prevotella sp. oral clone IDR_CEC_0055	1543	AY550997	clade_164	N	N
Prevotella sp. oral taxon 292	1547	GQ422735	clade_164	N	N
Prevotella sp. oral taxon 300	1549	GU409549	clade_164	N	N
Prevotella marshii	1505	AEEI01000070	clade_166	N	N
Prevotella sp. oral clone IK053	1544	AY349401	clade_166	N	N
Prevotella sp. oral taxon 781	1554	GQ422744	clade_166	N	N
Prevotella stercorea	1562	AB244774	clade_166	N	N
Prevotella brevis	1487	NR_041954	clade_167	N	N
Prevotella ruminicola	1516	CP002006	clade_167	N	N
Prevotella sp. sp24	1560	AB003384	clade_167	N	N
Prevotella sp. sp34	1561	AB003385	clade_167	N	N
Prevotella albensis	1483	NR_025300	clade_168	N	N
Prevotella copri	1490	ACBX02000014	clade_168	N	N
Prevotella oulorum	1514	L16472	clade_168	N	N
Prevotella sp. BI_42	1518	AJ581354	clade_168	N	N
Prevotella sp. oral clone P4PB_83 P2	1546	AY207050	clade_168	N	N
Prevotella sp. oral taxon G60	1557	GU432133	clade_168	N	N
Prevotella amnii	1484	AB547670	clade_169	N	N
Bacteroides caccae	268	EU136686	clade_170	N	N
Bacteroides finegoldii	277	AB222699	clade_170	N	N
Bacteroides intestinalis	283	ABJL02000006	clade_171	N	N
Bacteroides sp. XB44A	326	AM230649	clade_171	N	N
Bifidobacteriaceae genomosp. C1	345	AY278612	clade_172	N	N
Bifidobacterium adolescentis	346	AAXD02000018	clade_172	N	N
Bifidobacterium angulatum	347	ABYS02000004	clade_172	N	N
Bifidobacterium animalis	348	CP001606	clade_172	N	N
Bifidobacterium breve	350	CP002743	clade_172	N	N
Bifidobacterium catenulatum	351	ABXY01000019	clade_172	N	N
Bifidobacterium dentium	352	CP001750	clade_172	N	OP
Bifidobacterium gallicum	353	ABXB03000004	clade_172	N	N
Bifidobacterium infantis	354	AY151398	clade_172	N	N
Bifidobacterium kashiwanohense	355	AB491757	clade_172	N	N
Bifidobacterium longum	356	ABQQ01000041	clade_172	N	N
Bifidobacterium pseudocatenulatum	357	ABXX02000002	clade_172	N	N
Bifidobacterium pseudolongum	358	NR_043442	clade_172	N	N
Bifidobacterium scardovii	359	AJ307005	clade_172	N	N
Bifidobacterium sp. HM2	360	AB425276	clade_172	N	N
Bifidobacterium sp. HMLN12	361	JF519685	clade_172	N	N
Bifidobacterium sp. M45	362	HM626176	clade_172	N	N
Bifidobacterium sp. MSX5B	363	HQ616382	clade_172	N	N
Bifidobacterium sp. TM_7	364	AB218972	clade_172	N	N
Bifidobacterium thermophilum	365	DQ340557	clade_172	N	N
Leuconostoc citreum	1178	AM157444	clade_175	N	N
Leuconostoc lactis	1182	NR_040823	clade_175	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Alicyclobacillus acidoterrestris	123	NR_040844	clade_179	N	N
Alicyclobacillus cycloheptanicus	125	NR_024754	clade_179	N	N
Acinetobacter baumannii	27	ACYQ01000014	clade_181	N	N
Acinetobacter calcoaceticus	28	AM157426	clade_181	N	N
Acinetobacter genomosp. C1	29	AY278636	clade_181	N	N
Acinetobacter haemolyticus	30	ADMT01000017	clade_181	N	N
Acinetobacter johnsonii	31	ACPL01000162	clade_181	N	N
Acinetobacter junii	32	ACPM01000135	clade_181	N	N
Acinetobacter lwoffii	33	ACPN01000204	clade_181	N	N
Acinetobacter parvus	34	AIEB01000124	clade_181	N	N
Acinetobacter schindleri	36	NR_025412	clade_181	N	N
Acinetobacter sp. 56A1	37	GQ178049	clade_181	N	N
Acinetobacter sp. CIP 101934	38	JQ638573	clade_181	N	N
Acinetobacter sp. CIP 102143	39	JQ638578	clade_181	N	N
Acinetobacter sp. M16_22	41	HM366447	clade_181	N	N
Acinetobacter sp. RUH2624	42	ACQF01000094	clade_181	N	N
Acinetobacter sp. SH024	43	ADCH01000068	clade_181	N	N
Lactobacillus jensenii	1092	ACQD01000066	clade_182	N	N
Alcaligenes faecalis	119	AB680368	clade_183	N	N
Alcaligenes sp. CO14	120	DQ643040	clade_183	N	N
Alcaligenes sp. S3	121	HQ262549	clade_183	N	N
Oligella ureolytica	1366	NR_041998	clade_183	N	N
Oligella urethralis	1367	NR_041753	clade_183	N	N
Eikenella corrodens	784	ACEA01000028	clade_185	N	N
Kingella denitrificans	1019	AEWV01000047	clade_185	N	N
Kingella genomosp. P1 oral cone MB2_C20	1020	DQ003616	clade_185	N	N
Kingella kingae	1021	AFHS01000073	clade_185	N	N
Kingella oralis	1022	ACJW02000005	clade_185	N	N
Kingella sp. oral clone ID059	1023	AY349381	clade_185	N	N
Neisseria elongata	1330	ADBF01000003	clade_185	N	N
Neisseria genomosp. P2 oral clone MB5_P15	1332	DQ003630	clade_185	N	N
Neisseria sp. oral clone JC012	1345	AY349388	clade_185	N	N
Neisseria sp. SMC_A9199	1342	FJ763637	clade_185	N	N
Simonsiella muelleri	1731	ADCY01000105	clade_185	N	N
Corynebacterium glucuronolyticum	700	ABYP01000081	clade_193	N	N
Corynebacterium pyruviciproducens	716	FJ185225	clade_193	N	N
Rothia aeria	1649	DQ673320	clade_194	N	N
Rothia dentocariosa	1650	ADDW01000024	clade_194	N	N
Rothia sp. oral taxon 188	1653	GU470892	clade_194	N	N
Corynebacterium accolens	681	ACGD01000048	clade_195	N	N
Corynebacterium macginleyi	707	AB359393	clade_195	N	N
Corynebacterium pseudogenitalium	714	ABYQ01000237	clade_195	N	N
Corynebacterium tuberculostearicum	729	ACVP01000009	clade_195	N	N
Lactobacillus casei	1074	CP000423	clade_198	N	N
Lactobacillus paracasei	1106	ABQV01000067	clade_198	N	N
Lactobacillus zeae	1143	NR_037122	clade_198	N	N
Prevotella dentalis	1492	AB547678	clade_205	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Prevotella sp. oral clone ASCG10	1529	AY923148	clade_206	N	N
Prevotella sp. oral clone HF050	1541	AY349399	clade_206	N	N
Prevotella sp. oral clone ID019	1542	AY349400	clade_206	N	N
Prevotella sp. oral clone IK062	1545	AY349402	clade_206	N	N
Prevotella genomosp. P9 oral clone MB7_G16	1499	DQ003633	clade_207	N	N
Prevotella sp. oral clone AU069	1531	AY005062	clade_207	N	N
Prevotella sp. oral clone CY006	1532	AY005063	clade_207	N	N
Prevotella sp. oral clone FL019	1534	AY349392	clade_207	N	N
Actinomyces genomosp. C1	56	AY278610	clade_212	N	N
Actinomyces genomosp. C2	57	AY278611	clade_212	N	N
Actinomyces genomosp. P1 oral clone MB6_C03	58	DQ003632	clade_212	N	N
Actinomyces georgiae	59	GU561319	clade_212	N	N
Actinomyces israelii	60	AF479270	clade_212	N	N
Actinomyces massiliensis	61	AB545934	clade_212	N	N
Actinomyces meyeri	62	GU561321	clade_212	N	N
Actinomyces odontolyticus	66	ACYT01000123	clade_212	N	N
Actinomyces orihominis	68	AJ575186	clade_212	N	N
Actinomyces sp. CCUG 37290	71	AJ234058	clade_212	N	N
Actinomyces sp. ICM34	75	HQ616391	clade_212	N	N
Actinomyces sp. ICM41	76	HQ616392	clade_212	N	N
Actinomyces sp. ICM47	77	HQ616395	clade_212	N	N
Actinomyces sp. ICM54	78	HQ616398	clade_212	N	N
Actinomyces sp. oral clone IP081	87	AY349366	clade_212	N	N
Actinomyces sp. oral taxon 178	91	AEUH01000060	clade_212	N	N
Actinomyces sp. oral taxon 180	92	AEPP01000041	clade_212	N	N
Actinomyces sp. TeJ5	80	GU561315	clade_212	N	N
Haematobacter sp. BC14248	968	GU396991	clade_213	N	N
Paracoccus denitrificans	1424	CP000490	clade_213	N	N
Paracoccus marcusii	1425	NR_044922	clade_213	N	N
Grimontia hollisae	967	ADAQ01000013	clade_216	N	N
Shewanella putrefaciens	1723	CP002457	clade_216	N	N
Afipia genomosp. 4	111	EU117385	clade_217	N	N
Rhodopseudomonas palustris	1626	CP000301	clade_217	N	N
Methylobacterium extorquens	1223	NC_010172	clade_218	N	N
Methylobacterium podarium	1224	AY468363	clade_218	N	N
Methylobacterium radiotolerans	1225	GU294320	clade_218	N	N
Methylobacterium sp. 1sub	1226	AY468371	clade_218	N	N
Methylobacterium sp. MM4	1227	AY468370	clade_218	N	N
Achromobacter denitrificans	18	NR_042021	clade_224	N	N
Achromobacter piechaudii	19	ADMS01000149	clade_224	N	N
Achromobacter xylosoxidans	20	ACRC01000072	clade_224	N	N
Bordetella bronchiseptica	384	NR_025949	clade_224	N	OP
Bordetella holmesii	385	AB683187	clade_224	N	OP
Bordetella parapertussis	386	NR_025950	clade_224	N	OP
Bordetella pertussis	387	BX640418	clade_224	N	OP

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Microbacterium chocolatum	1230	NR_037045	clade_225	N	N
Microbacterium flavescens	1231	EU714363	clade_225	N	N
Microbacterium lacticum	1233	EU714351	clade_225	N	N
Microbacterium oleivorans	1234	EU714381	clade_225	N	N
Microbacterium oxydans	1235	EU714348	clade_225	N	N
Microbacterium paraoxydans	1236	AJ491806	clade_225	N	N
Microbacterium phyllosphaerae	1237	EU714359	clade_225	N	N
Microbacterium schleiferi	1238	NR_044936	clade_225	N	N
Microbacterium sp. 768	1239	EU714378	clade_225	N	N
Microbacterium sp. oral strain C24KA	1240	AF287752	clade_225	N	N
Microbacterium testaceum	1241	EU714365	clade_225	N	N
Corynebacterium atypicum	686	NR_025540	clade_229	N	N
Corynebacterium mastitidis	708	AB359395	clade_229	N	N
Corynebacterium sp. NML 97_0186	725	GU238411	clade_229	N	N
Mycobacterium elephantis	1275	AF385898	clade_237	N	OP
Mycobacterium paraterrae	1288	EU919229	clade_237	N	OP
Mycobacterium phlei	1289	GU142920	clade_237	N	OP
Mycobacterium sp. 1776	1293	EU703152	clade_237	N	N
Mycobacterium sp. 1781	1294	EU703147	clade_237	N	N
Mycobacterium sp. AQ1GA4	1297	HM210417	clade_237	N	N
Mycobacterium sp. GN_10546	1299	FJ497243	clade_237	N	N
Mycobacterium sp. GN_10827	1300	FJ497247	clade_237	N	N
Mycobacterium sp. GN_11124	1301	FJ652846	clade_237	N	N
Mycobacterium sp. GN_9188	1302	FJ497240	clade_237	N	N
Mycobacterium sp. GR_2007_210	1303	FJ555538	clade_237	N	N
Anoxybacillus contaminans	172	NR_029006	clade_238	N	N
Bacillus aeolius	195	NR_025557	clade_238	N	N
Brevibacterium frigoritolerans	422	NR_042639	clade_238	N	N
Geobacillus sp. E263	934	DQ647387	clade_238	N	N
Geobacillus sp. WCH70	935	CP001638	clade_238	N	N
Geobacillus thermocatenulatus	937	NR_043020	clade_238	N	N
Geobacillus thermoleovorans	940	NR_074931	clade_238	N	N
Lysinibacillus fusiformis	1192	FN397522	clade_238	N	N
Planomicrobium koreense	1468	NR_025011	clade_238	N	N
Sporosarcina newyorkensis	1754	AFPZ01000142	clade_238	N	N
Sporosarcina sp. 2681	1755	GU994081	clade_238	N	N
Ureibacillus composti	1968	NR_043746	clade_238	N	N
Ureibacillus suwonensis	1969	NR_043232	clade_238	N	N
Ureibacillus terrenus	1970	NR_025394	clade_238	N	N
Ureibacillus thermophilus	1971	NR_043747	clade_238	N	N
Ureibacillus thermosphaericus	1972	NR_040961	clade_238	N	N
Prevotella micans	1507	AGWK01000061	clade_239	N	N
Prevotella sp. oral clone DA058	1533	AY005065	clade_239	N	N
Prevotella sp. SEQ053	1523	JN867222	clade_239	N	N
Treponema socranskii	1937	NR_024868	clade_240	N	OP
Treponema sp. 6:H:D15A_4	1938	AY005083	clade_240	N	N
Treponema sp. oral taxon 265	1953	GU408850	clade_240	N	N
Treponema sp. oral taxon G85	1958	GU432215	clade_240	N	N
Porphyromonas endodontalis	1472	ACNN01000021	clade_241	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Porphyromonas sp. oral clone BB134	1478	AY005068	clade_241	N	N
Porphyromonas sp. oral clone F016	1479	AY005069	clade_241	N	N
Porphyromonas sp. oral clone P2PB_52 P1	1480	AY207054	clade_241	N	N
Porphyromonas sp. oral clone P4GB_100 P2	1481	AY207057	clade_241	N	N
Acidovorax sp. 98_63833	26	AY258065	clade_245	N	N
Comamonadaceae bacterium NML000135	663	JN585335	clade_245	N	N
Comamonadaceae bacterium NML790751	664	JN585331	clade_245	N	N
Comamonadaceae bacterium NML910035	665	JN585332	clade_245	N	N
Comamonadaceae bacterium NML910036	666	JN585333	clade_245	N	N
Comamonas sp. NSP5	668	AB076850	clade_245	N	N
Delftia acidovorans	748	CP000884	clade_245	N	N
Xenophilus aerolatus	2018	JN585329	clade_245	N	N
Oribacterium sp. oral taxon 078	1380	ACIQ02000009	clade_246	N	N
Oribacterium sp. oral taxon 102	1381	GQ422713	clade_246	N	N
Weissella cibaria	2007	NR_036924	clade_247	N	N
Weissella confusa	2008	NR_040816	clade_247	N	N
Weissella hellenica	2009	AB680902	clade_247	N	N
Weissella kandleri	2010	NR_044659	clade_247	N	N
Weissella koreensis	2011	NR_075058	clade_247	N	N
Weissella paramesenteroides	2012	ACKU01000017	clade_247	N	N
Weissella sp. KLDS 7.0701	2013	EU600924	clade_247	N	N
Mobiluncus curtisii	1251	AEPZ01000013	clade_249	N	N
Enhydrobacter aerosaccus	785	ACYI01000081	clade_256	N	N
Moraxella osloensis	1262	JN175341	clade_256	N	N
Moraxella sp. GM2	1264	JF837191	clade_256	N	N
Brevibacterium casei	420	JF951998	clade_257	N	N
Brevibacterium epidermidis	421	NR_029262	clade_257	N	N
Brevibacterium sanguinis	426	NR_028016	clade_257	N	N
Brevibacterium sp. H15	427	AB177640	clade_257	N	N
Acinetobacter radioresistens	35	ACVR01000010	clade_261	N	N
Lactobacillus alimentarius	1068	NR_044701	clade_263	N	N
Lactobacillus farciminis	1082	NR_044707	clade_263	N	N
Lactobacillus kimchii	1097	NR_025045	clade_263	N	N
Lactobacillus nodensis	1101	NR_041629	clade_263	N	N
Lactobacillus tucceti	1138	NR_042194	clade_263	N	N
Pseudomonas mendocina	1595	AAUL01000021	clade_265	N	N
Pseudomonas pseudoalcaligenes	1598	NR_037000	clade_265	N	N
Pseudomonas sp. NP522b	1602	EU723211	clade_265	N	N
Pseudomonas stutzeri	1603	AM905854	clade_265	N	N
Paenibacillus barcinonensis	1390	NR_042272	clade_270	N	N
Paenibacillus barengoltzii	1391	NR_042756	clade_270	N	N
Paenibacillus chibensis	1392	NR_040885	clade_270	N	N
Paenibacillus cookii	1393	NR_025372	clade_270	N	N
Paenibacillus durus	1394	NR_037017	clade_270	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Paenibacillus glucanolyticus	1395	D78470	clade_270	N	N
Paenibacillus lactis	1396	NR_025739	clade_270	N	N
Paenibacillus pabuli	1398	NR_040853	clade_270	N	N
Paenibacillus popilliae	1400	NR_040888	clade_270	N	N
Paenibacillus sp. CIP 101062	1401	HM212646	clade_270	N	N
Paenibacillus sp. JC66	1404	JF824808	clade_270	N	N
Paenibacillus sp. R_27413	1405	HE586333	clade_270	N	N
Paenibacillus sp. R_27422	1406	HE586338	clade_270	N	N
Paenibacillus timonensis	1408	NR_042844	clade_270	N	N
Rothia mucilaginosa	1651	ACVO01000020	clade_271	N	N
Rothia nasimurium	1652	NR_025310	clade_271	N	N
Prevotella sp. oral taxon 302	1550	ACZK01000043	clade_280	N	N
Prevotella sp. oral taxon F68	1556	HM099652	clade_280	N	N
Prevotella tannerae	1563	ACIJ02000018	clade_280	N	N
Prevotellaceae bacterium P4P_62 P1	1566	AY207061	clade_280	N	N
Porphyromonas asaccharolytica	1471	AENO01000048	clade_281	N	N
Porphyromonas gingivalis	1473	AE015924	clade_281	N	N
Porphyromonas macacae	1475	NR_025908	clade_281	N	N
Porphyromonas sp. UQD 301	1477	EU012301	clade_281	N	N
Porphyromonas uenonis	1482	ACLR01000152	clade_281	N	N
Leptotrichia buccalis	1165	CP001685	clade_282	N	N
Leptotrichia hofstadii	1168	ACVB02000032	clade_282	N	N
Leptotrichia sp. oral clone HE012	1173	AY349386	clade_282	N	N
Leptotrichia sp. oral taxon 223	1176	GU408547	clade_282	N	N
Bacteroides fluxus	278	AFBN01000029	clade_285	N	N
Bacteroides helcogenes	281	CP002352	clade_285	N	N
Parabacteroides johnsonii	1419	ABYH01000014	clade_286	N	N
Parabacteroides merdae	1420	EU136685	clade_286	N	N
Treponema denticola	1926	ADEC01000002	clade_288	N	OP
Treponema genomosp. P5 oral clone MB3_P23	1929	DQ003624	clade_288	N	N
Treponema putidum	1935	AJ543428	clade_288	N	OP
Treponema sp. oral clone P2PB_53 P3	1942	AY207055	clade_288	N	N
Treponema sp. oral taxon 247	1949	GU408748	clade_288	N	N
Treponema sp. oral taxon 250	1950	GU408776	clade_288	N	N
Treponema sp. oral taxon 251	1951	GU408781	clade_288	N	N
Anaerococcus hydrogenalis	144	ABXA01000039	clade_289	N	N
Anaerococcus sp. 8404299	148	HM587318	clade_289	N	N
Anaerococcus sp. gpac215	156	AM176540	clade_289	N	N
Anaerococcus vaginalis	158	ACXU01000016	clade_289	N	N
Propionibacterium acidipropionici	1569	NC_019395	clade_290	N	N
Propionibacterium avidum	1571	AJ003055	clade_290	N	N
Propionibacterium granulosum	1573	FJ785716	clade_290	N	N
Propionibacterium jensenii	1574	NR_042269	clade_290	N	N
Propionibacterium propionicum	1575	NR_025277	clade_290	N	N
Propionibacterium sp. H456	1577	AB177643	clade_290	N	N
Propionibacterium thoenii	1581	NR_042270	clade_290	N	N
Bifidobacterium bifidum	349	ABQP01000027	clade_293	N	N
Leuconostoc mesenteroides	1183	ACKV01000113	clade_295	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Leuconostoc pseudomesenteroides	1184	NR_040814	clade_295	N	N
Johnsonella ignava	1016	X87152	clade_298	N	N
Propionibacterium acnes	1570	ADJM01000010	clade_299	N	N
Propionibacterium sp. 434_HC2	1576	AFIL01000035	clade_299	N	N
Propionibacterium sp. LG	1578	AY354921	clade_299	N	N
Propionibacterium sp. S555a	1579	AB264622	clade_299	N	N
Alicyclobacillus sp. CCUG 53762	128	HE613268	clade_301	N	N
Actinomyces cardiffensis	53	GU470888	clade_303	N	N
Actinomyces funkei	55	HQ906497	clade_303	N	N
Actinomyces sp. HKU31	74	HQ335393	clade_303	N	N
Actinomyces sp. oral taxon C55	94	HM099646	clade_303	N	N
Kerstersia gyiorum	1018	NR_025669	clade_307	N	N
Pigmentiphaga daeguensis	1467	JN585327	clade_307	N	N
Aeromonas allosaccharophila	104	S39232	clade_308	N	N
Aeromonas enteropelogenes	105	X71121	clade_308	N	N
Aeromonas hydrophila	106	NC_008570	clade_308	N	N
Aeromonas jandaei	107	X60413	clade_308	N	N
Aeromonas salmonicida	108	NC_009348	clade_308	N	N
Aeromonas trota	109	X60415	clade_308	N	N
Aeromonas veronii	110	NR_044845	clade_308	N	N
Marvinbryantia formatexigens	1196	AJ505973	clade_309	N	N
Rhodobacter sp. oral taxon C30	1620	HM099648	clade_310	N	N
Rhodobacter sphaeroides	1621	CP000144	clade_310	N	N
Lactobacillus antri	1071	ACLL01000037	clade_313	N	N
Lactobacillus coleohominis	1076	ACOH01000030	clade_313	N	N
Lactobacillus fermentum	1083	CP002033	clade_313	N	N
Lactobacillus gastricus	1085	AICN01000060	clade_313	N	N
Lactobacillus mucosae	1099	FR693800	clade_313	N	N
Lactobacillus oris	1103	AEKL01000077	clade_313	N	N
Lactobacillus pontis	1111	HM218420	clade_313	N	N
Lactobacillus reuteri	1112	ACGW02000012	clade_313	N	N
Lactobacillus sp. KLDS 1.0707	1127	EU600911	clade_313	N	N
Lactobacillus sp. KLDS 1.0709	1128	EU600913	clade_313	N	N
Lactobacillus sp. KLDS 1.0711	1129	EU600915	clade_313	N	N
Lactobacillus sp. KLDS 1.0713	1131	EU600917	clade_313	N	N
Lactobacillus sp. KLDS 1.0716	1132	EU600921	clade_313	N	N
Lactobacillus sp. KLDS 1.0718	1133	EU600922	clade_313	N	N
Lactobacillus sp. oral taxon 052	1137	GQ422710	clade_313	N	N
Lactobacillus vaginalis	1140	ACGV01000168	clade_313	N	N
Brevibacterium aurantiacum	419	NR_044854	clade_314	N	N
Brevibacterium linens	423	AJ315491	clade_314	N	N
Lactobacillus pentosus	1108	JN813103	clade_315	N	N
Lactobacillus plantarum	1110	ACGZ02000033	clade_315	N	N
Lactobacillus sp. KLDS 1.0702	1123	EU600906	clade_315	N	N
Lactobacillus sp. KLDS 1.0703	1124	EU600907	clade_315	N	N
Lactobacillus sp. KLDS 1.0704	1125	EU600908	clade_315	N	N
Lactobacillus sp. KLDS 1.0705	1126	EU600909	clade_315	N	N
Agrobacterium radiobacter	115	CP000628	clade_316	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Agrobacterium tumefaciens	116	AJ389893	clade_316	N	N
Corynebacterium argentoratense	685	EF463055	clade_317	N	N
Corynebacterium diphtheriae	693	NC_002935	clade_317	N	OP
Corynebacterium pseudotuberculosis	715	NR_037070	clade_317	N	N
Corynebacterium renale	717	NR_037069	clade_317	N	N
Corynebacterium ulcerans	731	NR_074467	clade_317	N	N
Aurantimonas coralicida	191	AY065627	clade_318	N	N
Aureimonas altamirensis	192	FN658986	clade_318	N	N
Lactobacillus acidipiscis	1066	NR_024718	clade_320	N	N
Lactobacillus salivarius	1117	AEBA01000145	clade_320	N	N
Lactobacillus sp. KLDS 1.0719	1134	EU600923	clade_320	N	N
Lactobacillus buchneri	1073	ACGH01000101	clade_321	N	N
Lactobacillus genomosp. C1	1086	AY278619	clade_321	N	N
Lactobacillus genomosp. C2	1087	AY278620	clade_321	N	N
Lactobacillus hilgardii	1089	ACGP01000200	clade_321	N	N
Lactobacillus kefiri	1096	NR_042230	clade_321	N	N
Lactobacillus parabuchneri	1105	NR_041294	clade_321	N	N
Lactobacillus parakefiri	1107	NR_029039	clade_321	N	N
Lactobacillus curvatus	1079	NR_042437	clade_322	N	N
Lactobacillus sakei	1116	DQ989236	clade_322	N	N
Aneurinibacillus aneurinilyticus	167	AB101592	clade_323	N	N
Aneurinibacillus danicus	168	NR_028657	clade_323	N	N
Aneurinibacillus migulanus	169	NR_036799	clade_323	N	N
Aneurinibacillus terranovensis	170	NR_042271	clade_323	N	N
Staphylococcus aureus	1757	CP002643	clade_325	N	Category -B
Staphylococcus auricularis	1758	JQ624774	clade_325	N	N
Staphylococcus capitis	1759	ACFR01000029	clade_325	N	N
Staphylococcus caprae	1760	ACRH01000033	clade_325	N	N
Staphylococcus carnosus	1761	NR_075003	clade_325	N	N
Staphylococcus cohnii	1762	JN175375	clade_325	N	N
Staphylococcus condimenti	1763	NR_029345	clade_325	N	N
Staphylococcus epidermidis	1764	ACHE01000056	clade_325	N	N
Staphylococcus equorum	1765	NR_027520	clade_325	N	N
Staphylococcus haemolyticus	1767	NC_007168	clade_325	N	N
Staphylococcus hominis	1768	AM157418	clade_325	N	N
Staphylococcus lugdunensis	1769	AEQA01000024	clade_325	N	N
Staphylococcus pasteuri	1770	FJ189773	clade_325	N	N
Staphylococcus pseudintermedius	1771	CP002439	clade_325	N	N
Staphylococcus saccharolyticus	1772	NR_029158	clade_325	N	N
Staphylococcus saprophyticus	1773	NC_007350	clade_325	N	N
Staphylococcus sp. clone bottae7	1777	AF467424	clade_325	N	N
Staphylococcus sp. H292	1775	AB177642	clade_325	N	N
Staphylococcus sp. H780	1776	AB177644	clade_325	N	N
Staphylococcus succinus	1778	NR_028667	clade_325	N	N
Staphylococcus warneri	1780	ACPZ01000009	clade_325	N	N
Staphylococcus xylosus	1781	AY395016	clade_325	N	N
Cardiobacterium hominis	490	ACKY01000036	clade_326	N	N
Cardiobacterium valvarum	491	NR_028847	clade_326	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Pseudomonas fluorescens	1593	AY622220	clade_326	N	N
Pseudomonas gessardii	1594	FJ943496	clade_326	N	N
Pseudomonas monteilii	1596	NR_024910	clade_326	N	N
Pseudomonas poae	1597	GU188951	clade_326	N	N
Pseudomonas putida	1599	AF094741	clade_326	N	N
Pseudomonas sp. G1229	1601	DQ910482	clade_326	N	N
Pseudomonas tolaasii	1604	AF320988	clade_326	N	N
Pseudomonas viridiflava	1605	NR_042764	clade_326	N	N
Listeria grayi	1185	ACCR02000003	clade_328	N	OP
Listeria innocua	1186	JF967625	clade_328	N	N
Listeria ivanovii	1187	X56151	clade_328	N	N
Listeria monocytogenes	1188	CP002003	clade_328	N	Category -B
Listeria welshimeri	1189	AM263198	clade_328	N	OP
Capnocytophaga sp. oral clone ASCH05	484	AY923149	clade_333	N	N
Capnocytophaga sputigena	489	ABZV01000054	clade_333	N	N
Leptotrichia genomosp. C1	1166	AY278621	clade_334	N	N
Leptotrichia shahii	1169	AY029806	clade_334	N	N
Leptotrichia sp. neutropenicPatient	1170	AF189244	clade_334	N	N
Leptotrichia sp. oral clone GT018	1171	AY349384	clade_334	N	N
Leptotrichia sp. oral clone GT020	1172	AY349385	clade_334	N	N
Bacteroides sp. 20_3	296	ACRQ01000064	clade_335	N	N
Bacteroides sp. 3_1_19	307	ADCJ01000062	clade_335	N	N
Bacteroides sp. 3_2_5	311	ACIB01000079	clade_335	N	N
Parabacteroides distasonis	1416	CP000140	clade_335	N	N
Parabacteroides goldsteinii	1417	AY974070	clade_335	N	N
Parabacteroides gordonii	1418	AB470344	clade_335	N	N
Parabacteroides sp. D13	1421	ACPW01000017	clade_335	N	N
Capnocytophaga genomosp. C1	477	AY278613	clade_336	N	N
Capnocytophaga ochracea	480	AEOH01000054	clade_336	N	N
Capnocytophaga sp. GEJ8	481	GU561335	clade_336	N	N
Capnocytophaga sp. oral strain A47ROY	486	AY005077	clade_336	N	N
Capnocytophaga sp. S1b	482	U42009	clade_336	N	N
Paraprevotella clara	1426	AFFY01000068	clade_336	N	N
Bacteroides heparinolyticus	282	JN867284	clade_338	N	N
Prevotella heparinolytica	1500	GQ422742	clade_338	N	N
Treponema genomosp. P4 oral clone MB2_G19	1928	DQ003618	clade_339	N	N
Treponema genomosp. P6 oral clone MB4_G11	1930	DQ003625	clade_339	N	N
Treponema sp. oral taxon 254	1952	GU408803	clade_339	N	N
Treponema sp. oral taxon 508	1956	GU413616	clade_339	N	N
Treponema sp. oral taxon 518	1957	GU413640	clade_339	N	N
Chlamydia muridarum	502	AE002160	clade_341	N	OP
Chlamydia trachomatis	504	U68443	clade_341	N	OP
Chlamydia psittaci	503	NR_036864	clade_342	N	Category -B
Chlamydophila pneumoniae	509	NC_002179	clade_342	N	OP
Chlamydophila psittaci	510	D85712	clade_342	N	OP

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Anaerococcus octavius	146	NR_026360	clade_343	N	N
Anaerococcus sp. 8405254	149	HM587319	clade_343	N	N
Anaerococcus sp. 9401487	150	HM587322	clade_343	N	N
Anaerococcus sp. 9403502	151	HM587325	clade_343	N	N
Gardnerella vaginalis	923	CP001849	clade_344	N	N
Campylobacter lari	466	CP000932	clade_346	N	OP
Anaerobiospirillum succiniciproducens	142	NR_026075	clade_347	N	N
Anaerobiospirillum thomasii	143	AJ420985	clade_347	N	N
Ruminobacter amylophilus	1654	NR_026450	clade_347	N	N
Succinatimonas hippei	1897	AEVO01000027	clade_347	N	N
Actinomyces europaeus	54	NR_026363	clade_348	N	N
Actinomyces sp. oral clone GU009	82	AY349361	clade_348	N	N
Moraxella catarrhalis	1260	CP002005	clade_349	N	N
Moraxella lincolnii	1261	FR822735	clade_349	N	N
Moraxella sp. 16285	1263	JF682466	clade_349	N	N
Psychrobacter sp. 13983	1613	HM212668	clade_349	N	N
Actinobaculum massiliae	49	AF487679	clade_350	N	N
Actinobaculum schaalii	50	AY957507	clade_350	N	N
Actinobaculum sp. BM#101342	51	AY282578	clade_350	N	N
Actinobaculum sp. P2P_19 P1	52	AY207066	clade_350	N	N
Actinomyces sp. oral clone IO076	84	AY349363	clade_350	N	N
Actinomyces sp. oral taxon 848	93	ACUY01000072	clade_350	N	N
Actinomyces neuii	65	X71862	clade_352	N	N
Mobiluncus mulieris	1252	ACKW01000035	clade_352	N	N
Blastomonas natatoria	372	NR_040824	clade_356	N	N
Novosphingobium aromaticivorans	1357	AAAV03000008	clade_356	N	N
Sphingomonas sp. oral clone FI012	1745	AY349411	clade_356	N	N
Sphingopyxis alaskensis	1749	CP000356	clade_356	N	N
Oxalobacter formigenes	1389	ACDQ01000020	clade_357	N	N
Veillonella atypica	1974	AEDS01000059	clade_358	N	N
Veillonella dispar	1975	ACIK02000021	clade_358	N	N
Veillonella genomosp. P1 oral clone MB5_P17	1976	DQ003631	clade_358	N	N
Veillonella parvula	1978	ADFU01000009	clade_358	N	N
Veillonella sp. 3_1_44	1979	ADCV01000019	clade_358	N	N
Veillonella sp. 6_1_27	1980	ADCW01000016	clade_358	N	N
Veillonella sp. ACP1	1981	HQ616359	clade_358	N	N
Veillonella sp. AS16	1982	HQ616365	clade_358	N	N
Veillonella sp. BS32b	1983	HQ616368	clade_358	N	N
Veillonella sp. ICM51a	1984	HQ616396	clade_358	N	N
Veillonella sp. MSA12	1985	HQ616381	clade_358	N	N
Veillonella sp. NVG 100cf	1986	EF108443	clade_358	N	N
Veillonella sp. OK11	1987	JN695650	clade_358	N	N
Veillonella sp. oral clone ASCG01	1990	AY923144	clade_358	N	N
Veillonella sp. oral clone ASCG02	1991	AY953257	clade_358	N	N
Veillonella sp. oral clone OH1A	1992	AY947495	clade_358	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Veillonella sp. oral taxon 158	1993	AENU01000007	clade_358	N	N
Kocuria marina	1040	GQ260086	clade_365	N	N
Kocuria rhizophila	1042	AY030315	clade_365	N	N
Kocuria rosea	1043	X87756	clade_365	N	N
Kocuria varians	1044	AF542074	clade_365	N	N
Clostridiaceae bacterium END_2	531	EF451053	clade_368	N	N
Micrococcus antarcticus	1242	NR_025285	clade_371	N	N
Micrococcus luteus	1243	NR_075062	clade_371	N	N
Micrococcus lylae	1244	NR_026200	clade_371	N	N
Micrococcus sp. 185	1245	EU714334	clade_371	N	N
Lactobacillus brevis	1072	EU194349	clade_372	N	N
Lactobacillus parabrevis	1104	NR_042456	clade_372	N	N
Pediococcus acidilactici	1436	ACXB01000026	clade_372	N	N
Pediococcus pentosaceus	1437	NR_075052	clade_372	N	N
Lactobacillus dextrinicus	1081	NR_036861	clade_373	N	N
Lactobacillus perolens	1109	NR_029360	clade_373	N	N
Lactobacillus rhamnosus	1113	ABWJ01000068	clade_373	N	N
Lactobacillus saniviri	1118	AB602569	clade_373	N	N
Lactobacillus sp. BT6	1121	HQ616370	clade_373	N	N
Mycobacterium mageritense	1282	FR798914	clade_374	N	OP
Mycobacterium neoaurum	1286	AF268445	clade_374	N	OP
Mycobacterium smegmatis	1291	CP000480	clade_374	N	OP
Mycobacterium sp. HE5	1304	AJ012738	clade_374	N	N
Dysgonomonas gadei	775	ADLV01000001	clade_377	N	N
Dysgonomonas mossii	776	ADLW01000023	clade_377	N	N
Porphyromonas levii	1474	NR_025907	clade_377	N	N
Porphyromonas somerae	1476	AB547667	clade_377	N	N
Bacteroides barnesiae	267	NR_041446	clade_378	N	N
Bacteroides coprocola	272	ABIY02000050	clade_378	N	N
Bacteroides coprophilus	273	ACBW01000012	clade_378	N	N
Bacteroides dorei	274	ABWZ01000093	clade_378	N	N
Bacteroides massiliensis	284	AB200226	clade_378	N	N
Bacteroides plebeius	289	AB200218	clade_378	N	N
Bacteroides sp. 3_1_33FAA	309	ACPS01000085	clade_378	N	N
Bacteroides sp. 3_1_40A	310	ACRT01000136	clade_378	N	N
Bacteroides sp. 4_3_47FAA	313	ACDR02000029	clade_378	N	N
Bacteroides sp. 9_1_42FAA	314	ACAA01000096	clade_378	N	N
Bacteroides sp. NB_8	323	AB117565	clade_378	N	N
Bacteroides vulgatus	331	CP000139	clade_378	N	N
Bacteroides ovatus	287	ACWH01000036	clade_38	N	N
Bacteroides sp. 1_1_30	294	ADCL01000128	clade_38	N	N
Bacteroides sp. 2_1_22	297	ACPQ01000117	clade_38	N	N
Bacteroides sp. 2_2_4	299	ABZZ01000168	clade_38	N	N
Bacteroides sp. 3_1_23	308	ACRS01000081	clade_38	N	N
Bacteroides sp. D1	318	ACAB02000030	clade_38	N	N
Bacteroides sp. D2	321	ACGA01000077	clade_38	N	N
Bacteroides sp. D22	320	ADCK01000151	clade_38	N	N
Bacteroides xylanisolvens	332	ADKP01000087	clade_38	N	N
Treponema lecithinolyticum	1931	NR_026247	clade_380	N	OP
Treponema parvum	1933	AF302937	clade_380	N	OP
Treponema sp. oral clone JU025	1940	AY349417	clade_380	N	N
Treponema sp. oral taxon 270	1954	GQ422733	clade_380	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Parascardovia denticolens	1428	ADEB01000020	clade_381	N	N
Scardovia inopinata	1688	AB029087	clade_381	N	N
Scardovia wiggsiae	1689	AY278626	clade_381	N	N
Clostridiales bacterium 9400853	533	HM587320	clade_384	N	N
Mogibacterium diversum	1254	NR_027191	clade_384	N	N
Mogibacterium neglectum	1255	NR_027203	clade_384	N	N
Mogibacterium pumilum	1256	NR_028608	clade_384	N	N
Mogibacterium timidum	1257	Z36296	clade_384	N	N
Borrelia burgdorferi	389	ABGI01000001	clade_386	N	OP
Borrelia garinii	392	ABJV01000001	clade_386	N	OP
Borrelia sp. NE49	397	AJ224142	clade_386	N	OP
Caldimonas manganoxidans	457	NR_040787	clade_387	N	N
Comamonadaceae bacterium oral taxon F47	667	HM099651	clade_387	N	N
Lautropia mirabilis	1149	AEQP01000026	clade_387	N	N
Lautropia sp. oral clone AP009	1150	AY005030	clade_387	N	N
Peptoniphilus asaccharolyticus	1441	D14145	clade_389	N	N
Peptoniphilus duerdenii	1442	EU526290	clade_389	N	N
Peptoniphilus harei	1443	NR_026358	clade_389	N	N
Peptoniphilus indolicus	1444	AY153431	clade_389	N	N
Peptoniphilus lacrimalis	1446	ADDO01000050	clade_389	N	N
Peptoniphilus sp. gpac077	1450	AM176527	clade_389	N	N
Peptoniphilus sp. JC140	1447	JF824803	clade_389	N	N
Peptoniphilus sp. oral taxon 386	1452	ADCS01000031	clade_389	N	N
Peptoniphilus sp. oral taxon 836	1453	AEAA01000090	clade_389	N	N
Peptostreptococcaceae bacterium ph1	1454	JN837495	clade_389	N	N
Dialister pneumosintes	765	HM596297	clade_390	N	N
Dialister sp. oral taxon 502	767	GQ422739	clade_390	N	N
Cupriavidus metallidurans	741	GU230889	clade_391	N	N
Herbaspirillum seropedicae	1001	CP002039	clade_391	N	N
Herbaspirillum sp. JC206	1002	JN657219	clade_391	N	N
Janthinobacterium sp. SY12	1015	EF455530	clade_391	N	N
Massilia sp. CCUG 43427A	1197	FR773700	clade_391	N	N
Ralstonia pickettii	1615	NC_010682	clade_391	N	N
Ralstonia sp. 5_7_47FAA	1616	ACUF01000076	clade_391	N	N
Francisella novicida	889	ABSS01000002	clade_392	N	N
Francisella philomiragia	890	AY928394	clade_392	N	N
Francisella tularensis	891	ABAZ01000082	clade_392	N	Category -A
Ignatzschineria indica	1009	HQ823562	clade_392	N	N
Ignatzschineria sp. NML 95_0260	1010	HQ823559	clade_392	N	N
Streptococcus mutans	1814	AP010655	clade_394	N	N
Lactobacillus gasseri	1084	ACOZ01000018	clade_398	N	N
Lactobacillus hominis	1090	FR681902	clade_398	N	N
Lactobacillus iners	1091	AEKJ01000002	clade_398	N	N
Lactobacillus johnsonii	1093	AE017198	clade_398	N	N
Lactobacillus senioris	1119	AB602570	clade_398	N	N
Lactobacillus sp. oral clone HT002	1135	AY349382	clade_398	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Weissella beninensis	2006	EU439435	clade_398	N	N
Sphingomonas echinoides	1744	NR_024700	clade_399	N	N
Sphingomonas sp. oral taxon A09	1747	HM099639	clade_399	N	N
Sphingomonas sp. oral taxon F71	1748	HM099645	clade_399	N	N
Zymomonas mobilis	2032	NR_074274	clade_399	N	N
Arcanobacterium haemolyticum	174	NR_025347	clade_400	N	N
Arcanobacterium pyogenes	175	GU585578	clade_400	N	N
Trueperella pyogenes	1962	NR_044858	clade_400	N	N
Lactococcus garvieae	1144	AF061005	clade_401	N	N
Lactococcus lactis	1145	CP002365	clade_401	N	N
Brevibacterium mcbrellneri	424	ADNU01000076	clade_402	N	N
Brevibacterium paucivorans	425	EU086796	clade_402	N	N
Brevibacterium sp. JC43	428	JF824806	clade_402	N	N
Selenomonas artemidis	1692	HM596274	clade_403	N	N
Selenomonas sp. FOBRC9	1704	HQ616378	clade_403	N	N
Selenomonas sp. oral taxon 137	1715	AENV01000007	clade_403	N	N
Desmospora activa	751	AM940019	clade_404	N	N
Desmospora sp. 8437	752	AFHT01000143	clade_404	N	N
Paenibacillus sp. oral taxon F45	1407	HM099647	clade_404	N	N
Corynebacterium ammoniagenes	682	ADNS01000011	clade_405	N	N
Corynebacterium aurimucosum	687	ACLH01000041	clade_405	N	N
Corynebacterium bovis	688	AF537590	clade_405	N	N
Corynebacterium canis	689	GQ871934	clade_405	N	N
Corynebacterium casei	690	NR_025101	clade_405	N	N
Corynebacterium durum	694	Z97069	clade_405	N	N
Corynebacterium efficiens	695	ACLI01000121	clade_405	N	N
Corynebacterium falsenii	696	Y13024	clade_405	N	N
Corynebacterium flavescens	697	NR_037040	clade_405	N	N
Corynebacterium glutamicum	701	BA000036	clade_405	N	N
Corynebacterium jeikeium	704	ACYW01000001	clade_405	N	OP
Corynebacterium kroppenstedtii	705	NR_026380	clade_405	N	N
Corynebacterium lipophiloflavum	706	ACHJ01000075	clade_405	N	N
Corynebacterium matruchotii	709	ACSH02000003	clade_405	N	N
Corynebacterium minutissimum	710	X82064	clade_405	N	N
Corynebacterium resistens	718	ADGN01000058	clade_405	N	N
Corynebacterium simulans	720	AF537604	clade_405	N	N
Corynebacterium singulare	721	NR_026394	clade_405	N	N
Corynebacterium sp. 1 ex sheep	722	Y13427	clade_405	N	N
Corynebacterium sp. NML 99_0018	726	GU238413	clade_405	N	N
Corynebacterium striatum	727	ACGE01000001	clade_405	N	OP
Corynebacterium urealyticum	732	X81913	clade_405	N	OP
Corynebacterium variabile	734	NR_025314	clade_405	N	N
Aerococcus sanguinicola	98	AY837833	clade_407	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Aerococcus urinae	99	CP002512	clade_407	N	N
Aerococcus urinaeequi	100	NR_043443	clade_407	N	N
Aerococcus viridans	101	ADNT01000041	clade_407	N	N
Fusobacterium naviforme	898	HQ223106	clade_408	N	N
Moryella indoligenes	1268	AF527773	clade_408	N	N
Selenomonas genomosp. P5	1697	AY341820	clade_410	N	N
Selenomonas sp. oral clone IQ048	1710	AY349408	clade_410	N	N
Selenomonas sputigena	1717	ACKP02000033	clade_410	N	N
Hyphomicrobium sulfonivorans	1007	AY468372	clade_411	N	N
Methylocella silvestris	1228	NR_074237	clade_411	N	N
Legionella pneumophila	1153	NC_002942	clade_412	N	OP
Lactobacillus coryniformis	1077	NR_044705	clade_413	N	N
Arthrobacter agilis	178	NR_026198	clade_414	N	N
Arthrobacter arilaitensis	179	NR_074608	clade_414	N	N
Arthrobacter bergerei	180	NR_025612	clade_414	N	N
Arthrobacter globiformis	181	NR_026187	clade_414	N	N
Arthrobacter nicotianae	182	NR_026190	clade_414	N	N
Mycobacterium abscessus	1269	AGQU01000002	clade_418	N	OP
Mycobacterium chelonae	1273	AB548610	clade_418	N	OP
Bacteroides salanitronis	291	CP002530	clade_419	N	N
Paraprevotella xylaniphila	1427	AFBR01000011	clade_419	N	N
Barnesiella intestinihominis	336	AB370251	clade_420	N	N
Barnesiella viscericola	337	NR_041508	clade_420	N	N
Parabacteroides sp. NS31_3	1422	JN029805	clade_420	N	N
Porphyromonadaceae bacterium NML 060648	1470	EF184292	clade_420	N	N
Tannerella forsythia	1913	CP003191	clade_420	N	N
Tannerella sp. 6_1_58FAA_CT1	1914	ACWX01000068	clade_420	N	N
Mycoplasma amphoriforme	1311	AY531656	clade_421	N	N
Mycoplasma genitalium	1317	L43967	clade_421	N	N
Mycoplasma pneumoniae	1322	NC_000912	clade_421	N	N
Mycoplasma penetrans	1321	NC_004432	clade_422	N	N
Ureaplasma parvum	1966	AE002127	clade_422	N	N
Ureaplasma urealyticum	1967	AAYN01000002	clade_422	N	N
Treponema genomosp. P1	1927	AY341822	clade_425	N	N
Treponema sp. oral taxon 228	1943	GU408580	clade_425	N	N
Treponema sp. oral taxon 230	1944	GU408603	clade_425	N	N
Treponema sp. oral taxon 231	1945	GU408631	clade_425	N	N
Treponema sp. oral taxon 232	1946	GU408646	clade_425	N	N
Treponema sp. oral taxon 235	1947	GU408673	clade_425	N	N
Treponema sp. ovine footrot	1959	AJ010951	clade_425	N	N
Treponema vincentii	1960	ACYH01000036	clade_425	N	OP
Burkholderiales bacterium 1_1_47	452	ADCQ01000066	clade_432	N	OP
Parasutterella excrementihominis	1429	AFBP01000029	clade_432	N	N
Parasutterella secunda	1430	AB491209	clade_432	N	N
Sutterella morbirenis	1898	AJ832129	clade_432	N	N
Sutterella sanguinus	1900	AJ748647	clade_432	N	N
Sutterella sp. YIT 12072	1901	AB491210	clade_432	N	N
Sutterella stercoricanis	1902	NR_025600	clade_432	N	N
Sutterella wadsworthensis	1903	ADMF01000048	clade_432	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Propionibacterium freudenreichii	1572	NR_036972	clade_433	N	N
Propionibacterium sp. oral taxon 192	1580	GQ422728	clade_433	N	N
Tessaracoccus sp. oral taxon F04	1917	HM099640	clade_433	N	N
Peptoniphilus ivorii	1445	Y07840	clade_434	N	N
Peptoniphilus sp. gpac007	1448	AM176517	clade_434	N	N
Peptoniphilus sp. gpac018A	1449	AM176519	clade_434	N	N
Peptoniphilus sp. gpac148	1451	AM176535	clade_434	N	N
Flexispira rappini	887	AY126479	clade_436	N	N
Helicobacter bilis	993	ACDN01000023	clade_436	N	N
Helicobacter cinaedi	995	ABQT01000054	clade_436	N	N
Helicobacter sp. None	998	U44756	clade_436	N	N
Brevundimonas subvibrioides	429	CP002102	clade_438	N	N
Hyphomonas neptunium	1008	NR_074092	clade_438	N	N
Phenylobacterium zucineum	1465	AY628697	clade_438	N	N
Streptococcus downei	1793	AEKN01000002	clade_441	N	N
Streptococcus sp. SHV515	1848	Y07601	clade_441	N	N
Acinetobacter sp. CIP 53.82	40	JQ638584	clade_443	N	N
Halomonas elongata	990	NR_074782	clade_443	N	N
Halomonas johnsoniae	991	FR775979	clade_443	N	N
Butyrivibrio fibrisolvens	456	U41172	clade_444	N	N
Roseburia sp. 11SE37	1640	FM954975	clade_444	N	N
Roseburia sp. 11SE38	1641	FM954976	clade_444	N	N
Shuttleworthia satelles	1728	ACIP02000004	clade_444	N	N
Shuttleworthia sp. MSX8B	1729	HQ616383	clade_444	N	N
Shuttleworthia sp. oral taxon G69	1730	GU432167	clade_444	N	N
Bdellovibrio sp. MPA	344	AY294215	clade_445	N	N
Desulfobulbus sp. oral clone CH031	755	AY005036	clade_445	N	N
Desulfovibrio desulfuricans	757	DQ092636	clade_445	N	N
Desulfovibrio fairfieldensis	758	U42221	clade_445	N	N
Desulfovibrio piger	759	AF192152	clade_445	N	N
Desulfovibrio sp. 3_1_syn3	760	ADDR01000239	clade_445	N	N
Geobacter bemidjiensis	941	CP001124	clade_445	N	N
Brachybacterium alimentarium	401	NR_026269	clade_446	N	N
Brachybacterium conglomeratum	402	AB537169	clade_446	N	N
Brachybacterium tyrofermentans	403	NR_026272	clade_446	N	N
Dermabacter hominis	749	FJ263375	clade_446	N	N
Aneurinibacillus thermoaerophilus	171	NR_029303	clade_448	N	N
Brevibacillus agri	409	NR_040983	clade_448	N	N
Brevibacillus centrosporus	411	NR_043414	clade_448	N	N
Brevibacillus choshinensis	412	NR_040980	clade_448	N	N
Brevibacillus invocatus	413	NR_041836	clade_448	N	N
Brevibacillus parabrevis	415	NR_040981	clade_448	N	N
Brevibacillus reuszeri	416	NR_040982	clade_448	N	N
Brevibacillus sp. phR	417	JN837488	clade_448	N	N
Brevibacillus thermoruber	418	NR_026514	clade_448	N	N
Lactobacillus murinus	1100	NR_042231	clade_449	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Lactobacillus oeni	1102	NR_043095	clade_449	N	N
Lactobacillus ruminis	1115	ACGS02000043	clade_449	N	N
Lactobacillus vini	1141	NR_042196	clade_449	N	N
Gemella haemolysans	924	ACDZ02000012	clade_450	N	N
Gemella morbillorum	925	NR_025904	clade_450	N	N
Gemella morbillorum	926	ACRX01000010	clade_450	N	N
Gemella sanguinis	927	ACRY01000057	clade_450	N	N
Gemella sp. oral clone ASCE02	929	AY923133	clade_450	N	N
Gemella sp. oral clone ASCF04	930	AY923139	clade_450	N	N
Gemella sp. oral clone ASCF12	931	AY923143	clade_450	N	N
Gemella sp. WAL 1945J	928	EU427463	clade_450	N	N
Sporolactobacillus nakayamae	1753	NR_042247	clade_451	N	N
Gluconacetobacter entanii	945	NR_028909	clade_452	N	N
Gluconacetobacter europaeus	946	NR_026513	clade_452	N	N
Gluconacetobacter hansenii	947	NR_026133	clade_452	N	N
Gluconacetobacter oboediens	949	NR_041295	clade_452	N	N
Gluconacetobacter xylinus	950	NR_074338	clade_452	N	N
Auritibacter ignavus	193	FN554542	clade_453	N	N
Dermacoccus sp. Ellin185	750	AEIQ01000090	clade_453	N	N
Janibacter limosus	1013	NR_026362	clade_453	N	N
Janibacter melonis	1014	EF063716	clade_453	N	N
Acetobacter aceti	7	NR_026121	clade_454	N	N
Acetobacter fabarum	8	NR_042678	clade_454	N	N
Acetobacter lovaniensis	9	NR_040832	clade_454	N	N
Acetobacter malorum	10	NR_025513	clade_454	N	N
Acetobacter orientalis	11	NR_028625	clade_454	N	N
Acetobacter pasteurianus	12	NR_026107	clade_454	N	N
Acetobacter pomorum	13	NR_042112	clade_454	N	N
Acetobacter syzygii	14	NR_040868	clade_454	N	N
Acetobacter tropicalis	15	NR_036881	clade_454	N	N
Gluconacetobacter azotocaptans	943	NR_028767	clade_454	N	N
Gluconacetobacter diazotrophicus	944	NR_074292	clade_454	N	N
Gluconacetobacter johannae	948	NR_024959	clade_454	N	N
Nocardia brasiliensis	1351	AIHV01000038	clade_455	N	N
Nocardia cyriacigeorgica	1352	HQ009486	clade_455	N	N
Nocardia puris	1354	NR_028994	clade_455	N	N
Nocardia sp. 01_Je_025	1355	GU574059	clade_455	N	N
Rhodococcus equi	1623	ADNW01000058	clade_455	N	N
Oceanobacillus caeni	1358	NR_041533	clade_456	N	N
Oceanobacillus sp. Ndiop	1359	CAER01000083	clade_456	N	N
Ornithinibacillus bavariensis	1384	NR_044923	clade_456	N	N
Ornithinibacillus sp. 7_10AIA	1385	FN397526	clade_456	N	N
Virgibacillus proomii	2005	NR_025308	clade_456	N	N
Corynebacterium amycolatum	683	ABZU01000033	clade_457	N	OP
Corynebacterium hansenii	702	AM946639	clade_457	N	N
Corynebacterium xerosis	735	FN179330	clade_457	N	OP
Staphylococcaceae bacterium NML 92_0017	1756	AY841362	clade_458	N	N
Staphylococcus fleurettii	1766	NR_041326	clade_458	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Staphylococcus sciuri	1774	NR_025520	clade_458	N	N
Staphylococcus vitulinus	1779	NR_024670	clade_458	N	N
Stenotrophomonas maltophilia	1782	AAVZ01000005	clade_459	N	N
Stenotrophomonas sp. FG_6	1783	EF017810	clade_459	N	N
Mycobacterium africanum	1270	AF480605	clade_46	N	OP
Mycobacterium alsiensis	1271	AJ938169	clade_46	N	OP
Mycobacterium avium	1272	CP000479	clade_46	N	OP
Mycobacterium colombiense	1274	AM062764	clade_46	N	OP
Mycobacterium gordonae	1276	GU142930	clade_46	N	OP
Mycobacterium intracellulare	1277	GQ153276	clade_46	N	OP
Mycobacterium kansasii	1278	AF480601	clade_46	N	OP
Mycobacterium lacus	1279	NR_025175	clade_46	N	OP
Mycobacterium leprae	1280	FM211192	clade_46	N	OP
Mycobacterium lepromatosis	1281	EU203590	clade_46	N	OP
Mycobacterium mantenii	1283	FJ042897	clade_46	N	OP
Mycobacterium marinum	1284	NC_010612	clade_46	N	OP
Mycobacterium microti	1285	NR_025234	clade_46	N	OP
Mycobacterium parascrofulaceum	1287	ADNV01000350	clade_46	N	OP
Mycobacterium seoulense	1290	DQ536403	clade_46	N	OP
Mycobacterium sp. 1761	1292	EU703150	clade_46	N	N
Mycobacterium sp. 1791	1295	EU703148	clade_46	N	N
Mycobacterium sp. 1797	1296	EU703149	clade_46	N	N
Mycobacterium sp. B10_07.09.0206	1298	HQ174245	clade_46	N	N
Mycobacterium sp. NLA001000736	1305	HM627011	clade_46	N	N
Mycobacterium sp. W	1306	DQ437715	clade_46	N	N
Mycobacterium tuberculosis	1307	CP001658	clade_46	N	Category -C
Mycobacterium ulcerans	1308	AB548725	clade_46	N	OP
Mycobacterium vulneris	1309	EU834055	clade_46	N	OP
Xanthomonas campestris	2016	EF101975	clade_461	N	N
Xanthomonas sp. kmd_489	2017	EU723184	clade_461	N	N
Dietzia natronolimnaea	769	GQ870426	clade_462	N	N
Dietzia sp. BBDP51	770	DQ337512	clade_462	N	N
Dietzia sp. CA149	771	GQ870422	clade_462	N	N
Dietzia timorensis	772	GQ870424	clade_462	N	N
Gordonia bronchialis	951	NR_027594	clade_463	N	N
Gordonia polyisoprenivorans	952	DQ385609	clade_463	N	N
Gordonia sp. KTR9	953	DQ068383	clade_463	N	N
Gordonia sputi	954	FJ536304	clade_463	N	N
Gordonia terrae	955	GQ848239	clade_463	N	N
Leptotrichia goodfellowii	1167	ADAD01000110	clade_465	N	N
Leptotrichia sp. oral clone IK040	1174	AY349387	clade_465	N	N
Leptotrichia sp. oral clone P2PB_51 P1	1175	AY207053	clade_465	N	N
Bacteroidales genomosp. P7 oral clone MB3_P19	264	DQ003623	clade_466	N	N
Butyricimonas virosa	454	AB443949	clade_466	N	N
Odoribacter laneus	1363	AB490805	clade_466	N	N
Odoribacter splanchnicus	1364	CP002544	clade_466	N	N
Capnocytophaga gingivalis	478	ACLQ01000011	clade_467	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Capnocytophaga granulosa	479	X97248	clade_467	N	N
Capnocytophaga sp. oral clone AH015	483	AY005074	clade_467	N	N
Capnocytophaga sp. oral strain S3	487	AY005073	clade_467	N	N
Capnocytophaga sp. oral taxon 338	488	AEXX01000050	clade_467	N	N
Capnocytophaga canimorsus	476	CP002113	clade_468	N	N
Capnocytophaga sp. oral clone ID062	485	AY349368	clade_468	N	N
Lactobacillus catenaformis	1075	M23729	clade_469	N	N
Lactobacillus vitulinus	1142	NR_041305	clade_469	N	N
Cetobacterium somerae	501	AJ438155	clade_470	N	N
Fusobacterium gonidiaformans	896	ACET01000043	clade_470	N	N
Fusobacterium mortiferum	897	ACDB02000034	clade_470	N	N
Fusobacterium necrogenes	899	X55408	clade_470	N	N
Fusobacterium necrophorum	900	AM905356	clade_470	N	N
Fusobacterium sp. 12_1B	905	AGWJ01000070	clade_470	N	N
Fusobacterium sp. 3_1_5R	911	ACDD01000078	clade_470	N	N
Fusobacterium sp. D12	918	ACDG02000036	clade_470	N	N
Fusobacterium ulcerans	921	ACDH01000090	clade_470	N	N
Fusobacterium varium	922	ACIE01000009	clade_470	N	N
Mycoplasma arthritidis	1312	NC_011025	clade_473	N	N
Mycoplasma faucium	1314	NR_024983	clade_473	N	N
Mycoplasma hominis	1318	AF443616	clade_473	N	N
Mycoplasma orale	1319	AY796060	clade_473	N	N
Mycoplasma salivarium	1324	M24661	clade_473	N	N
Mitsuokella jalaludinii	1247	NR_028840	clade_474	N	N
Mitsuokella multacida	1248	ABWK02000005	clade_474	N	N
Mitsuokella sp. oral taxon 521	1249	GU413658	clade_474	N	N
Mitsuokella sp. oral taxon G68	1250	GU432166	clade_474	N	N
Selenomonas genomosp. C1	1695	AY278627	clade_474	N	N
Selenomonas genomosp. P8 oral clone MB5_P06	1700	DQ003628	clade_474	N	N
Selenomonas ruminantium	1703	NR_075026	clade_474	N	N
Veillonellaceae bacterium oral taxon 131	1994	GU402916	clade_474	N	N
Alloscardovia omnicolens	139	NR_042583	clade_475	N	N
Alloscardovia sp. OB7196	140	AB425070	clade_475	N	N
Bifidobacterium urinalis	366	AJ278695	clade_475	N	N
Prevotella loescheii	1503	JN867231	clade_48	N	N
Prevotella sp. oral clone ASCG12	1530	DQ272511	clade_48	N	N
Prevotella sp. oral clone GU027	1540	AY349398	clade_48	N	N
Prevotella sp. oral taxon 472	1553	ACZS01000106	clade_48	N	N
Selenomonas dianae	1693	GQ422719	clade_480	N	N
Selenomonas flueggei	1694	AF287803	clade_480	N	N
Selenomonas genomosp. C2	1696	AY278628	clade_480	N	N
Selenomonas genomosp. P6 oral clone MB3_C41	1698	DQ003636	clade_480	N	N
Selenomonas genomosp. P7 oral clone MB5_C08	1699	DQ003627	clade_480	N	N
Selenomonas infelix	1701	AF287802	clade_480	N	N
Selenomonas noxia	1702	GU470909	clade_480	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Selenomonas sp. oral clone FT050	1705	AY349403	clade_480	N	N
Selenomonas sp. oral clone GI064	1706	AY349404	clade_480	N	N
Selenomonas sp. oral clone GT010	1707	AY349405	clade_480	N	N
Selenomonas sp. oral clone HU051	1708	AY349406	clade_480	N	N
Selenomonas sp. oral clone IK004	1709	AY349407	clade_480	N	N
Selenomonas sp. oral clone JI021	1711	AY349409	clade_480	N	N
Selenomonas sp. oral clone JS031	1712	AY349410	clade_480	N	N
Selenomonas sp. oral clone OH4A	1713	AY947498	clade_480	N	N
Selenomonas sp. oral clone P2PA_80 P4	1714	AY207052	clade_480	N	N
Selenomonas sp. oral taxon 149	1716	AEEJ01000007	clade_480	N	N
Veillonellaceae bacterium oral taxon 155	1995	GU470897	clade_480	N	N
Agrococcus jenensis	117	NR_026275	clade_484	N	N
Microbacterium gubbeenense	1232	NR_025098	clade_484	N	N
Pseudoclavibacter sp. Timone	1590	FJ375951	clade_484	N	N
Tropheryma whipplei	1961	BX251412	clade_484	N	N
Zimmermannella bifida	2031	AB012592	clade_484	N	N
Legionella hackeliae	1151	M36028	clade_486	N	OP
Legionella longbeachae	1152	M36029	clade_486	N	OP
Legionella sp. D3923	1154	JN380999	clade_486	N	OP
Legionella sp. D4088	1155	JN381012	clade_486	N	OP
Legionella sp. H63	1156	JF831047	clade_486	N	OP
Legionella sp. NML 93L054	1157	GU062706	clade_486	N	OP
Legionella steelei	1158	HQ398202	clade_486	N	OP
Tatlockia micdadei	1915	M36032	clade_486	N	N
Helicobacter pullorum	996	ABQU01000097	clade_489	N	N
Acetobacteraceae bacterium AT_5844	16	AGEZ01000040	clade_490	N	N
Roseomonas cervicalis	1643	ADVL01000363	clade_490	N	N
Roseomonas mucosa	1644	NR_028857	clade_490	N	N
Roseomonas sp. NML94_0193	1645	AF533357	clade_490	N	N
Roseomonas sp. NML97_0121	1646	AF533359	clade_490	N	N
Roseomonas sp. NML98_0009	1647	AF533358	clade_490	N	N
Roseomonas sp. NML98_0157	1648	AF533360	clade_490	N	N
Rickettsia akari	1627	CP000847	clade_492	N	OP
Rickettsia conorii	1628	AE008647	clade_492	N	OP
Rickettsia prowazekii	1629	M21789	clade_492	N	Category -B
Rickettsia rickettsii	1630	NC_010263	clade_492	N	OP
Rickettsia slovaca	1631	L36224	clade_492	N	OP
Rickettsia typhi	1632	AE017197	clade_492	N	OP
Anaeroglobus geminatus	160	AGCJ01000054	clade_493	N	N
Megasphaera genomosp. C1	1201	AY278622	clade_493	N	N
Megasphaera micronuciformis	1203	AECS01000020	clade_493	N	N
Clostridiales genomosp.	540	CP001850	clade_495	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
BVAB3					
Tsukamurella paurometabola	1963	X80628	clade_496	N	N
Tsukamurella tyrosinosolvens	1964	AB478958	clade_496	N	N
Abiotrophia para_adiacens	2	AB022027	clade_497	N	N
Carnobacterium divergens	492	NR_044706	clade_497	N	N
Carnobacterium maltaromaticum	493	NC_019425	clade_497	N	N
Enterococcus avium	800	AF133535	clade_497	N	N
Enterococcus caccae	801	AY943820	clade_497	N	N
Enterococcus casseliflavus	802	AEWT01000047	clade_497	N	N
Enterococcus durans	803	AJ276354	clade_497	N	N
Enterococcus faecalis	804	AE016830	clade_497	N	N
Enterococcus faecium	805	AM157434	clade_497	N	N
Enterococcus gallinarum	806	AB269767	clade_497	N	N
Enterococcus gilvus	807	AY033814	clade_497	N	N
Enterococcus hawaiiensis	808	AY321377	clade_497	N	N
Enterococcus hirae	809	AF061011	clade_497	N	N
Enterococcus italicus	810	AEPV01000109	clade_497	N	N
Enterococcus mundtii	811	NR_024906	clade_497	N	N
Enterococcus raffinosus	812	FN600541	clade_497	N	N
Enterococcus sp. BV2CASA2	813	JN809766	clade_497	N	N
Enterococcus sp. CCRI_16620	814	GU457263	clade_497	N	N
Enterococcus sp. F95	815	FJ463817	clade_497	N	N
Enterococcus sp. RfL6	816	AJ133478	clade_497	N	N
Enterococcus thailandicus	817	AY321376	clade_497	N	N
Fusobacterium canifelinum	893	AY162222	clade_497	N	N
Fusobacterium genomosp. C1	894	AY278616	clade_497	N	N
Fusobacterium genomosp. C2	895	AY278617	clade_497	N	N
Fusobacterium periodonticum	902	ACJY01000002	clade_497	N	N
Fusobacterium sp. 1_1_41FAA	906	ADGG01000053	clade_497	N	N
Fusobacterium sp. 11_3_2	904	ACUO01000052	clade_497	N	N
Fusobacterium sp. 2_1_31	907	ACDC02000018	clade_497	N	N
Fusobacterium sp. 3_1_27	908	ADGF01000045	clade_497	N	N
Fusobacterium sp. 3_1_33	909	ACQE01000178	clade_497	N	N
Fusobacterium sp. 3_1_36A2	910	ACPU01000044	clade_497	N	N
Fusobacterium sp. AC18	912	HQ616357	clade_497	N	N
Fusobacterium sp. ACB2	913	HQ616358	clade_497	N	N
Fusobacterium sp. AS2	914	HQ616361	clade_497	N	N
Fusobacterium sp. CM1	915	HQ616371	clade_497	N	N
Fusobacterium sp. CM21	916	HQ616375	clade_497	N	N
Fusobacterium sp. CM22	917	HQ616376	clade_497	N	N
Fusobacterium sp. oral clone ASCF06	919	AY923141	clade_497	N	N
Fusobacterium sp. oral clone ASCF11	920	AY953256	clade_497	N	N
Granulicatella adiacens	959	ACKZ01000002	clade_497	N	N
Granulicatella elegans	960	AB252689	clade_497	N	N
Granulicatella paradiacens	961	AY879298	clade_497	N	N
Granulicatella sp. oral clone ASC02	963	AY923126	clade_497	N	N
Granulicatella sp. oral clone ASCA05	964	DQ341469	clade_497	N	N
Granulicatella sp. oral clone ASCB09	965	AY953251	clade_497	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Granulicatella sp. oral clone ASCG05	966	AY923146	clade_497	N	N
Tetragenococcus halophilus	1918	NR_075020	clade_497	N	N
Tetragenococcus koreensis	1919	NR_043113	clade_497	N	N
Vagococcus fluvialis	1973	NR_026489	clade_497	N	N
Chryseobacterium anthropi	514	AM982793	clade_498	N	N
Chryseobacterium gleum	515	ACKQ02000003	clade_498	N	N
Chryseobacterium hominis	516	NR_042517	clade_498	N	N
Treponema refringens	1936	AF426101	clade_499	N	OP
Treponema sp. oral clone JU031	1941	AY349416	clade_499	N	N
Treponema sp. oral taxon 239	1948	GU408738	clade_499	N	N
Treponema sp. oral taxon 271	1955	GU408871	clade_499	N	N
Alistipes finegoldii	129	NR_043064	clade_500	N	N
Alistipes onderdonkii	131	NR_043318	clade_500	N	N
Alistipes putredinis	132	ABFK02000017	clade_500	N	N
Alistipes shahii	133	FP929032	clade_500	N	N
Alistipes sp. HGB5	134	AENZ01000082	clade_500	N	N
Alistipes sp. JC50	135	JF824804	clade_500	N	N
Alistipes sp. RMA 9912	136	GQ140629	clade_500	N	N
Mycoplasma agalactiae	1310	AF010477	clade_501	N	N
Mycoplasma bovoculi	1313	NR_025987	clade_501	N	N
Mycoplasma fermentans	1315	CP002458	clade_501	N	N
Mycoplasma flocculare	1316	X62699	clade_501	N	N
Mycoplasma ovipneumoniae	1320	NR_025989	clade_501	N	N
Arcobacter butzleri	176	AEPT01000071	clade_502	N	N
Arcobacter cryaerophilus	177	NR_025905	clade_502	N	N
Campylobacter curvus	461	NC_009715	clade_502	N	OP
Campylobacter rectus	467	ACFU01000050	clade_502	N	OP
Campylobacter showae	468	ACVQ01000030	clade_502	N	OP
Campylobacter sp. FOBRC14	469	HQ616379	clade_502	N	OP
Campylobacter sp. FOBRC15	470	HQ616380	clade_502	N	OP
Campylobacter sp. oral clone BB120	471	AY005038	clade_502	N	OP
Campylobacter sputorum	472	NR_044839	clade_502	N	OP
Bacteroides ureolyticus	330	GQ167666	clade_504	N	N
Campylobacter gracilis	463	ACYG01000026	clade_504	N	OP
Campylobacter hominis	464	NC_009714	clade_504	N	OP
Dialister invisus	762	ACIM02000001	clade_506	N	N
Dialister micraerophilus	763	AFBB01000028	clade_506	N	N
Dialister microaerophilus	764	AENT01000008	clade_506	N	N
Dialister propionicifaciens	766	NR_043231	clade_506	N	N
Dialister succinatiphilus	768	AB370249	clade_506	N	N
Megasphaera elsdenii	1200	AY038996	clade_506	N	N
Megasphaera genomosp. type_1	1202	ADGP01000010	clade_506	N	N
Megasphaera sp. BLPYG_07	1204	HM990964	clade_506	N	N
Megasphaera sp. UPII 199_6	1205	AFIJ01000040	clade_506	N	N
Chromobacterium violaceum	513	NC_005085	clade_507	N	N
Laribacter hongkongensis	1148	CP001154	clade_507	N	N
Methylophilus sp. ECd5	1229	AY436794	clade_507	N	N
Finegoldia magna	883	ACHM02000001	clade_509	N	N
Parvimonas micra	1431	AB729072	clade_509	N	N
Parvimonas sp. oral taxon 110	1432	AFII01000002	clade_509	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Peptostreptococcus micros	1456	AM176538	clade_509	N	N
Peptostreptococcus sp. oral clone FJ023	1460	AY349390	clade_509	N	N
Peptostreptococcus sp. P4P_31 P3	1458	AY207059	clade_509	N	N
Helicobacter pylori	997	CP000012	clade_510	N	OP
Anaplasma marginale	165	ABOR01000019	clade_511	N	N
Anaplasma phagocytophilum	166	NC_007797	clade_511	N	N
Ehrlichia chaffeensis	783	AAIF01000035	clade_511	N	OP
Neorickettsia risticii	1349	CP001431	clade_511	N	N
Neorickettsia sennetsu	1350	NC_007798	clade_511	N	N
Pseudoramibacter alactolyticus	1606	AB036759	clade_512	N	N
Veillonella montpellierensis	1977	AF473836	clade_513	N	N
Veillonella sp. oral clone ASCA08	1988	AY923118	clade_513	N	N
Veillonella sp. oral clone ASCB03	1989	AY923122	clade_513	N	N
Inquilinus limosus	1012	NR_029046	clade_514	N	N
Sphingomonas sp. oral clone FZ016	1746	AY349412	clade_514	N	N
Anaerococcus lactolyticus	145	ABYO01000217	clade_515	N	N
Anaerococcus prevotii	147	CP001708	clade_515	N	N
Anaerococcus sp. gpac104	152	AM176528	clade_515	N	N
Anaerococcus sp. gpac126	153	AM176530	clade_515	N	N
Anaerococcus sp. gpac155	154	AM176536	clade_515	N	N
Anaerococcus sp. gpac199	155	AM176539	clade_515	N	N
Anaerococcus tetradius	157	ACGC01000107	clade_515	N	N
Bacteroides coagulans	271	AB547639	clade_515	N	N
Clostridiales bacterium 9403326	534	HM587324	clade_515	N	N
Clostridiales bacterium ph2	539	JN837487	clade_515	N	N
Peptostreptococcus sp. 9succ1	1457	X90471	clade_515	N	N
Peptostreptococcus sp. oral clone AP24	1459	AB175072	clade_515	N	N
Tissierella praeacuta	1924	NR_044860	clade_515	N	N
Helicobacter canadensis	994	ABQS01000108	clade_518	N	N
Peptostreptococcus anaerobius	1455	AY326462	clade_520	N	N
Peptostreptococcus stomatis	1461	ADGQ01000048	clade_520	N	N
Bilophila wadsworthia	367	ADCP01000166	clade_521	N	N
Desulfovibrio vulgaris	761	NR_074897	clade_521	N	N
Actinomyces nasicola	64	AJ508455	clade_523	N	N
Cellulosimicrobium funkei	500	AY501364	clade_523	N	N
Lactococcus raffinolactis	1146	NR_044359	clade_524	N	N
Bacteroidales genomosp. P1	258	AY341819	clade_529	N	N
Bacteroidales genomosp. P2 oral clone MB1_G13	259	DQ003613	clade_529	N	N
Bacteroidales genomosp. P3 oral clone MB1_G34	260	DQ003615	clade_529	N	N
Bacteroidales genomosp. P4 oral clone MB2_G17	261	DQ003617	clade_529	N	N
Bacteroidales genomosp. P5 oral clone MB2_P04	262	DQ003619	clade_529	N	N
Bacteroidales genomosp. P6 oral clone MB3_C19	263	DQ003634	clade_529	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Bacteroidales genomosp. P8 oral clone MB4_G15	265	DQ003626	clade_529	N	N
Bacteroidetes bacterium oral taxon D27	333	HM099638	clade_530	N	N
Bacteroidetes bacterium oral taxon F31	334	HM099643	clade_530	N	N
Bacteroidetes bacterium oral taxon F44	335	HM099649	clade_530	N	N
Flavobacterium sp. NF2_1	885	FJ195988	clade_530	N	N
Myroides odoratimimus	1326	NR_042354	clade_530	N	N
Myroides sp. MY15	1327	GU253339	clade_530	N	N
Chlamydiales bacterium NS16	507	JN606076	clade_531	N	N
Chlamydophila pecorum	508	D88317	clade_531	N	OP
Parachlamydia sp. UWE25	1423	BX908798	clade_531	N	N
Fusobacterium russii	903	NR_044687	clade_532	N	N
Streptobacillus moniliformis	1784	NR_027615	clade_532	N	N
Eubacteriaceae bacterium P4P_50 P4	833	AY207060	clade_533	N	N
Abiotrophia defectiva	1	ACIN02000016	clade_534	N	N
Abiotrophia sp. oral clone P4PA_155 P1	3	AY207063	clade_534	N	N
Catonella genomosp. P1 oral clone MB5_P12	496	DQ003629	clade_534	N	N
Catonella morbi	497	ACIL02000016	clade_534	N	N
Catonella sp. oral clone FL037	498	AY349369	clade_534	N	N
Eremococcus coleocola	818	AENN01000008	clade_534	N	N
Facklamia hominis	879	Y10772	clade_534	N	N
Granulicatella sp. M658_99_3	962	AJ271861	clade_534	N	N
Campylobacter coli	459	AAFL01000004	clade_535	N	OP
Campylobacter concisus	460	CP000792	clade_535	N	OP
Campylobacter fetus	462	ACLG01001177	clade_535	N	OP
Campylobacter jejuni	465	AL139074	clade_535	N	Category -B
Campylobacter upsaliensis	473	AEPU01000040	clade_535	N	OP
Atopobium minutum	183	HM007583	clade_539	N	N
Atopobium parvulum	184	CP001721	clade_539	N	N
Atopobium rimae	185	ACFE01000007	clade_539	N	N
Atopobium sp. BS2	186	HQ616367	clade_539	N	N
Atopobium sp. F0209	187	EU592966	clade_539	N	N
Atopobium sp. ICM42b10	188	HQ616393	clade_539	N	N
Atopobium sp. ICM57	189	HQ616400	clade_539	N	N
Atopobium vaginae	190	AEDQ01000024	clade_539	N	N
Coriobacteriaceae bacterium BV3Ac1	677	JN809768	clade_539	N	N
Actinomyces naeslundii	63	X81062	clade_54	N	N
Actinomyces oricola	67	NR_025559	clade_54	N	N
Actinomyces oris	69	BABV01000070	clade_54	N	N
Actinomyces sp. 7400942	70	EU484334	clade_54	N	N
Actinomyces sp. ChDC B197	72	AF543275	clade_54	N	N
Actinomyces sp. GEJ15	73	GU561313	clade_54	N	N
Actinomyces sp. M2231_94_1	79	AJ234063	clade_54	N	N
Actinomyces sp. oral clone GU067	83	AY349362	clade_54	N	N
Actinomyces sp. oral clone IO077	85	AY349364	clade_54	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Actinomyces sp. oral clone IP073	86	AY349365	clade_54	N	N
Actinomyces sp. oral clone JA063	88	AY349367	clade_54	N	N
Actinomyces sp. oral taxon 170	89	AFBL01000010	clade_54	N	N
Actinomyces sp. oral taxon 171	90	AECW01000034	clade_54	N	N
Actinomyces urogenitalis	95	ACFH01000038	clade_54	N	N
Actinomyces viscosus	96	ACRE01000096	clade_54	N	N
Orientia tsutsugamushi	1383	AP008981	clade_541	N	OP
Megamonas funiformis	1198	AB300988	clade_542	N	N
Megamonas hypermegale	1199	AJ420107	clade_542	N	N
Aeromicrobium marinum	102	NR_025681	clade_544	N	N
Aeromicrobium sp. JC14	103	JF824798	clade_544	N	N
Luteococcus sanguinis	1190	NR_025507	clade_544	N	N
Propionibacteriaceae bacterium NML 02_0265	1568	EF599122	clade_544	N	N
Rhodococcus corynebacterioides	1622	X80615	clade_546	N	N
Rhodococcus erythropolis	1624	ACNO01000030	clade_546	N	N
Rhodococcus fascians	1625	NR_037021	clade_546	N	N
Segniliparus rotundus	1690	CP001958	clade_546	N	N
Segniliparus rugosus	1691	ACZI01000025	clade_546	N	N
Exiguobacterium acetylicum	878	FJ970034	clade_547	N	N
Macrococcus caseolyticus	1194	NR_074941	clade_547	N	N
Streptomyces sp. 1 AIP_2009	1890	FJ176782	clade_548	N	N
Streptomyces sp. SD 524	1892	EU544234	clade_548	N	N
Streptomyces sp. SD 528	1893	EU544233	clade_548	N	N
Streptomyces thermoviolaceus	1895	NR_027616	clade_548	N	N
Borrelia afzelii	388	ABCU01000001	clade_549	N	OP
Borrelia crocidurae	390	DQ057990	clade_549	N	OP
Borrelia duttonii	391	NC_011229	clade_549	N	OP
Borrelia hermsii	393	AY597657	clade_549	N	OP
Borrelia hispanica	394	DQ057988	clade_549	N	OP
Borrelia persica	395	HM161645	clade_549	N	OP
Borrelia recurrentis	396	AF107367	clade_549	N	OP
Borrelia spielmanii	398	ABKB01000002	clade_549	N	OP
Borrelia turicatae	399	NC_008710	clade_549	N	OP
Borrelia valaisiana	400	ABCY01000002	clade_549	N	OP
Providencia alcalifaciens	1586	ABXW01000071	clade_55	N	N
Providencia rettgeri	1587	AM040492	clade_55	N	N
Providencia rustigianii	1588	AM040489	clade_55	N	N
Providencia stuartii	1589	AF008581	clade_55	N	N
Treponema pallidum	1932	CP001752	clade_550	N	OP
Treponema phagedenis	1934	AEFH01000172	clade_550	N	N
Treponema sp. clone DDKL_4	1939	Y08894	clade_550	N	N
Acholeplasma laidlawii	17	NR_074448	clade_551	N	N
Mycoplasma putrefaciens	1323	U26055	clade_551	N	N
Mycoplasmataceae genomosp. P1 oral clone MB1_G23	1325	DQ003614	clade_551	N	N
Spiroplasma insolitum	1750	NR_025705	clade_551	N	N
Collinsella intestinalis	660	ABXH02000037	clade_553	N	N
Collinsella stercoris	661	ABXJ01000150	clade_553	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Collinsella tanakaei	662	AB490807	clade_553	N	N
Caminicella sporogenes	458	NR_025485	clade_554	N	N
Acidaminococcus fermentans	21	CP001859	clade_556	N	N
Acidaminococcus intestini	22	CP003058	clade_556	N	N
Acidaminococcus sp. D21	23	ACGB01000071	clade_556	N	N
Phascolarctobacterium faecium	1462	NR_026111	clade_556	N	N
Phascolarctobacterium sp. YIT 12068	1463	AB490812	clade_556	N	N
Phascolarctobacterium succinatutens	1464	AB490811	clade_556	N	N
Acidithiobacillus ferrivorans	25	NR_074660	clade_557	N	N
Xanthomonadaceae bacterium NML 03_0222	2015	EU313791	clade_557	N	N
Catabacter hongkongensis	494	AB671763	clade_558	N	N
Christensenella minuta	512	AB490809	clade_558	N	N
Clostridiales bacterium oral clone P4PA_66 P1	536	AY207065	clade_558	N	N
Clostridiales bacterium oral taxon 093	537	GQ422712	clade_558	N	N
Heliobacterium modesticaldum	1000	NR_074517	clade_560	N	N
Alistipes indistinctus	130	AB490804	clade_561	N	N
Bacteroidales bacterium ph8	257	JN837494	clade_561	N	N
Candidatus Sulcia muelleri	475	CP002163	clade_561	N	N
Cytophaga xylanolytica	742	FR733683	clade_561	N	N
Flavobacteriaceae genomosp. C1	884	AY278614	clade_561	N	N
Gramella forsetii	958	NR_074707	clade_561	N	N
Sphingobacterium faecium	1740	NR_025537	clade_562	N	N
Sphingobacterium mizutaii	1741	JF708889	clade_562	N	N
Sphingobacterium multivorum	1742	NR_040953	clade_562	N	N
Sphingobacterium spiritivorum	1743	ACHA02000013	clade_562	N	N
Jonquetella anthropi	1017	ACOO02000004	clade_563	N	N
Pyramidobacter piscolens	1614	AY207056	clade_563	N	N
Synergistes genomosp. C1	1904	AY278615	clade_563	N	N
Synergistes sp. RMA 14551	1905	DQ412722	clade_563	N	N
Synergistetes bacterium ADV897	1906	GQ258968	clade_563	N	N
Candidatus Arthromitus sp. SFB_mouse_Yit	474	NR_074460	clade_564	N	N
Gracilibacter thermotolerans	957	NR_043559	clade_564	N	N
Brachyspira aalborgi	404	FM178386	clade_565	N	N
Brachyspira sp. HIS3	406	FM178387	clade_565	N	N
Brachyspira sp. HIS4	407	FM178388	clade_565	N	N
Brachyspira sp. HIS5	408	FM178389	clade_565	N	N
Adlercreutzia equolifaciens	97	AB306661	clade_566	N	N
Coriobacteriaceae bacterium JC110	678	CAEM01000062	clade_566	N	N
Coriobacteriaceae bacterium phI	679	JN837493	clade_566	N	N
Cryptobacterium curtum	740	GQ422741	clade_566	N	N
Eggerthella sinensis	779	AY321958	clade_566	N	N
Eggerthella sp. 1_3_56FAA	780	ACWN01000099	clade_566	N	N
Eggerthella sp. HGA1	781	AEXR01000021	clade_566	N	N
Eggerthella sp. YY7918	782	AP012211	clade_566	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Gordonibacter pamelaeae	680	AM886059	clade_566	N	N
Gordonibacter pamelaeae	956	FP929047	clade_566	N	N
Slackia equolifaciens	1732	EU377663	clade_566	N	N
Slackia exigua	1733	ACUX01000029	clade_566	N	N
Slackia faecicanis	1734	NR_042220	clade_566	N	N
Slackia heliotrinireducens	1735	NR_074439	clade_566	N	N
Slackia isoflavoniconvertens	1736	AB566418	clade_566	N	N
Slackia piriformis	1737	AB490806	clade_566	N	N
Slackia sp. NATTS	1738	AB505075	clade_566	N	N
Chlamydiales bacterium NS13	506	JN606075	clade_567	N	N
Victivallaceae bacterium NML 080035	2003	FJ394915	clade_567	N	N
Victivallis vadensis	2004	ABDE02000010	clade_567	N	N
Streptomyces griseus	1889	NR_074787	clade_573	N	N
Streptomyces sp. SD 511	1891	EU544231	clade_573	N	N
Streptomyces sp. SD 534	1894	EU544232	clade_573	N	N
Cloacibacillus evryensis	530	GQ258966	clade_575	N	N
Deferribacteres sp. oral clone JV001	743	AY349370	clade_575	N	N
Deferribacteres sp. oral clone JV023	745	AY349372	clade_575	N	N
Synergistetes bacterium LBVCM1157	1907	GQ258969	clade_575	N	N
Synergistetes bacterium oral taxon 362	1909	GU410752	clade_575	N	N
Synergistetes bacterium oral taxon D48	1910	GU430992	clade_575	N	N
Peptococcus sp. oral clone JM048	1439	AY349389	clade_576	N	N
Helicobacter winghamensis	999	ACDO01000013	clade_577	N	N
Wolinella succinogenes	2014	BX571657	clade_577	N	N
Olsenella genomosp. C1	1368	AY278623	clade_578	N	N
Olsenella profusa	1369	FN178466	clade_578	N	N
Olsenella sp. F0004	1370	EU592964	clade_578	N	N
Olsenella sp. oral taxon 809	1371	ACVE01000002	clade_578	N	N
Olsenella uli	1372	CP002106	clade_578	N	N
Nocardiopsis dassonvillei	1356	CP002041	clade_579	N	N
Peptococcus niger	1438	NR_029221	clade_580	N	N
Peptococcus sp. oral taxon 167	1440	GQ422727	clade_580	N	N
Akkermansia muciniphila	118	CP001071	clade_583	N	N
Opitutus terrae	1373	NR_074978	clade_583	N	N
Clostridiales bacterium oral taxon F32	538	HM099644	clade_584	N	N
Leptospira borgpetersenii	1161	NC_008508	clade_585	N	OP
Leptospira broomii	1162	NR_043200	clade_585	N	OP
Leptospira interrogans	1163	NC_005823	clade_585	N	OP
Methanobrevibacter gottschalkii	1213	NR_044789	clade_587	N	N
Methanobrevibacter millerae	1214	NR_042785	clade_587	N	N
Methanobrevibacter oralis	1216	HE654003	clade_587	N	N
Methanobrevibacter thaueri	1219	NR_044787	clade_587	N	N
Methanobrevibacter smithii	1218	ABYV02000002	clade_588	N	N
Deinococcus radiodurans	746	AE000513	clade_589	N	N
Deinococcus sp. R_43890	747	FR682752	clade_589	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Thermus aquaticus	1923	NR_025900	clade_589	N	N
Actinomyces sp. c109	81	AB167239	clade_590	N	N
Syntrophomonadaceae genomosp. P1	1912	AY341821	clade_590	N	N
Anaerobaculum hydrogeniformans	141	ACJX02000009	clade_591	N	N
Microcystis aeruginosa	1246	NC_010296	clade_592	N	N
Prochlorococcus marinus	1567	CP000551	clade_592	N	N
Methanobrevibacter acididurans	1208	NR_028779	clade_593	N	N
Methanobrevibacter arboriphilus	1209	NR_042783	clade_593	N	N
Methanobrevibacter curvatus	1210	NR_044796	clade_593	N	N
Methanobrevibacter cuticularis	1211	NR_044776	clade_593	N	N
Methanobrevibacter filiformis	1212	NR_044801	clade_593	N	N
Methanobrevibacter woesei	1220	NR_044788	clade_593	N	N
Roseiflexus castenholzii	1642	CP000804	clade_594	N	N
Methanobrevibacter olleyae	1215	NR_043024	clade_595	N	N
Methanobrevibacter ruminantium	1217	NR_042784	clade_595	N	N
Methanobrevibacter wolinii	1221	NR_044790	clade_595	N	N
Methanosphaera stadtmanae	1222	AY196684	clade_595	N	N
Chloroflexi genomosp. P1	511	AY331414	clade_596	N	N
Halorubrum lipolyticum	992	AB477978	clade_597	N	N
Methanobacterium formicicum	1207	NR_025028	clade_597	N	N
Acidilobus saccharovorans	24	AY350586	clade_598	N	N
Hyperthermus butylicus	1006	CP000493	clade_598	N	N
Ignicoccus islandicus	1011	X99562	clade_598	N	N
Metallosphaera sedula	1206	D26491	clade_598	N	N
Thermofilum pendens	1922	X14835	clade_598	N	N
Prevotella melaninogenica	1506	CP002122	clade_6	N	N
Prevotella sp. ICM1	1520	HQ616385	clade_6	N	N
Prevotella sp. oral clone FU048	1535	AY349393	clade_6	N	N
Prevotella sp. oral clone GI030	1537	AY349395	clade_6	N	N
Prevotella sp. SEQ116	1526	JN867246	clade_6	N	N
Streptococcus anginosus	1787	AECT01000011	clade_60	N	N
Streptococcus milleri	1812	X81023	clade_60	N	N
Streptococcus sp. 16362	1829	JN590019	clade_60	N	N
Streptococcus sp. 69130	1832	X78825	clade_60	N	N
Streptococcus sp. AC15	1833	HQ616356	clade_60	N	N
Streptococcus sp. CM7	1839	HQ616373	clade_60	N	N
Streptococcus sp. OBRC6	1847	HQ616352	clade_60	N	N
Burkholderia ambifaria	442	AAUZ01000009	clade_61	N	OP
Burkholderia cenocepacia	443	AAHI01000060	clade_61	N	OP
Burkholderia cepacia	444	NR_041719	clade_61	N	OP
Burkholderia mallei	445	CP000547	clade_61	N	Category -B
Burkholderia multivorans	446	NC_010086	clade_61	N	OP
Burkholderia oklahomensis	447	DQ108388	clade_61	N	OP
Burkholderia pseudomallei	448	CP001408	clade_61	N	Category -B
Burkholderia rhizoxinica	449	HQ005410	clade_61	N	OP
Burkholderia sp. 383	450	CP000151	clade_61	N	OP

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Burkholderia xenovorans	451	U86373	clade_61	N	OP
Prevotella buccae	1488	ACRB01000001	clade_62	N	N
Prevotella genomosp. P8 oral clone MB3_P13	1498	DQ003622	clade_62	N	N
Prevotella sp. oral clone FW035	1536	AY349394	clade_62	N	N
Prevotella bivia	1486	ADFO01000096	clade_63	N	N
Prevotella disiens	1494	AEDO01000026	clade_64	N	N
Bacteroides faecis	276	GQ496624	clade_65	N	N
Bacteroides fragilis	279	AP006841	clade_65	N	N
Bacteroides nordii	285	NR_043017	clade_65	N	N
Bacteroides salyersiae	292	EU136690	clade_65	N	N
Bacteroides sp. 1_1_14	293	ACRP01000155	clade_65	N	N
Bacteroides sp. 1_1_6	295	ACIC01000215	clade_65	N	N
Bacteroides sp. 2_1_56FAA	298	ACWI01000065	clade_65	N	N
Bacteroides sp. AR29	316	AF139525	clade_65	N	N
Bacteroides sp. B2	317	EU722733	clade_65	N	N
Bacteroides thetaiotaomicron	328	NR_074277	clade_65	N	N
Actinobacillus minor	45	ACFT01000025	clade_69	N	N
Haemophilus parasuis	978	GU226366	clade_69	N	N
Vibrio cholerae	1996	AAUR01000095	clade_71	N	Category -B
Vibrio fluvialis	1997	X76335	clade_71	N	Category -B
Vibrio furnissii	1998	CP002377	clade_71	N	Category -B
Vibrio mimicus	1999	ADAF01000001	clade_71	N	Category -B
Vibrio parahaemolyticus	2000	AAWQ01000116	clade_71	N	Category -B
Vibrio sp. RC341	2001	ACZT01000024	clade_71	N	Category -B
Vibrio vulnificus	2002	AE016796	clade_71	N	Category -B
Lactobacillus acidophilus	1067	CP000033	clade_72	N	N
Lactobacillus amylolyticus	1069	ADNY01000006	clade_72	N	N
Lactobacillus amylovorus	1070	CP002338	clade_72	N	N
Lactobacillus crispatus	1078	ACOG01000151	clade_72	N	N
Lactobacillus delbrueckii	1080	CP002341	clade_72	N	N
Lactobacillus helveticus	1088	ACLM01000202	clade_72	N	N
Lactobacillus kalixensis	1094	NR_029083	clade_72	N	N
Lactobacillus kefiranofaciens	1095	NR_042440	clade_72	N	N
Lactobacillus leichmannii	1098	JX986966	clade_72	N	N
Lactobacillus sp. 66c	1120	FR681900	clade_72	N	N
Lactobacillus sp. KLDS 1.0701	1122	EU600905	clade_72	N	N
Lactobacillus sp. KLDS 1.0712	1130	EU600916	clade_72	N	N
Lactobacillus sp. oral clone HT070	1136	AY349383	clade_72	N	N
Lactobacillus ultunensis	1139	ACGU01000081	clade_72	N	N
Prevotella intermedia	1502	AF414829	clade_81	N	N
Prevotella nigrescens	1511	AFPX01000069	clade_81	N	N
Prevotella pallens	1515	AFPY01000135	clade_81	N	N
Prevotella sp. oral taxon 310	1551	GQ422737	clade_81	N	N
Prevotella genomosp. C1	1495	AY278624	clade_82	N	N
Prevotella sp. CM38	1519	HQ610181	clade_82	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Prevotella sp. oral taxon 317	1552	ACQH01000158	clade_82	N	N
Prevotella sp. SG12	1527	GU561343	clade_82	N	N
Prevotella denticola	1493	CP002589	clade_83	N	N
Prevotella genomosp. P7 oral clone MB2_P31	1497	DQ003620	clade_83	N	N
Prevotella histicola	1501	JN867315	clade_83	N	N
Prevotella multiformis	1508	AEWX01000054	clade_83	N	N
Prevotella sp. JCM 6330	1522	AB547699	clade_83	N	N
Prevotella sp. oral clone GI059	1539	AY349397	clade_83	N	N
Prevotella sp. oral taxon 782	1555	GQ422745	clade_83	N	N
Prevotella sp. oral taxon G71	1559	GU432180	clade_83	N	N
Prevotella sp. SEQ065	1524	JN867234	clade_83	N	N
Prevotella veroralis	1565	ACVA01000027	clade_83	N	N
Bacteroides acidifaciens	266	NR_028607	clade_85	N	N
Bacteroides cellulosilyticus	269	ACCH01000108	clade_85	N	N
Bacteroides clarus	270	AFBM01000011	clade_85	N	N
Bacteroides eggerthii	275	ACWG01000065	clade_85	N	N
Bacteroides oleiciplenus	286	AB547644	clade_85	N	N
Bacteroides pyogenes	290	NR_041280	clade_85	N	N
Bacteroides sp. 315_5	300	FJ848547	clade_85	N	N
Bacteroides sp. 31SF15	301	AJ583248	clade_85	N	N
Bacteroides sp. 31SF18	302	AJ583249	clade_85	N	N
Bacteroides sp. 35AE31	303	AJ583244	clade_85	N	N
Bacteroides sp. 35AE37	304	AJ583245	clade_85	N	N
Bacteroides sp. 35BE34	305	AJ583246	clade_85	N	N
Bacteroides sp. 35BE35	306	AJ583247	clade_85	N	N
Bacteroides sp. WH2	324	AY895180	clade_85	N	N
Bacteroides sp. XB12B	325	AM230648	clade_85	N	N
Bacteroides stercoris	327	ABFZ02000022	clade_85	N	N
Actinobacillus pleuropneumoniae	46	NR_074857	clade_88	N	N
Actinobacillus ureae	48	AEVG01000167	clade_88	N	N
Haemophilus aegyptius	969	AFBC01000053	clade_88	N	N
Haemophilus ducreyi	970	AE017143	clade_88	N	OP
Haemophilus haemolyticus	973	JN175335	clade_88	N	N
Haemophilus influenzae	974	AADP01000001	clade_88	N	OP
Haemophilus parahaemolyticus	975	GU561425	clade_88	N	N
Haemophilus parainfluenzae	976	AEWU01000024	clade_88	N	N
Haemophilus paraphrophaemolyticus	977	M75076	clade_88	N	N
Haemophilus somnus	979	NC_008309	clade_88	N	N
Haemophilus sp. 70334	980	HQ680854	clade_88	N	N
Haemophilus sp. HK445	981	FJ685624	clade_88	N	N
Haemophilus sp. oral clone ASCA07	982	AY923117	clade_88	N	N
Haemophilus sp. oral clone ASCG06	983	AY923147	clade_88	N	N
Haemophilus sp. oral clone BJ021	984	AY005034	clade_88	N	N
Haemophilus sp. oral clone BJ095	985	AY005033	clade_88	N	N
Haemophilus sp. oral taxon 851	987	AGRK01000004	clade_88	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Haemophilus sputorum	988	AFNK01000005	clade_88	N	N
Histophilus somni	1003	AF549387	clade_88	N	N
Mannheimia haemolytica	1195	ACZX01000102	clade_88	N	N
Pasteurella bettyae	1433	L06088	clade_88	N	N
Moellerella wisconsensis	1253	JN175344	clade_89	N	N
Morganella morganii	1265	AJ301681	clade_89	N	N
Morganella sp. JB_T16	1266	AJ781005	clade_89	N	N
Proteus mirabilis	1582	ACLE01000013	clade_89	N	N
Proteus penneri	1583	ABVP01000020	clade_89	N	N
Proteus sp. HS7514	1584	DQ512963	clade_89	N	N
Proteus vulgaris	1585	AJ233425	clade_89	N	N
Oribacterium sinus	1374	ACKX01000142	clade_90	N	N
Oribacterium sp. ACB1	1375	HM120210	clade_90	N	N
Oribacterium sp. ACB7	1376	HM120211	clade_90	N	N
Oribacterium sp. CM12	1377	HQ616374	clade_90	N	N
Oribacterium sp. ICM51	1378	HQ616397	clade_90	N	N
Oribacterium sp. OBRC12	1379	HQ616355	clade_90	N	N
Oribacterium sp. oral taxon 108	1382	AFIH01000001	clade_90	N	N
Actinobacillus actinomycetemcomitans	44	AY362885	clade_92	N	N
Actinobacillus succinogenes	47	CP000746	clade_92	N	N
Aggregatibacter actinomycetemcomitans	112	CP001733	clade_92	N	N
Aggregatibacter aphrophilus	113	CP001607	clade_92	N	N
Aggregatibacter segnis	114	AEPS01000017	clade_92	N	N
Averyella dalhousiensis	194	DQ481464	clade_92	N	N
Bisgaard Taxon	368	AY683487	clade_92	N	N
Bisgaard Taxon	369	AY683489	clade_92	N	N
Bisgaard Taxon	370	AY683491	clade_92	N	N
Bisgaard Taxon	371	AY683492	clade_92	N	N
Buchnera aphidicola	440	NR_074609	clade_92	N	N
Cedecea davisae	499	AF493976	clade_92	N	N
Citrobacter amalonaticus	517	FR870441	clade_92	N	N
Citrobacter braakii	518	NR_028687	clade_92	N	N
Citrobacter farmeri	519	AF025371	clade_92	N	N
Citrobacter freundii	520	NR_028894	clade_92	N	N
Citrobacter gillenii	521	AF025367	clade_92	N	N
Citrobacter koseri	522	NC_009792	clade_92	N	N
Citrobacter murliniae	523	AF025369	clade_92	N	N
Citrobacter rodentium	524	NR_074903	clade_92	N	N
Citrobacter sedlakii	525	AF025364	clade_92	N	N
Citrobacter sp. 30_2	526	ACDJ01000053	clade_92	N	N
Citrobacter sp. KMSI_3	527	GQ468398	clade_92	N	N
Citrobacter werkmanii	528	AF025373	clade_92	N	N
Citrobacter youngae	529	ABWL02000011	clade_92	N	N
Cronobacter malonaticus	737	GU122174	clade_92	N	N
Cronobacter sakazakii	738	NC_009778	clade_92	N	N
Cronobacter turicensis	739	FN543093	clade_92	N	N
Enterobacter aerogenes	786	AJ251468	clade_92	N	N
Enterobacter asburiae	787	NR_024640	clade_92	N	N
Enterobacter cancerogenus	788	Z96078	clade_92	N	N
Enterobacter cloacae	789	FP929040	clade_92	N	N
Enterobacter cowanii	790	NR_025566	clade_92	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Enterobacter hormaechei	791	AFHR01000079	clade_92	N	N
Enterobacter sp. 247BMC	792	HQ122932	clade_92	N	N
Enterobacter sp. 638	793	NR_074777	clade_92	N	N
Enterobacter sp. JC163	794	JN657217	clade_92	N	N
Enterobacter sp. SCSS	795	HM007811	clade_92	N	N
Enterobacter sp. TSE38	796	HM156134	clade_92	N	N
Enterobacteriaceae bacterium 9_2_54FAA	797	ADCU01000033	clade_92	N	N
Enterobacteriaceae bacterium CF01Ent_1	798	AJ489826	clade_92	N	N
Enterobacteriaceae bacterium Smarlab 3302238	799	AY538694	clade_92	N	N
Escherichia albertii	824	ABKX01000012	clade_92	N	N
Escherichia coli	825	NC_008563	clade_92	N	Category -B
Escherichia fergusonii	826	CU928158	clade_92	N	N
Escherichia hermannii	827	HQ407266	clade_92	N	N
Escherichia sp. 1_1_43	828	ACID01000033	clade_92	N	N
Escherichia sp. 4_1_40B	829	ACDM02000056	clade_92	N	N
Escherichia sp. B4	830	EU722735	clade_92	N	N
Escherichia vulneris	831	NR_041927	clade_92	N	N
Ewingella americana	877	JN175329	clade_92	N	N
Haemophilus genomosp. P2 oral clone MB3_C24	971	DQ003621	clade_92	N	N
Haemophilus genomosp. P3 oral clone MB3_C38	972	DQ003635	clade_92	N	N
Haemophilus sp. oral clone JM053	986	AY349380	clade_92	N	N
Hafnia alvei	989	DQ412565	clade_92	N	N
Klebsiella oxytoca	1024	AY292871	clade_92	N	OP
Klebsiella pneumoniae	1025	CP000647	clade_92	N	OP
Klebsiella sp. AS10	1026	HQ616362	clade_92	N	N
Klebsiella sp. Co9935	1027	DQ068764	clade_92	N	N
Klebsiella sp. enrichment culture clone SRC_DSD25	1036	HM195210	clade_92	N	N
Klebsiella sp. OBRC7	1028	HQ616353	clade_92	N	N
Klebsiella sp. SP_BA	1029	FJ999767	clade_92	N	N
Klebsiella sp. SRC_DSD1	1033	GU797254	clade_92	N	N
Klebsiella sp. SRC_DSD11	1030	GU797263	clade_92	N	N
Klebsiella sp. SRC_DSD12	1031	GU797264	clade_92	N	N
Klebsiella sp. SRC_DSD15	1032	GU797267	clade_92	N	N
Klebsiella sp. SRC_DSD2	1034	GU797253	clade_92	N	N
Klebsiella sp. SRC_DSD6	1035	GU797258	clade_92	N	N
Klebsiella variicola	1037	CP001891	clade_92	N	N
Kluyvera ascorbata	1038	NR_028677	clade_92	N	N
Kluyvera cryocrescens	1039	NR_028803	clade_92	N	N
Leminorella grimontii	1159	AJ233421	clade_92	N	N
Leminorella richardii	1160	HF558368	clade_92	N	N
Pantoea agglomerans	1409	AY335552	clade_92	N	N
Pantoea ananatis	1410	CP001875	clade_92	N	N
Pantoea brenneri	1411	EU216735	clade_92	N	N
Pantoea citrea	1412	EF688008	clade_92	N	N
Pantoea conspicua	1413	EU216737	clade_92	N	N
Pantoea septica	1414	EU216734	clade_92	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Pasteurella dagmatis	1434	ACZR01000003	clade_92	N	N
Pasteurella multocida	1435	NC_002663	clade_92	N	N
Plesiomonas shigelloides	1469	X60418	clade_92	N	N
Raoultella ornithinolytica	1617	AB364958	clade_92	N	N
Raoultella planticola	1618	AF129443	clade_92	N	N
Raoultella terrigena	1619	NR_037085	clade_92	N	N
Salmonella bongori	1683	NR_041699	clade_92	N	Category -B
Salmonella enterica	1672	NC_011149	clade_92	N	Category -B
Salmonella enterica	1673	NC_011205	clade_92	N	Category -B
Salmonella enterica	1674	DQ344532	clade_92	N	Category -B
Salmonella enterica	1675	ABEH02000004	clade_92	N	Category -B
Salmonella enterica	1676	ABAK02000001	clade_92	N	Category -B
Salmonella enterica	1677	NC_011080	clade_92	N	Category -B
Salmonella enterica	1678	EU118094	clade_92	N	Category -B
Salmonella enterica	1679	NC_011094	clade_92	N	Category -B
Salmonella enterica	1680	AE014613	clade_92	N	Category -B
Salmonella enterica	1682	ABFH02000001	clade_92	N	Category -B
Salmonella enterica	1684	ABEM01000001	clade_92	N	Category -B
Salmonella enterica	1685	ABAM02000001	clade_92	N	Category -B
Salmonella typhimurium	1681	DQ344533	clade_92	N	Category -B
Salmonella typhimurium	1686	AF170176	clade_92	N	Category -B
Serratia fonticola	1718	NR_025339	clade_92	N	N
Serratia liquefaciens	1719	NR_042062	clade_92	N	N
Serratia marcescens	1720	GU826157	clade_92	N	N
Serratia odorifera	1721	ADBY01000001	clade_92	N	N
Serratia proteamaculans	1722	AAUN01000015	clade_92	N	N
Shigella boydii	1724	AAKA01000007	clade_92	N	Category -B
Shigella dysenteriae	1725	NC_007606	clade_92	N	Category -B
Shigella flexneri	1726	AE005674	clade_92	N	Category -B
Shigella sonnei	1727	NC_007384	clade_92	N	Category -B
Tatumella ptyseos	1916	NR_025342	clade_92	N	N
Trabulsiella guamensis	1925	AY373830	clade_92	N	N
Yersinia aldovae	2019	AJ871363	clade_92	N	OP
Yersinia aleksiciae	2020	AJ627597	clade_92	N	OP
Yersinia bercovieri	2021	AF366377	clade_92	N	OP
Yersinia enterocolitica	2022	FR729477	clade_92	N	Category -B

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Yersinia frederiksenii	2023	AF366379	clade_92	N	OP
Yersinia intermedia	2024	AF366380	clade_92	N	OP
Yersinia kristensenii	2025	ACCA01000078	clade_92	N	OP
Yersinia mollaretii	2026	NR_027546	clade_92	N	OP
Yersinia pestis	2027	AE013632	clade_92	N	Category -A
Yersinia pseudotuberculosis	2028	NC_009708	clade_92	N	OP
Yersinia rohdei	2029	ACCD01000071	clade_92	N	OP
Yokenella regensburgei	2030	AB273739	clade_92	N	N
Conchiformibius kuhniae	669	NR_041821	clade_94	N	N
Morococcus cerebrosus	1267	JN175352	clade_94	N	N
Neisseria bacilliformis	1328	AFAY01000058	clade_94	N	N
Neisseria cinerea	1329	ACDY01000037	clade_94	N	N
Neisseria flavescens	1331	ACQV01000025	clade_94	N	N
Neisseria gonorrhoeae	1333	CP002440	clade_94	N	OP
Neisseria lactamica	1334	ACEQ01000095	clade_94	N	N
Neisseria macacae	1335	AFQE01000146	clade_94	N	N
Neisseria meningitidis	1336	NC_003112	clade_94	N	OP
Neisseria mucosa	1337	ACDX01000110	clade_94	N	N
Neisseria pharyngis	1338	AJ239281	clade_94	N	N
Neisseria polysaccharea	1339	ADBE01000137	clade_94	N	N
Neisseria sicca	1340	ACKO02000016	clade_94	N	N
Neisseria sp. KEM232	1341	GQ203291	clade_94	N	N
Neisseria sp. oral clone AP132	1344	AY005027	clade_94	N	N
Neisseria sp. oral strain B33KA	1346	AY005028	clade_94	N	N
Neisseria sp. oral taxon 014	1347	ADEA01000039	clade_94	N	N
Neisseria sp. TM10_1	1343	DQ279352	clade_94	N	N
Neisseria subflava	1348	ACEO01000067	clade_94	N	N
Okadaella gastrococcus	1365	HQ699465	clade_98	N	N
Streptococcus agalactiae	1785	AAJO01000130	clade_98	N	N
Streptococcus alactolyticus	1786	NR_041781	clade_98	N	N
Streptococcus australis	1788	AEQR01000024	clade_98	N	N
Streptococcus bovis	1789	AEEL01000030	clade_98	N	N
Streptococcus canis	1790	AJ413203	clade_98	N	N
Streptococcus constellatus	1791	AY277942	clade_98	N	N
Streptococcus cristatus	1792	AEVC01000028	clade_98	N	N
Streptococcus dysgalactiae	1794	AP010935	clade_98	N	N
Streptococcus equi	1795	CP001129	clade_98	N	N
Streptococcus equinus	1796	AEVB01000043	clade_98	N	N
Streptococcus gallolyticus	1797	FR824043	clade_98	N	N
Streptococcus genomosp. C1	1798	AY278629	clade_98	N	N
Streptococcus genomosp. C2	1799	AY278630	clade_98	N	N
Streptococcus genomosp. C3	1800	AY278631	clade_98	N	N
Streptococcus genomosp. C4	1801	AY278632	clade_98	N	N
Streptococcus genomosp. C5	1802	AY278633	clade_98	N	N
Streptococcus genomosp. C6	1803	AY278634	clade_98	N	N
Streptococcus genomosp. C7	1804	AY278635	clade_98	N	N
Streptococcus genomosp. C8	1805	AY278609	clade_98	N	N
Streptococcus gordonii	1806	NC_009785	clade_98	N	N
Streptococcus infantarius	1807	ABJK02000017	clade_98	N	N
Streptococcus infantis	1808	AFNN01000024	clade_98	N	N
Streptococcus intermedius	1809	NR_028736	clade_98	N	N
Streptococcus lutetiensis	1810	NR_037096	clade_98	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
Streptococcus massiliensis	1811	AY769997	clade_98	N	N
Streptococcus mitis	1813	AM157420	clade_98	N	N
Streptococcus oligofermentans	1815	AY099095	clade_98	N	N
Streptococcus oralis	1816	ADMV01000001	clade_98	N	N
Streptococcus parasanguinis	1817	AEKM01000012	clade_98	N	N
Streptococcus pasteurianus	1818	AP012054	clade_98	N	N
Streptococcus peroris	1819	AEVF01000016	clade_98	N	N
Streptococcus pneumoniae	1820	AE008537	clade_98	N	N
Streptococcus porcinus	1821	EF121439	clade_98	N	N
Streptococcus pseudopneumoniae	1822	FJ827123	clade_98	N	N
Streptococcus pseudoporcinus	1823	AENS01000003	clade_98	N	N
Streptococcus pyogenes	1824	AE006496	clade_98	N	OP
Streptococcus ratti	1825	X58304	clade_98	N	N
Streptococcus sanguinis	1827	NR_074974	clade_98	N	N
Streptococcus sinensis	1828	AF432857	clade_98	N	N
Streptococcus sp. 2_1_36FAA	1831	ACOI01000028	clade_98	N	N
Streptococcus sp. 2285_97	1830	AJ131965	clade_98	N	N
Streptococcus sp. ACS2	1834	HQ616360	clade_98	N	N
Streptococcus sp. AS20	1835	HQ616366	clade_98	N	N
Streptococcus sp. BS35a	1836	HQ616369	clade_98	N	N
Streptococcus sp. C150	1837	ACRI01000045	clade_98	N	N
Streptococcus sp. CM6	1838	HQ616372	clade_98	N	N
Streptococcus sp. ICM10	1840	HQ616389	clade_98	N	N
Streptococcus sp. ICM12	1841	HQ616390	clade_98	N	N
Streptococcus sp. ICM2	1842	HQ616386	clade_98	N	N
Streptococcus sp. ICM4	1844	HQ616387	clade_98	N	N
Streptococcus sp. ICM45	1843	HQ616394	clade_98	N	N
Streptococcus sp. M143	1845	ACRK01000025	clade_98	N	N
Streptococcus sp. M334	1846	ACRL01000052	clade_98	N	N
Streptococcus sp. oral clone ASB02	1849	AY923121	clade_98	N	N
Streptococcus sp. oral clone ASCA03	1850	DQ272504	clade_98	N	N
Streptococcus sp. oral clone ASCA04	1851	AY923116	clade_98	N	N
Streptococcus sp. oral clone ASCA09	1852	AY923119	clade_98	N	N
Streptococcus sp. oral clone ASCB04	1853	AY923123	clade_98	N	N
Streptococcus sp. oral clone ASCB06	1854	AY923124	clade_98	N	N
Streptococcus sp. oral clone ASCC04	1855	AY923127	clade_98	N	N
Streptococcus sp. oral clone ASCC05	1856	AY923128	clade_98	N	N
Streptococcus sp. oral clone ASCC12	1857	DQ272507	clade_98	N	N
Streptococcus sp. oral clone ASCD01	1858	AY923129	clade_98	N	N
Streptococcus sp. oral clone ASCD09	1859	AY923130	clade_98	N	N
Streptococcus sp. oral clone ASCD10	1860	DQ272509	clade_98	N	N
Streptococcus sp. oral clone	1861	AY923134	clade_98	N	N

OTU	SEQ ID Number	Public DB Accession	Clade	Spore Former	Pathogen Status
ASCE03					
Streptococcus sp. oral clone ASCE04	1862	AY953253	clade_98	N	N
Streptococcus sp. oral clone ASCE05	1863	DQ272510	clade_98	N	N
Streptococcus sp. oral clone ASCE06	1864	AY923135	clade_98	N	N
Streptococcus sp. oral clone ASCE09	1865	AY923136	clade_98	N	N
Streptococcus sp. oral clone ASCE10	1866	AY923137	clade_98	N	N
Streptococcus sp. oral clone ASCE12	1867	AY923138	clade_98	N	N
Streptococcus sp. oral clone ASCF05	1868	AY923140	clade_98	N	N
Streptococcus sp. oral clone ASCF07	1869	AY953255	clade_98	N	N
Streptococcus sp. oral clone ASCF09	1870	AY923142	clade_98	N	N
Streptococcus sp. oral clone ASCG04	1871	AY923145	clade_98	N	N
Streptococcus sp. oral clone BW009	1872	AY005042	clade_98	N	N
Streptococcus sp. oral clone CH016	1873	AY005044	clade_98	N	N
Streptococcus sp. oral clone GK051	1874	AY349413	clade_98	N	N
Streptococcus sp. oral clone GM006	1875	AY349414	clade_98	N	N
Streptococcus sp. oral clone P2PA_41 P2	1876	AY207051	clade_98	N	N
Streptococcus sp. oral clone P4PA_30 P4	1877	AY207064	clade_98	N	N
Streptococcus sp. oral taxon 071	1878	AEEP01000019	clade_98	N	N
Streptococcus sp. oral taxon G59	1879	GU432132	clade_98	N	N
Streptococcus sp. oral taxon G62	1880	GU432146	clade_98	N	N
Streptococcus sp. oral taxon G63	1881	GU432150	clade_98	N	N
Streptococcus suis	1882	FM252032	clade_98	N	N
Streptococcus thermophilus	1883	CP000419	clade_98	N	N
Streptococcus salivarius	1826	AGBV01000001	clade_98	N	N
Streptococcus uberis	1884	HQ391900	clade_98	N	N
Streptococcus urinalis	1885	DQ303194	clade_98	N	N
Streptococcus vestibularis	1886	AEKO01000008	clade_98	N	N
Streptococcus viridans	1887	AF076036	clade_98	N	N
Synergistetes bacterium oral clone 03 5 D05	1908	GU227192	clade_98	N	N

Table X4. Spore-forming Bacterial Species

Alkaliphilus metalliredigens
Ammonifex degensii
Anaerofustis stercorihominis
Anaerostipes caccae
Anaerotruncus colihominis
Bacillus amyloliquefaciens
Bacillus anthracis
Bacillus cellulosilyticus
Bacillus cereus
Bacillus clausii
Bacillus coagulans
Bacillus cytotoxicus
Bacillus halodurans
Bacillus licheniformis
Bacillus pumilus
Bacillus subtilis
Bacillus thuringiensis
Bacillus weihenstephanensis
Blautia hansenii
Brevibacillus brevis
Bryantella formatexigens
Caldicellulosiruptor saccharolyticus
Candidatus Desulforudis audaxviato
Carboxydibrachium pacificum
Carboxydothermus hydrogenoformans
Clostridium acetobutylicum
Clostridium asparagiforme
Clostridium bartlettii
Clostridium beijerinckii
Clostridium bolteae
Clostridium botulinum A str. ATCC 19397
Clostridium botulinum B str. Eklund 17B
Clostridium butyricum pathogenic E4 str. BoNT BL5262
Clostridium Carboxidivorans
Clostridium cellulolyticum
Clostridium cellulovorans
Clostridium difficile
Clostridium hathewayi
Clostridium hylemonae
Clostridium kluyveri
Clostridium leptum
Clostridium methylpentosum
Clostridium nexile
Clostridium novyi NT
Clostridium papyrosolvens
Clostridium perfringens

Clostridium phytofermentans ISDg
Clostridium scindens
Clostridium sp. 7_2_43FAA
Clostridium sporogenes
Clostridium tetani
Clostridium thermocellum
Coprococcus comes
Desulfotomaculum reducens
Dorea longicatena
Eubacterium eligens
Eubacterium hallii
Eubacterium rectale
Eubacterium ventriosum
Faecalibacterium prausnitzii
Geobacillus kaustophilus
Geobacillus sp. G11MC16
Geobacillus thermodenitrificans
Heliobacterium modesticaldum
Lysinibacillus sphaericus
Oceanobacillus iheyensis
Paenibacillus sp. JDR-2
Pelotomaculum thermopropionicum
Roseburia intestinalis
Ruminococcus bromii
Ruminococcus gnavus
Ruminococcus obeum
Ruminococcus torques
Subdoligranulum variabile
Symbiobacterium thermophilum
Thermoanaerobacter italicus
Thermoanaerobacter tengcongensis
Thermoanaerobacterium thermosaccharolyticum
Thermosinus carboxydivorans

Table 2: Species isolated from ethanol treated spore preparation preparation before (left) and after (right) CsCl gradient step

Isolates	ethanol treated spore preparation	ethanol treated, gradient purified spore preparation
Bacillus coagulans	7	2
Blautia luti	1	1
Blautia sp	14	13
Blautia wexlerae	3	1
Ruminococcus obeum	4	2
Clostridiales sp	1	2
Clostridium aerotolerans	1	2
Clostridium disporicum	0	1
Clostridium sp	1	1
Clostridium symbiosum	0	1
Dorea longicatena	8	6
Eubacterium cellulosolvens	1	0
Eubacterium ventriosum	2	2
Gemmiger formicilis	0	1
Robinsoniella peoriensis	0	1
Roseburia hominis	3	6
Roseburia intestinalis	9	7
Ruminococcus sp	5	2
Syntrophococcus sucromutans	1	1
Turicibacter sanguinis	3	4
Clostridiales sp	7	9
Clostridium bartlettii	8	11
Clostridium irregulare	0	1
Clostridium sordellii	4	6

Lachnospiraceae sp	1	0

Table 3 Mortality and weight change in mice challenged with C. difficile with or without ethanol treated, spore product treatment.

Test article	mortality (n=10)	% weight change on Day 3
vehicle (negative control)	20%	-10.5%
Donor feces (positive control)	0	-0.1%
EtOH-treated feces 1x	0	2.3%
EtOH-treated feces 0.1x	0	2.4%
EtOH-treated feces 0.01x	0	-3%
heat-treated feces	0	0.1%

Table 4: 16S rDNA identified spore forming species from picked colony plates.

Treatment	Species	No. isolates
70deg 1h	Clostridium_celatum	4
70deg 1h	Clostridium_clostridioform	1
70deg 1h	Clostridium_hylemonae	1
70deg 1h	Clostridium_paraputrificum	3
70deg 1h	Clostridium_sp_D5	1
70deg 1h	Clostridium_symbiosum	1
80deg 1h	Clostridium_bartlettii	6
80deg 1h	Clostridium_butyricum	1
80deg 1h	Clostridium_paraputrificum	5
80deg 1h	Coprobacillus_sp_D7	1
80deg 1h	Eubacterium_sp_WAL_14571	1
80deg 1h	Ruminococcus_bromii	1
90deg 1h	Clostridium_butyricum	1
90deg 10min	Ruminococcus_bromii	1
90deg 10min	Anaerotruncus_colihominis	2

90deg 10min	Clostridium_bartlettii	1
100deg 10 min	Ruminococcus_bromii	1

Table 5: Spore-forming species identified in ethanol treated or heat treated samples and not identified in untreated samples

Species	isolated from untreated	isolated from EtOH-treated	isolated from heat-treated
Acetivibrio ethanolgignens		x	
Anaerofustis stercorihominis		x	
Bacillus anthracis		x	
Bacillus horti		x	
Bacillus licheniformis			x
Bacillus nealsonii		x	
Bacillus pumilus			x
Bacillus sp. BT1B_CT2		x	
Bacillus thuringiensis		x	
Bacteroides galacturonicus (phylogenetically in Clostridiales)		x	
Bacteroides pectinophilus (phylogenetically in Clostridiales)		x	
Blautia wexlerae		x	x
Brachyspira pilosicoli		x	
Brevibacillus parabrevis			x
Clostridium aldenense		x	
Clostridium beijerinckii		x	
Clostridium carnis		x	
Clostridium celatum		x	
Clostridium favososporum		x	
Clostridium hylemonae			x
Clostridium irregulare		x	

Clostridium methylpentosum			x
Clostridium sp. D5		x	x
Clostridium sp. L2-50		x	
Clostridium sp. MT4 E		x	
Clostridium sp. NML 04A032		x	
Clostridium sp. SS2/1		x	
Clostridium sp. YIT 12069			x
Clostridium stercorarium		x	
Clostridium xylanolyticum		x	
Coprococcus sp. ART55/1		x	
Deferribacteres sp. oral clone JV006		x	
Desulfitobacterium frappieri		x	
Eubacterium callanderi		x	
Eubacterium siraeum		x	
Exiguobacterium acetylicum		x	
Gemmiger formicilis		x	
Lachnospira multipara		x	
Lachnospira pectinoschiza		x	
Roseburia faecalis		x	
Ruminococcus albus		x	

Table 6. Donor A, 45 species in 374 EtOH-resistant colonies sequenced

OTU
Anaerostipes_sp_3_2_56FAA
Bacillus_anthracis
Bacillus_cereus
Bacillus_thuringiensis

Blautia_producta
Blautia_sp_M25
Clostridiales_sp_SSC_2
Clostridium_aldenense
Clostridium_bartlettii
Clostridium_bolteae
Clostridium_celatum
Clostridium_disporicum
Clostridium_ghonii
Clostridium_hathewayi
Clostridium_lactatifermentans
Clostridium_mayombei
Clostridium_orbiscindens
Clostridium_paraputrificum
Clostridium_perfringens
Clostridium_sordellii
Clostridium_stercorarium
Clostridium_straminisolvens
Clostridium_tertium
Coprobacillus_sp_D7
Coprococcus_catus
Deferribacteres_sp_oral_clone_JV006
Dorea_formicigenerans
Eubacterium_rectale
Eubacterium_siraeum
Eubacterium_sp_WAL_14571
Eubacterium_ventriosum
Flexistipes_sinusarabici

Fulvimonas_sp_NML_060897
Lachnospiraceae_bacterium_2_1_58FAA
Lachnospiraceae_bacterium_3_1_57FAA
Lachnospiraceae_bacterium_A4
Lachnospiraceae_bacterium_oral_taxon_F15
Moorella_thermoacetica
Roseburia_faecalis
Roseburia_hominis
Ruminococcus_albus
Ruminococcus_bromii
Ruminococcus_gnavus
Ruminococcus_sp_5_1_39BFAA
Ruminococcus_torques

Table 7 Donor B, 26 species in 195 EtOH-resistant colonies sequenced

OTU
Bacillus_horti
Blautia_wexlerae
Chlamydiales_bacterium_NS11
Clostridiales_sp_SSC_2
Clostridium_bartlettii
Clostridium_celatum
Clostridium_disporicum
Clostridium_ghonii
Clostridium_oroticum
Clostridium_paraputrificum
Clostridium_perfringens

Clostridium_sordellii
Clostridium_sp_L2_50
Clostridium_sp_MT4_E
Clostridium_straminisolvens
Coprococcus_sp_ART55_1
Eubacterium_callanderi
Eubacterium_rectale
Eubacterium_ruminantium
Gemmiger_formicilis
Lachnospira_pectinoschiza
Ruminococcus_albus
Ruminococcus_gnavus
Ruminococcus_obeum
Ruminococcus_sp_5_1_39BFAA
Ruminococcus_sp_K_1

Table 8 Donor C, 39 species in 416 EtOH-resistant colonies sequenced

OTU
Bacteroides_galacturonicus
Bacteroides_pectinophilus
Blautia_producta
Blautia_sp_M25
Blautia_wexlerae
Clostridiales_sp_SS3_4
Clostridiales_sp_SSC_2
Clostridium_bartlettii
Clostridium_citroniae

Clostridium_disporicum
Clostridium_indolis
Clostridium_orbiscindens
Clostridium_paraputrificum
Clostridium_sordellii
Clostridium_sp_NML_04A032
Clostridium_sp_SS2_1
Clostridium_straminisolvens
Clostridium_viride
Clostridium_xylanolyticum
Coprobacillus_sp_D7
Dorea_longicatena
Eubacterium_rectale
Eubacterium_ventriosum
Hydrogenoanaerobacterium_saccharovorans
Lachnospira_multipara
Lachnospira_pectinoschiza
Lachnospiraceae_bacterium_A4
Oscillibacter_sp_G2
Pseudoflavonifractor_capillosus
Roseburia_hominis
Roseburia_intestinalis
Ruminococcus_albus
Ruminococcus_lactaris
Ruminococcus_obeum
Ruminococcus_sp_5_1_39BFAA
Ruminococcus_sp_K_1

Ruminococcus_torques
Syntrophococcus_sucromutans

Table 9 Donor D, 12 species in 118 EtOH-resistant colonies sequenced

OTU
Blautia_luti
Blautia_wexlerae
Brachyspira_pilosicoli
Clostridium_paraputrificum
Collinsella_aerofaciens
Coprobacillus_sp_D7
Desulfitobacterium_frappieri
Eubacterium_rectale
Moorella_thermoacetica
Ruminococcus_gnavus
Ruminococcus_obeum
Ruminococcus_sp_K_1

Table 10 Donor E, 11 species in 118 EtOH-resistant colonies sequenced

OTU
Blautia_luti
Blautia_wexlerae
Brachyspira_pilosicoli
Clostridium_paraputrificum
Coprobacillus_sp_D7
Desulfitobacterium_frappieri

Eubacterium_rectale
Moorella_thermoacetica
Ruminococcus_gnavus
Ruminococcus_obeum
Ruminococcus_sp_K_1

Table 11 Donor F, 54 OTUs in 768 EtOH-resistant colonies sequenced

OTU
Anaerofustis_stercorihominis
Anaerostipes_sp_3_2_56FAA
Bacillus_nealsonii
Bacillus_sp_BT1B_CT2
Blautia_producta
Butyrivibrio_crossotus
Clostridiales_bacterium_SY8519
Clostridiales_sp_1_7_47
Clostridium_aldenense
Clostridium_bartlettii
Clostridium_bolteae
Clostridium_butyricum
Clostridium_citroniae
Clostridium_clostridioforme
Clostridium_disporicum
Clostridium_favososporum
Clostridium_glycolicum
Clostridium_hathewayi
Clostridium_indolis

Clostridium_leptum
Clostridium_mayombei
Clostridium_nexile
Clostridium_orbiscindens
Clostridium_sordellii
Clostridium_sp_7_2_43FAA
Clostridium_sp_D5
Clostridium_sp_M62_1
Clostridium_sp_NML_04A032
Clostridium_spiroforme
Clostridium_symbiosum
Clostridium_tertium
Coprobacillus_sp_29_1
Coprobacillus_sp_D7
Eubacterium_contortum
Eubacterium_desmolans
Eubacterium_ramulus
Exiguobacterium_acetylicum
Faecalibacterium_prausnitzii
Lachnospiraceae_bacterium_2_1_58FAA
Lachnospiraceae_bacterium_3_1_57FAA
Lachnospiraceae_bacterium_5_1_57FAA
Lachnospiraceae_bacterium_6_1_63FAA
Lachnospiraceae_bacterium_oral_taxon_F15
Marvinbryantia_formatexigens
Mycoplasma_amphoriforme
Oscillibacter_sp_G2
Pseudoflavonifractor_capillosus

Ruminococcus_gnavus
Ruminococcus_hansenii
Ruminococcus_obeum
Ruminococcus_sp_5_1_39BFAA
Ruminococcus_sp_ID8
Turicibacter_sanguinis

Table 12 Organisms grown from ethanol treated spore population on various media (See Example 5 for full media names and references).

Media	total number reads	unique OTUs	% unique OTUs
M2GSC	93	33	0.35
M-BHI	66	26	0.39
Sweet B	74	23	0.31
GAM fructose	44	18	0.41
M2 mannitol	39	17	0.44
M2 soluble starch	62	16	0.26
M2 lactate	43	14	0.33
GAM FOS/Inulin	52	14	0.27
EYA	29	13	0.45
Mucin	19	12	0.63
M2 lactose	32	12	0.38
BHIS az1/ge2	35	12	0.34
BHIS CInM az1/ge2	24	11	0.46
GAM mannitol	41	11	0.27
BBA	29	10	0.34
Sulfite-polymyxin milk	48	9	0.19
Noack-Blaut Eubacterium agar	12	4	0.33
	742 total analyzed		

Table 13: Species identified as germinable and sporulatable by colony picking

OTU	BBA	GAM + FOS/inulin	M2GSC	Sweet B + FOS/Inulin	Sweet GAM	Total
Blautia producta	1					1
Clostridium bartlettii	4		1			5
Clostridium bolteae	2			5	1	8
Clostridium botulinum				5		5
Clostridium butyricum	37	43	8	1	33	122
Clostridium celatum	4				1	5
Clostridium clostridioforme	1				1	2
Clostridium disporicum	26	26	22	33	50	157
Clostridium glycolicum	4	9	14			27
Clostridium mayombei	2	2				4
Clostridium paraputrificum	8	8	33	16	6	71
Clostridium sordellii			14			14
Clostridium sp. 7_2_43FAA		1				1
Clostridium symbiosum	3					3
Clostridium tertium		1		1		2
(blank)		2		31		33
Totals	92	92	92	92	92	460

Table 15: Results of the prophylaxis mouse model and dosing information for the germinable, and sporulatable fractions.

[0429] Clinical score is based on a combined phenotypic assessment of the mouse's health on a scale of 0-4 in several areas including appearance (0-2 pts based on normal, hunched, piloerection, or lethargic), and clinical signs (0-2 points based on normal, wet tail, cold-to-the-touch, or isolation from other animals).

Test Article	Dose	# Deaths by Day 6	Average Weight on Day 3 Relative to Day -1	Average Clinical Score on Day 3
Vehicle	NA	10	0.72	NA
Naive	NA	0	1.03	0
Donor B fecal suspension	0.2 mL of 10% suspension	1	0.91	0.11
Donor A Spore Prep germinable	8.99*10^7 Spore Equivalents/dose	0	1.02	0
Donor A Spore Prep Sporulatable	7.46*10^7 Spore Equivalents/dose	0	0.99	0

Table 16. Bacterial OTUs associated with engraftment and ecological augmentation and establishment of a more diverse microbial ecology in patients treated with an ethanol treated spore preparation.

OTU	Phylogenetic Clade	Spore Forming OTU	Dominant OTU in Augmented Ecology
Bacteroides sp. 2_1_22	clade38	N	Y
Streptococcus anginosus	clade60	N	
Prevotella intermedia	clade81	N	
Prevotella nigrescens	clade81	N	
Oribacterium sp. ACB7	clade90	N	
Prevotella salivae	clade104	N	
Bacteroides intestinalis	clade171	N	Y
Bifidobacterium dentium	clade172	N	
Alcaligenes faecalis	clade183	N	
Rothia dentocariosa	clade194	N	

Peptoniphilus lacrimalis	clade291	N	
Anaerococcus sp. gpac155	clade294	N	
Sutterella stercoricanis	clade302	N	Y
Bacteroides sp. 3_1_19	clade335	N	Y
Parabacteroides goldsteinii	clade335	N	
Bacteroides dorei	clade378	N	Y
Bacteroides massiliensis	clade378	N	
Lactobacillus iners	clade398	N	
Granulicatella adiacens	clade460	N	
Eggerthella sp. 1_3_56FAA	clade477	N	
Gordonibacter pamelaeae	clade477	N	
Finegoldia magna	clade509	N	
Actinomyces nasicola	clade523	N	
Streptobacillus moniliformis	clade532	N	
Oscillospira guilliermondii	clade540	N	
Orientia tsutsugamushi	clade541	N	
Christensenella minuta	clade558	N	
Clostridium oroticum	clade96	Y	
Clostridium sp. D5	clade96	Y	
Clostridium glycyrrhizinilyticum	clade147	Y	
Coprococcus comes	clade147	Y	
Ruminococcus lactaris	clade147	Y	
Ruminococcus torques	clade147	Y	Y
Clostridiales sp. SS3/4	clade246	Y	
Clostridium hylemonae	clade260	Y	
Clostridium aerotolerans	clade269	Y	
Clostridium asparagiforme	clade300	Y	Y
Clostridium sp. M62/1	clade300	Y	
Clostridium symbiosum	clade300	Y	
Lachnospiraceae genomosp. C1	clade300	Y	

Blautia sp. M25	clade304	Y	Y
Blautia stercoris	clade304	Y	
Ruminococcus hansenii	clade304	Y	
Ruminococcus obeum	clade304	Y	
Ruminococcus sp. 5_1_39BFAA	clade304	Y	
Bryantella formatexigens	clade309	Y	
Eubacterium cellulosolvens	clade309	Y	
Clostridium sp. HGF2	clade351	Y	
Clostridium bartlettii	clade354	Y	
Clostridium bifermentans	clade354	Y	
Clostridium glycolicum	clade354	Y	
Eubacterium tenue	clade354	Y	
Dorea formicigenerans	clade360	Y	
Dorea longicatena	clade360	Y	
Lachnospiraceae bacterium 2_1_46FAA	clade360	Y	
Lachnospiraceae bacterium 9_1_43BFAA	clade360	Y	Y
Ruminococcus gnavus	clade360	Y	
Clostridium hathewayi	clade362	Y	
Blautia hydrogenotrophica	clade368	Y	
Clostridiaceae bacterium END-2	clade368	Y	
Roseburia faecis	clade369	Y	
Roseburia hominis	clade370	Y	
Roseburia intestinalis	clade370	Y	
Eubacterium sp. WAL 14571	clade384	Y	
Erysipelotrichaceae bacterium 5_2_54FAA	clade385	Y	
Eubacterium biforme	clade385	Y	
Eubacterium dolichum	clade385	Y	
Coprococcus catus	clade393	Y	
Acetivibrio ethanolgignens	clade396	Y	
Anaerosporobacter mobilis	clade396	Y	

Bacteroides pectinophilus	clade396	Y	
Eubacterium hallii	clade396	Y	
Eubacterium xylanophilum	clade396	Y	
Anaerostipes caccae	clade408	Y	
Clostridiales bacterium 1_7_47FAA	clade408	Y	
Clostridium aldenense	clade408	Y	
Clostridium citroniae	clade408	Y	
Eubacterium hadrum	clade408	Y	Y
Acetanaerobacterium elongatum	clade439	Y	
Faecalibacterium prausnitzii	clade478	Y	
Gemmiger formicilis	clade478	Y	Y
Eubacterium ramulus	clade482	Y	
Lachnospiraceae bacterium 3_1_57FAA_CT1	clade483	Y	
Lachnospiraceae bacterium A4	clade483	Y	Y
Lachnospiraceae bacterium DJF VP30	clade483	Y	
Holdemania filiformis	clade485	Y	
Clostridium orbiscindens	clade494	Y	
Pseudoflavonifractor capillosus	clade494	Y	
Ruminococcaceae bacterium D16	clade494	Y	
Acetivibrio cellulolyticus	clade495	Y	
Eubacterium limosum	clade512	Y	
Anaerotruncus colihominis	clade516	Y	
Clostridium methylpentosum	clade516	Y	
Clostridium sp. YIT 12070	clade516	Y	
Hydrogenoanaerobacterium saccharovorans	clade516	Y	
Eubacterium ventriosum	clade519	Y	
Eubacterium eligens	clade522	Y	
Lachnospira pectinoschiza	clade522	Y	
Lactobacillus rogosae	clade522	Y	Y
Clostridium leptum	clade537	Y	

Eubacterium coprostanoligenes	clade537	Y	
Ruminococcus bromii	clade537	Y	
Clostridium viride	clade540	Y	
Butyrivibrio crossotus	clade543	Y	
Coprococcus eutactus	clade543	Y	
Eubacterium ruminantium	clade543	Y	
Eubacterium rectale	clade568	Y	Y
Roseburia inulinivorans	clade568	Y	
Butyricicoccus pullicaecorum	clade572	Y	
Eubacterium desmolans	clade572	Y	
Papillibacter cinnamivorans	clade572	Y	
Sporobacter termitidis	clade572	Y	
Clostridium lactatifermentans	clade576	Y	

Table 18. Reduction in the opportunistic pathogen or pathobiont load by ethanol treated spores.

	Pretreatment	**Day 5**	**Day 14**	**Day 25**
Klebsiella (% of total reads)	20.27%	1.32%	7.62%	0.00%
Fusobacterium (% total of reads)	19.14%	3.01%	0.01%	0.00%

Table 19. Changes in Enterobacteria as a function of treatment measured on Simmons Citrate Agar

Patient	**Organism**	**Pretreatment titer (cfu/g)**	**Day 25 titer (cfu/g)**
1	*Klebsiella pneumoniae*	$9x10^6$	$1x10^3$
1	*Klebsiella sp. Co9935*	$4x10^6$	$1x10^3$
1	*Escherichia coli*	$7x10^6$	$1x10^6$
2	*Klebsiella sp. Co9935*	$4x10^6$	$1x10^3$
4	Klebsiella pneumoniae	$3x10^8$	$<1x10^4$

4	*Klebsiella sp. Co9935*	$6x10^7$	$<1x10^4$
5	Klebsiella pneumoniae	$1x10^6$	$<1x10^4$

Table 20 Augmentation of Bacteroides as a function of bacterial composition treatment of Patient 1

Media	Bacteroides species	Pretreatment titer (cfu/g)	Day 25 titer (cfu/g)
BBE	*B. fragilis* group	$<2x10^4$	$3x10^8$
PFA	All Bacteroides	$<2x10^7$	$2x10^{10}$

Table 21. Bacteroides spp. post-treatment with the ethanol treated spore preparation based full-length 16S rDNA sequences of isolated strains

Species	% of total Bacteroides cfu (1.58E10 cfu/g)
Bacteroides sp. 4_1_36	63%
Bacteroides cellulosilyticus	14%
Bacteroides sp. 1_1_30	14%
Bacteroides uniformis	4.8%
Bacteroides ovatus	1.7%
Bacteroides dorei	0.91%
Bacteroides xylanisolvens	0.83%
Bacteroides sp. 3_1_19	0.23%

Table 22. Titers (in cfu/g) of imipenem-resistant *M. morganii*, *P. rettgeri* and *P. pennerii* from Patients B, D & E

Patient	Organism	Pretreatment titer	Day 28 titer *
Patient 2	*M. morganii*	$1x10^4$	$6x10^2$
Patient 2	*P. rettgeri*	$9x10^3$	$<5x10^1$
Patient 4	*M. morganii*	$2x10^4$	$<5x10^1$
Patient 4	*P. pennerii*	$2x10^4$	$<5x10^1$

Patient 5	*M. morganii*	$5x10^3$	$<5x10^1$

* Limit of detection based on plating 200 uL of 10% wt/vol suspension is $5x10^1$

Table YYY. Species identified as germinable by 16S colony pick approach

Clostridium_paraputrificum
Clostridium_disporicum
Clostridium_glycolicum
Clostridium_bartlettii
Clostridium_butyricum
Ruminococcus_bromii
Lachnospiraceae_bacterium_2_1_58FAA
Eubacterium_hadrum
Turicibacter_sanguinis
Lachnospiraceae_bacterium_oral_taxon_F15
Clostridium_perfringens
Clostridium_bifermentans
Roseburia_sp_11SE37
Clostridium_quinii
Ruminococcus_lactaris
Clostridium_botulinum
Clostridium_tyrobutyricum
Blautia_hansenii
Clostridium_kluyveri
Clostridium_sp_JC122
Clostridium_hylemonae
Clostridium_celatum
Clostridium_straminisolvens

Clostridium_orbiscindens
Roseburia_cecicola
Eubacterium_tenue
Clostridium_sp_7_2_43FAA
Lachnospiraceae_bacterium_4_1_37FAA
Eubacterium_rectale
Clostridium_viride
Ruminococcus_sp_K_1
Clostridium_symbiosum
Ruminococcus_torques
Clostridium_algidicarnis

Table ZZZ. Species identified as sporulatable by 16S NGS approach

Clostridium_paraputrificum
Clostridium_bartlettii
Lachnospiraceae_bacterium_2_1_58FAA
Clostridium_disporicum
Ruminococcus_bromii
Eubacterium_hadrum
Clostridium_butyricum
Roseburia_sp_11SE37
Clostridium_perfringens
Clostridium_glycolicum
Clostridium_hylemonae
Clostridium_orbiscindens
Ruminococcus_lactaris

Clostridium_symbiosum
Lachnospiraceae_bacterium_oral_taxon_F15
Blautia_hansenii
Turicibacter_sanguinis
Clostridium_straminisolvens
Clostridium_botulinum
Lachnospiraceae_bacterium_4_1_37FAA
Roseburia_cecicola
Ruminococcus_sp_K_1
Clostridium_bifermentans
Eubacterium_rectale
Clostridium_quinii
Clostridium_viride
Clostridium_kluyveri
Clostridium_tyrobutyricum
Oscillibacter_sp_G2
Clostridium_sp_JC122
Lachnospiraceae_bacterium_3_1_57FAA
Clostridium_aldenense
Ruminococcus_torques
Clostridium_sp_7_2_43FAA
Clostridium_celatum
Eubacterium_sp_WAL_14571
Eubacterium_tenue
Lachnospiraceae_bacterium_5_1_57FAA
Clostridium_clostridioforme
Clostridium_sp_YIT_12070

Blautia_sp_M25
Anaerostipes_caccae
Roseburia_inulinivorans
Clostridium_sp_D5
Clostridium_asparagiforme
Coprobacillus_sp_D7
Clostridium_sp_HGF2
Clostridium_citroniae
Clostridium_difficile
Oscillibacter_valericigenes
Clostridium_algidicarnis

2014212004 15 Aug 2018

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A therapeutic composition comprising a purified population of germination-competent bacterial spores when used in a method of treating or preventing or reducing the severity of at least one symptom of a dysbiosis associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis in a mammalian recipient subject, the germination-competent bacterial spores produced by the steps of a) providing a fecal material from a mammalian donor subject and b) subjecting the fecal material to a treatment step resulting in the purified population of germination-competent bacterial spores, wherein the therapeutic composition is given in an amount effective to i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least one type of bacteria present in the therapeutic composition but not present in the mammalian recipient subject prior to treatment.

2. A therapeutic composition comprising a purified population of germination-competent bacterial spores when used in a method of treating or preventing or reducing the severity of at least one symptom of a dysbiosis, associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis, wherein the therapeutic composition is given in an amount effective to i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least one type of bacteria present in the therapeutic composition but not present in a mammalian recipient subject prior to treatment.

3. A therapeutic composition comprising a purified population of germination-competent bacterial spores produced by the steps of a) providing a fecal material from a mammalian donor subject and b) subjecting the material to a treatment step resulting in the purified population of germination-competent bacterial spores, wherein the purified population is present in an amount effective to treat or prevent or reduce the severity of at least one symptom of a dysbiosis associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis in a mammalian recipient subject, and i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least

2014212004 15 Aug 2018

one type of bacteria present in the therapeutic composition but not present in the mammalian recipient subject prior to treatment.

4. A therapeutic composition comprising a purified population of germination-competent bacterial spores, in an amount effective to treat or prevent or reducing the severity of at least one symptom of a dysbiosis, associated with *Clostridium difficile*, including recurrent *C. difficile* infection, or ulcerative colitis, and i) augment at least one type of bacteria not present in the therapeutic composition in the mammalian recipient subject, and/or ii) engraft at least one type of bacteria present in the therapeutic composition but not present in the mammalian recipient subject prior to treatment.

5. The therapeutic composition when used according claim 1 or 2 or the therapeutic composition of claim 3 or 4, wherein the mammalian recipient subject is a human.

6. The therapeutic composition when used according to claim 1 or the therapeutic composition of claim 3, wherein the treatment step comprises removing at least a portion of an acellular component of the fecal material, thereby separating germination-competent bacterial spores from acellular material.

7. The therapeutic composition when used according to claim 1 or the therapeutic composition of claim 3, wherein the treatment step comprises depleting or inactivating a pathogenic material.

8. The therapeutic composition when used according to claim 1 or the therapeutic composition of claim 3, wherein the purified population is obtained from an ethanol treatment of the fecal material.

9. The therapeutic composition when used according to claim 1 or 2 or the therapeutic composition of claim 3 or 4, wherein the purified population is substantially depleted of a detectable level of a first pathogenic material or is substantially free or has a reduced level of a pathogenic activity of a first pathogenic material.

2014212004 15 Aug 2018

10. The therapeutic composition when used or the therapeutic composition of claim 9, wherein the first pathogenic material is selected from the group consisting of virus, bacterium, eukaryotic parasite, helminth, phage, mycoplasma, toxoplasma, and fungus.

11. The therapeutic composition when used according to claim 1 or the therapeutic composition of claim 3, wherein the purified population is substantially depleted of a residual habitat product.

12. The therapeutic composition when used or the therapeutic composition of claim 11, wherein the residual habitat product is selected from the group comprising acellular material, residual fiber, DNA, viral coat material, non-viable material and a eukaryotic cell from the mammalian donor subject.

13. The therapeutic composition when used according to claim 2 or the therapeutic composition of claim 4, wherein the purified population is purified from a fecal material obtained from a mammalian donor subject.

14. The therapeutic composition when used according to claim 1 or 13 or the therapeutic composition of claim 3 or 12, wherein the mammalian donor subject is validated as not having a detectable level of a pathogen or a pathobiont prior to production of the fecal material.

15. The therapeutic composition when used or the therapeutic composition of claim 11 or 12, wherein the residual habitat product is reduced at least 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 99%, or greater than 99% from the fecal material obtained from the mammalian donor subject.

16. The therapeutic composition when used according to claim 1 or claim 2 or the therapeutic composition of claim 3 or 4, wherein the composition comprises at least about $1x10^4$ spores per gram or dose or the composition comprises at least about $1x10^3$, $1x10^4$, $1x10^5$, $1x10^6$, $1x10^7$, $1x10^8$, $1x10^9$, $1x10^{10}$, or greater than $1x10^{10}$ spores per gram or dose.

2014212004 15 Aug 2018

17. The therapeutic composition when used according to claim 1 or 2 or the therapeutic composition of claim 3 or 4, wherein the composition comprises at least $1x10^4$ spores per gram and wherein the spores comprise at least two bacterial entities comprising nucleic acid sequences at least 97% identical to the nucleic acid sequences selected from the group consisting of SEQ ID NO. 1591, SEQ ID NO. 1657, SEQ ID NO. 381, SEQ ID NO. 572, SEQ ID NO. 601, SEQ ID NO. 652, SEQ ID NO. 659, SEQ ID NO. 673, SEQ ID NO. 674, SEQ ID NO. 774, SEQ ID NO. 839, SEQ ID NO. 845, SEQ ID NO. 847, SEQ ID NO. 848, SEQ ID NO. 856, SEQ ID NO. 874, SEQ ID NO. 880, SEQ ID NO. 886, SEQ ID NO. 1049, SEQ ID NO. 1655, SEQ ID NO. 1670, and SEQ ID NO. 1896.

18. The therapeutic composition when used according to claims 1 or 2 or the therapeutic composition of claims 3 or 4, wherein the composition comprises at least $1x10^4$ spores per gram and wherein the spores comprise at least two bacterial entities comprising nucleic acid sequences at least 97% identical to the nucleic acid sequences selected from the group consisting of SEQ ID NO. 673, SEQ ID NO. 674, SEQ ID NO. 774, SEQ ID NO. 845, SEQ ID NO. 847, SEQ ID NO. 848, SEQ ID NO. 856, SEQ ID NO. 1591, SEQ ID NO. 1657, and SEQ ID NO. 1670.

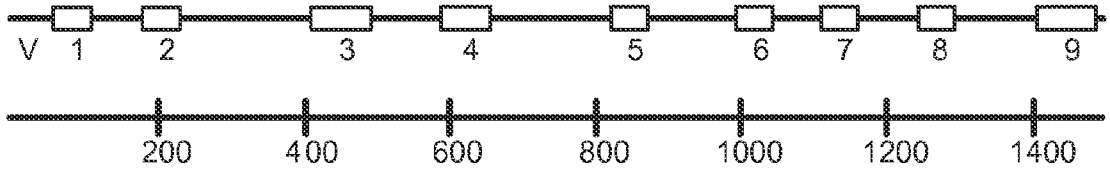


FIG. 1A

1 AAATTGAAGAGTTTGATCATGGCTCAGATTGAACGCTGGCGGCAGGCCTA
51 ACACATGCAAGTCGAACGGTAACAGGAAGAAGCTTGCTCTTTGCTGACGA
101 GTGGCGGACGGGTGAGTAATGTCTGGGAAACTGCCTGATGGAGGGGGATA
151 ACTACTGGAAACGGTAGCTAATACCGCATAACGTCGCAAGACCAAAGAGG
201 GGGACCTTCGGGCCTCTTGCCATCGGATGTGCCCAGATGGGATTAGCTAG
251 TAGGTGGGGTAACGGCTCACCTAGGCGACGATCCCTAGCTGGTCTGAGAG
301 GATGACCAGCCACACTGGAACTGAGACACGGTCCAGACTCCTACGGGAGG
351 CAGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCCATGCC
401 GCGTGTATGAAGAAGGCCTTCGGGTTGTAAAGTACTTTCAGCGGGGAGGA
451 AGGGAGTAAAGTTAATACCTTTGCTCATTGACGTTACCCGCAGAAGAAGC
501 ACCGGCTAACTCGTGCCCAGGCATGCGCAGGAATACGGAGGTGCAAGCGT
551 TAATCGGAATTACTGGGCGTAAAGCGCACGCAGGCGGTTTGTTAAGTCAG
601 ATGTGAAATCCCCGGGCTCAACCTGGGAACTGCATCTGATACTGGCAAGC
651 TTGAGTCTCGTAGAGGGGGGTAGAATTCCAGGTGTAGCGGTGAAATGCGT
701 AGAGATCTGGAGGAATACCGGTGGCGAAGGCGGCCCCCTGGACGAAGACT
751 CACGCTCAGGTGCGAAAGCGTGGGGAGCAAACAGGATTAGATACCCTGGT
801 AGTCCACGCCGTAAACGATGTCGACTTGGAGGTTGTGCCCTTGAGGCGTG
851 GCTTCCGGAGCTAACGCGTTAAGTCGACCGCCTGGGGAGTACGGCCGCAA
901 GGTTAAAACTCAAATGAATTGACGGGGGCCCGCACAAGCGGTGGAGCATG
951 TGGTTTAATTCGATGCAACGCGAAGAACCTTACCTGGTCTTGACATCCAC
1001 GGAAGTTTTCAGAGATGAGAATGTGCCTTCGGGAACCGTGAGACAGGTGC
1051 TGCATGGCTGTCGTCAGCTCGTGTTGTGAAATGTTGGGTTAAGTCCCGCA
1101 ACGAGCGCAACCCTTATCCTTTGTTGCCAGCGGTCCGGCCGGGAACTCAA
1151 AGGAGACTGCCAGTGATAAACTGGAGGAAGGTGGGGATGACGTCAAGTCA
1201 TCATGGCCCTTACGACCAGGGCTACACACGTGCTACAATGGCGCATACAA
1251 AGAGAAGCGACCTCGCGAGAGCAAGCGGACCTCATAAAGTGCGTCGTAGT
1301 CCGGATTGGAGTCTGCAACTCGACTCCATGAAGTCGGAATCGCTAGTAAT
1351 CGTGGATCAGAATGCCACGGTGAATACGTTCCCGGGCCTTGTACACACCG
1401 CCCGTCACACCATGGGAGTGGGTTGCAAAAGAAGTAGGTAGCTTAACCTT
1451 CGGGAGGGCGCTTACCACTTTGTGATTCATGACTGGGGTGAAGTCGTAAC
1501 AAGGTAACCGTAGGGGAACCTGCGGTTGGATCACCTCCTTA

FIG. 1B

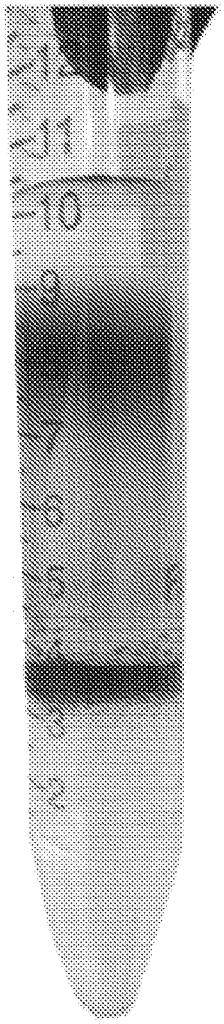


FIG. 2

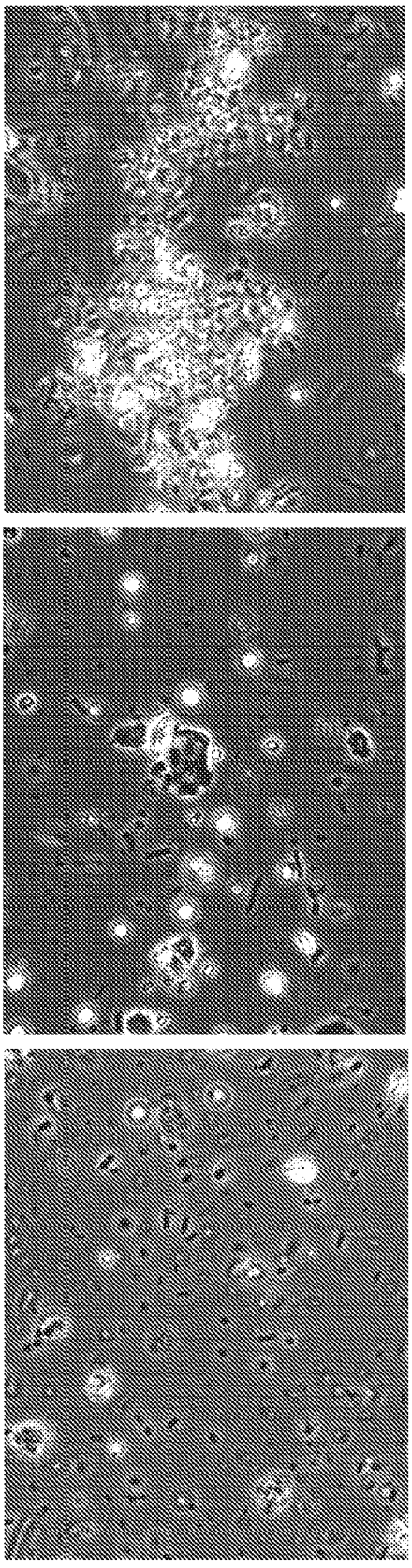


FIG. 3

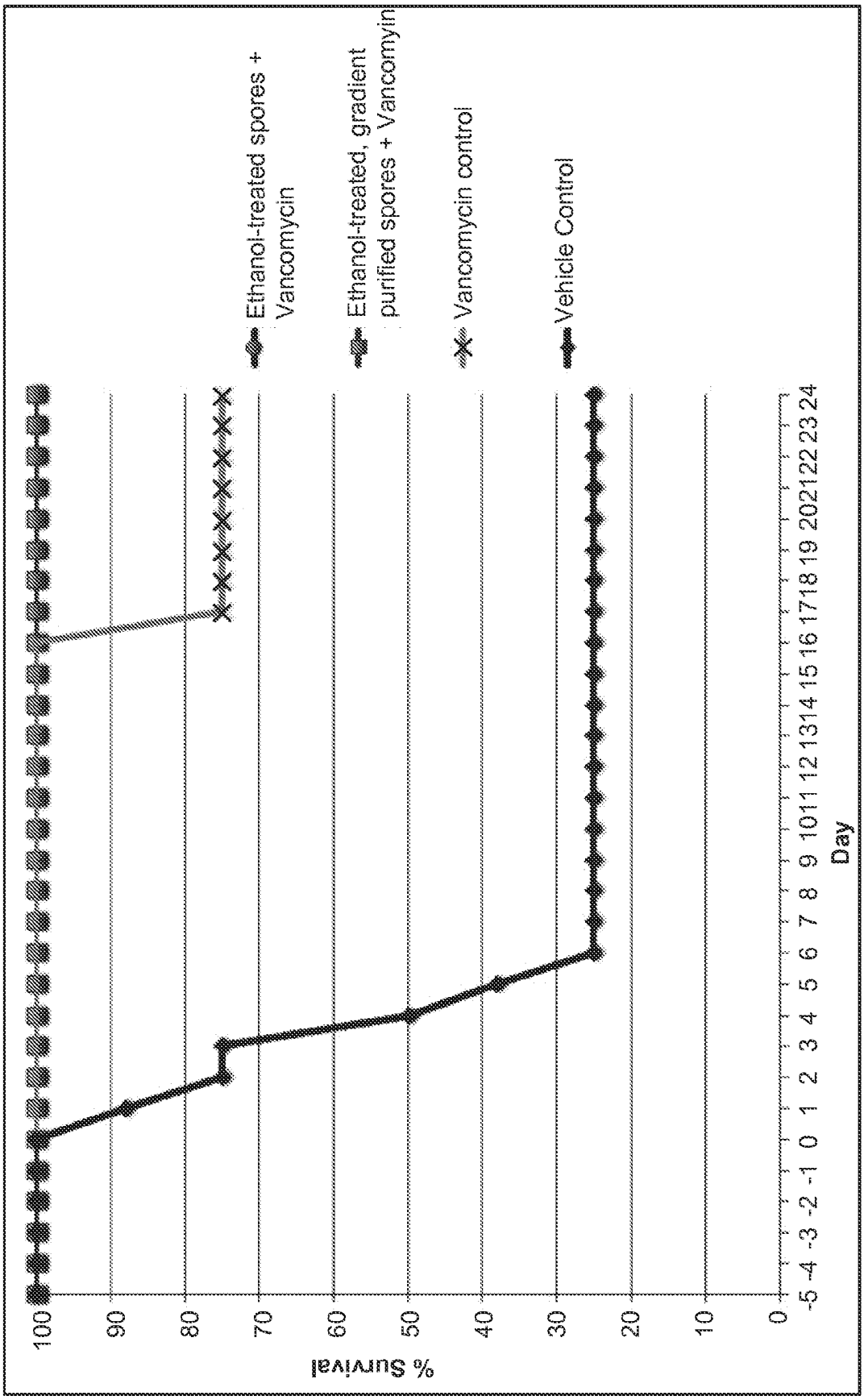

Ethanol-treated spores + Vancomycin
Ethanol-treated, gradient purified spores + Vancomyin
Vancomycin control
Vehicle Control
% Survival
100
90
80
70
60
50
40
30
20
10
0
-5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Day

FIG. 4

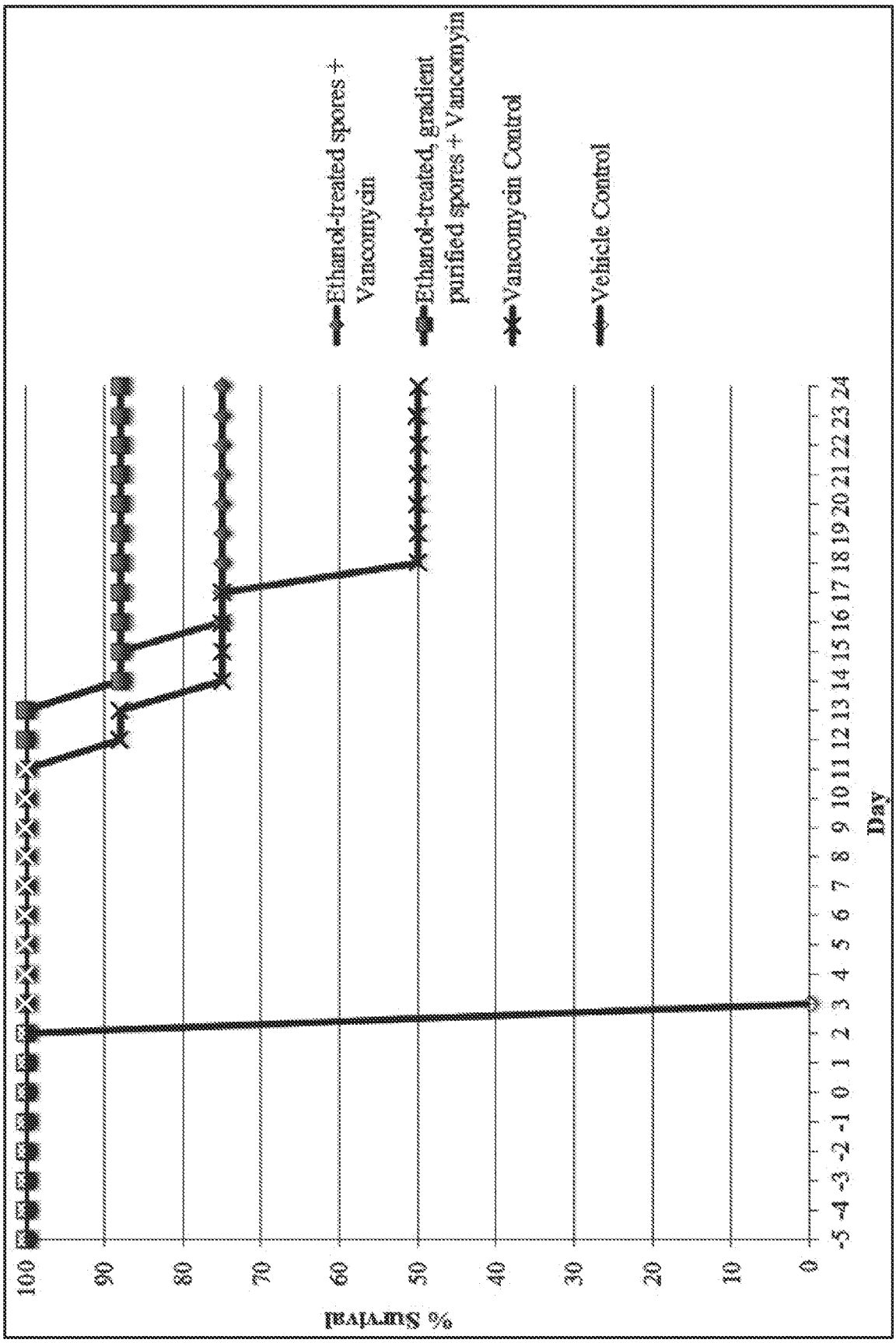

% Survival
100
90
80
70
60
50
40
30
20
10
0
-5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Day
Ethanol-treated spores + Vancomycin
Ethanol-treated, gradient purified spores + Vancomyin
Vancomycin Control
Vehicle Control

FIG. 5

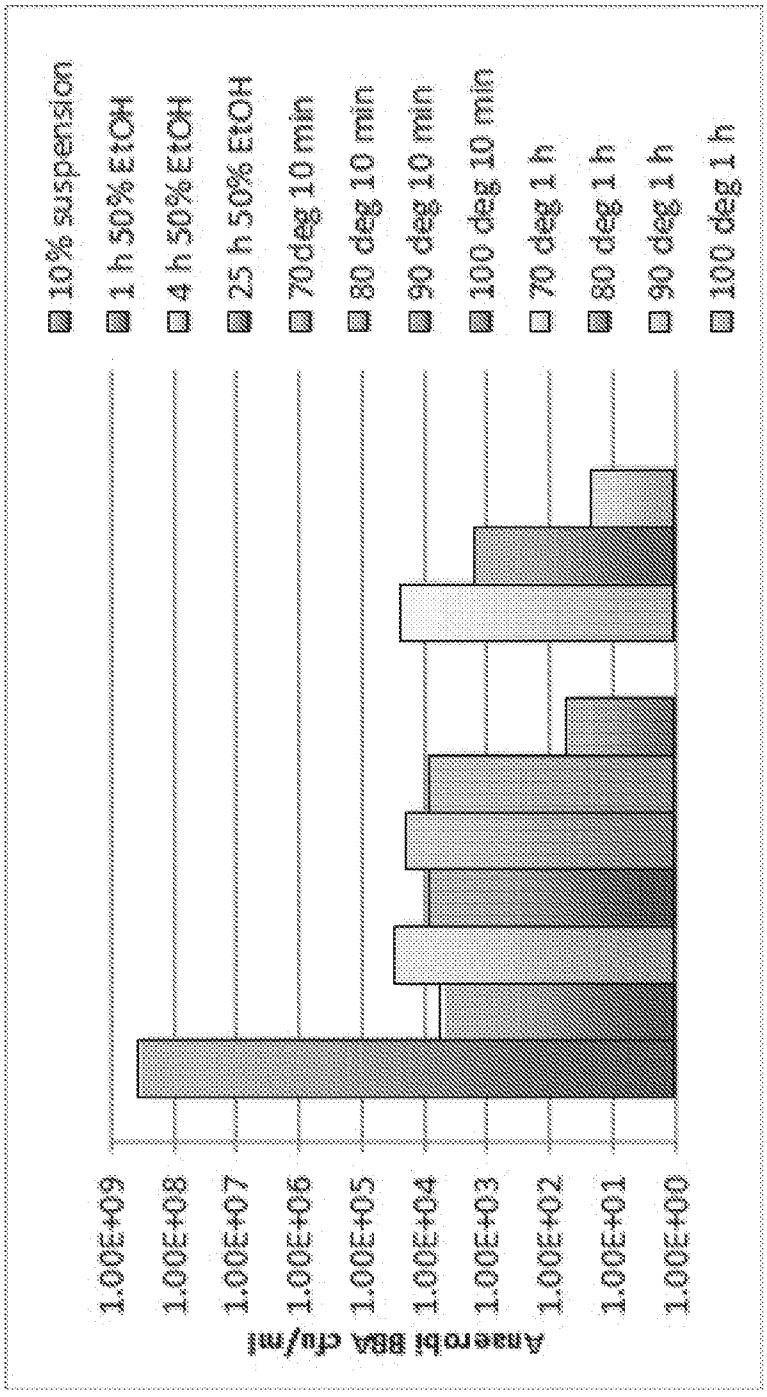

10 % suspension
1 h 50% EtOH
4 h 50% EtOH
25 h 50% EtOH
70 deg 10 min
80 deg 10 min
90 deg 10 min
100 deg 10 min
70 deg 1 h
80 deg 1 h
90 deg 1 h
100 deg 1 h
1.00E+09
1.00E+08
1.00E+07
1.00E+06
1.00E+05
1.00E+04
1.00E+03
1.00E+02
1.00E+01
1.00E+00
Anaerobi BBA cfu/ml

FIG. 6

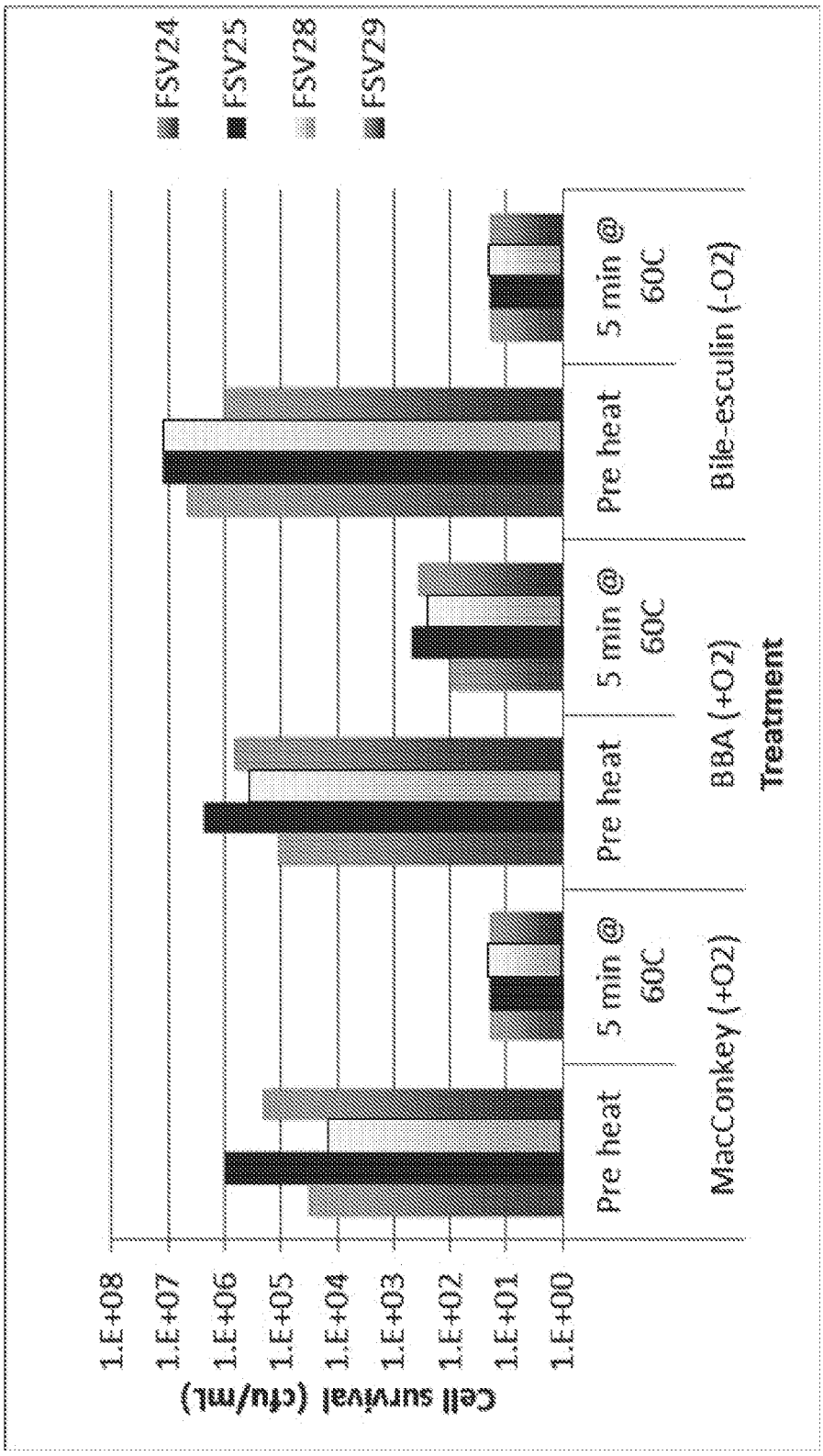

FSV24
FSV25
FSV28
FSV29
Cell survival (cfu/mL)
1.E+08
1.E+07
1.E+06
1.E+05
1.E+04
1.E+03
1.E+02
1.E+01
1.E+00
Pre heat
5 min @ 60C
Pre heat
5 min @ 60C
Pre heat
5 min @ 60C
MacConkey (+O2)
BBA (+O2)
Bile-esculin (-O2)
Treatment

FIG. 7

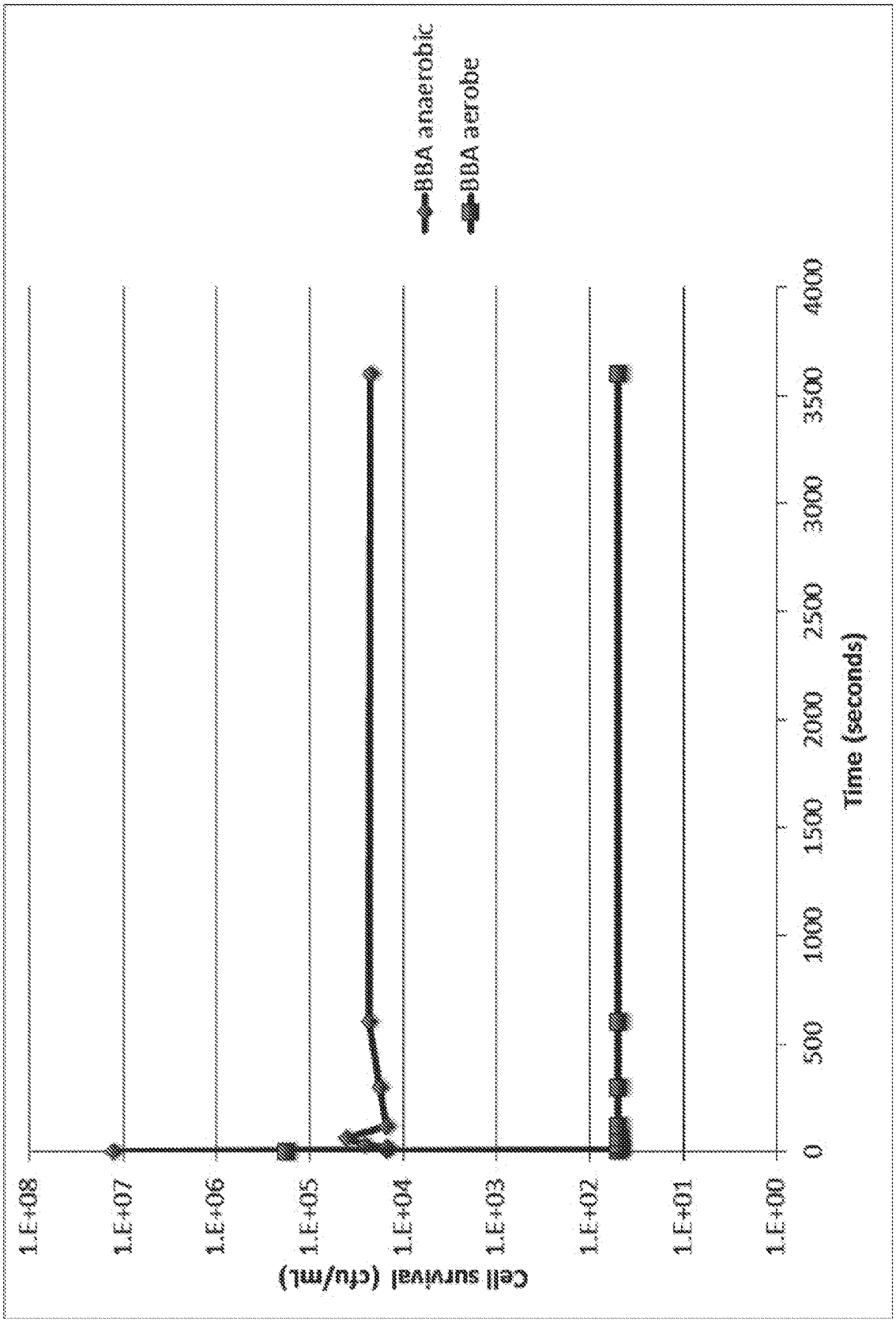

BBA anaerobic
BBA aerobe
Cell survival (cfu/mL)
1.E+08
1.E+07
1.E+06
1.E+05
1.E+04
1.E+03
1.E+02
1.E+01
1.E+00
0
500
1000
1500
2000
2500
3000
3500
4000
Time (seconds)

FIG. 8

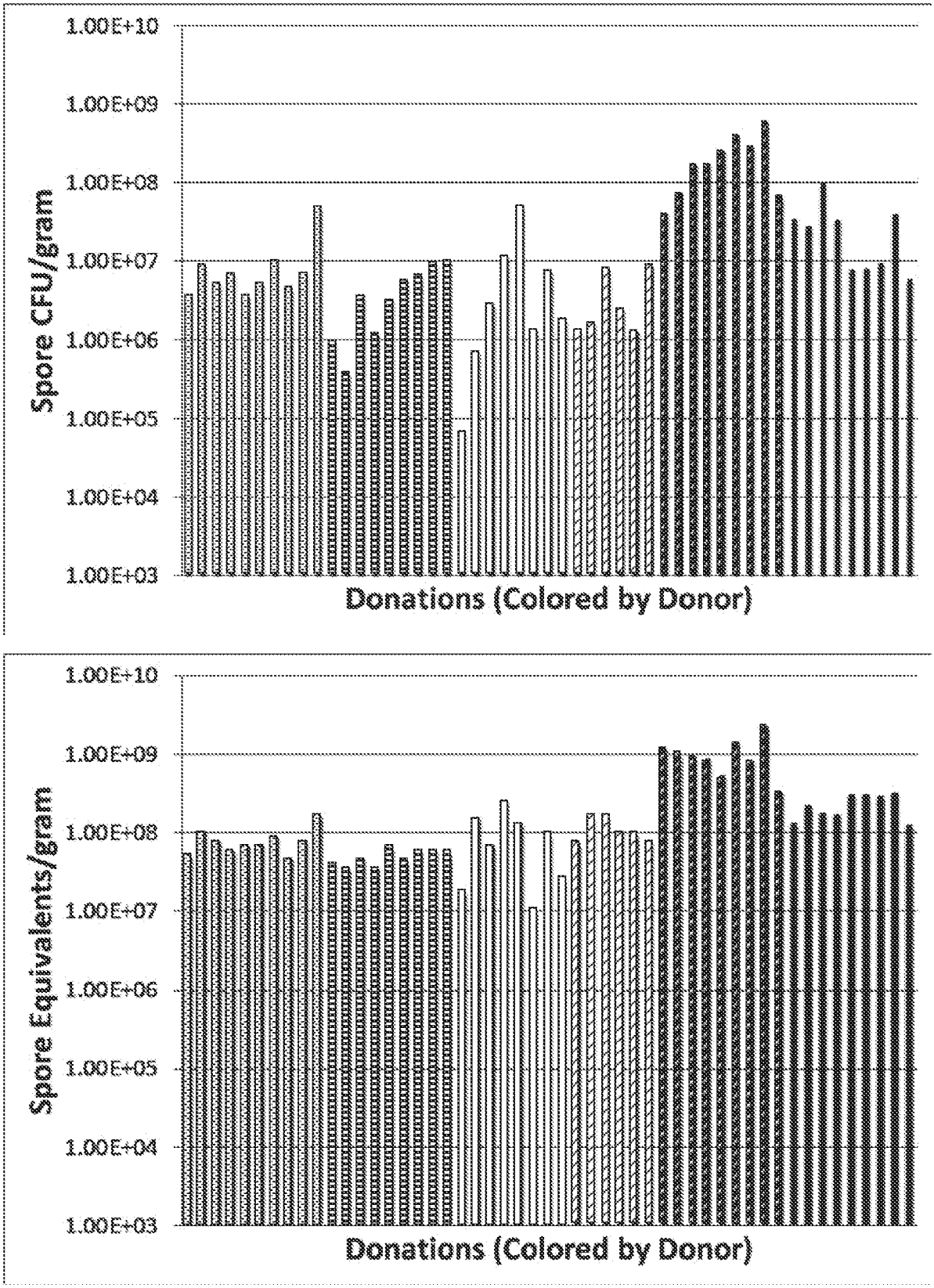

1.00E+10
1.00E+09
1.00E+08
1.00E+07
1.00E+06
1.00E+05
1.00E+04
1.00E+03
Spore CFU/gram
Donations (Colored by Donor)
1.00E+10
1.00E+09
1.00E+08
1.00E+07
1.00E+06
1.00E+05
1.00E+04
1.00E+03
Spore Equivalents/gram
Donations (Colored by Donor)

FIG. 9

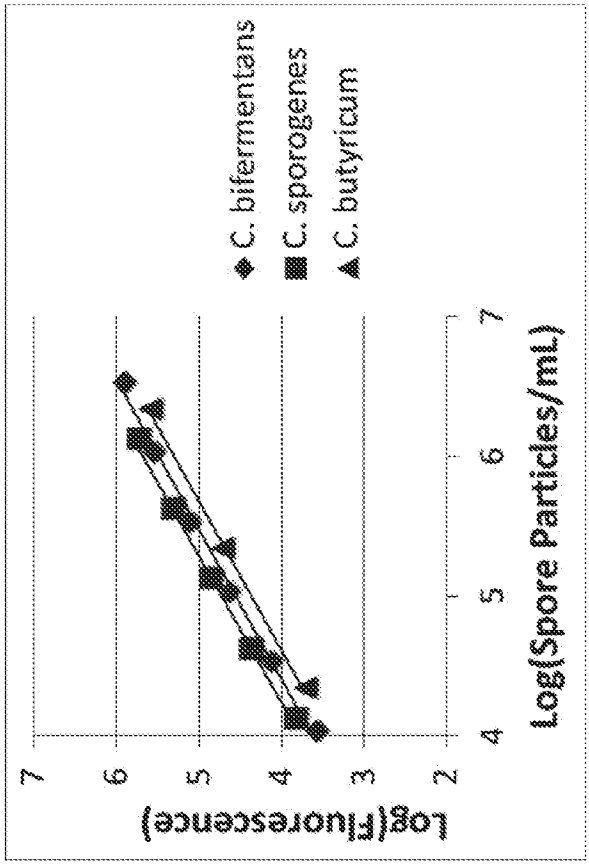

C. bifermentans
C. sporogenes
C. butyricum
log(Fluorescence)
Log(Spore Particles/mL)
7
6
5
4
3
2
4
5
6
7

FIG. 10

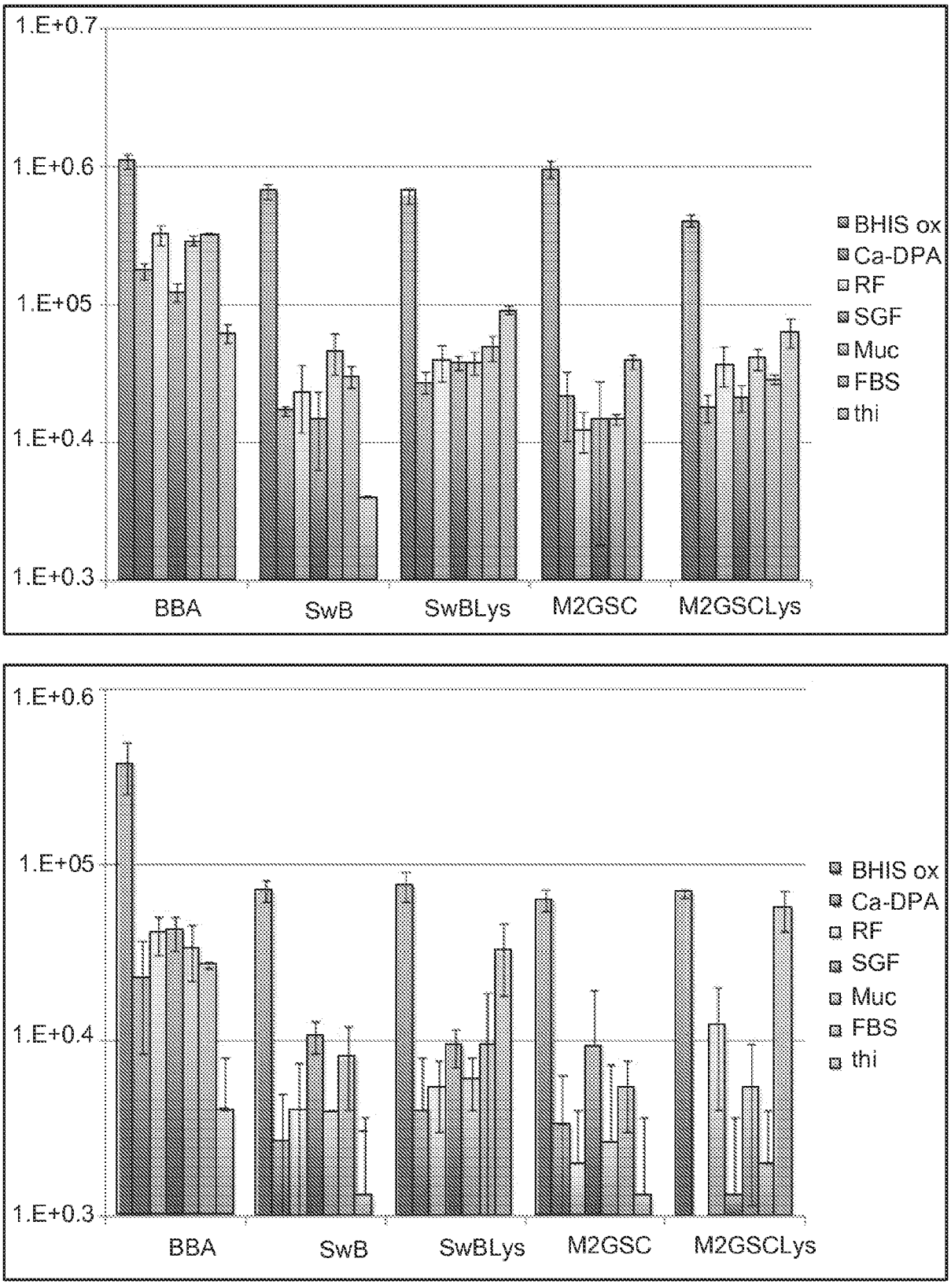
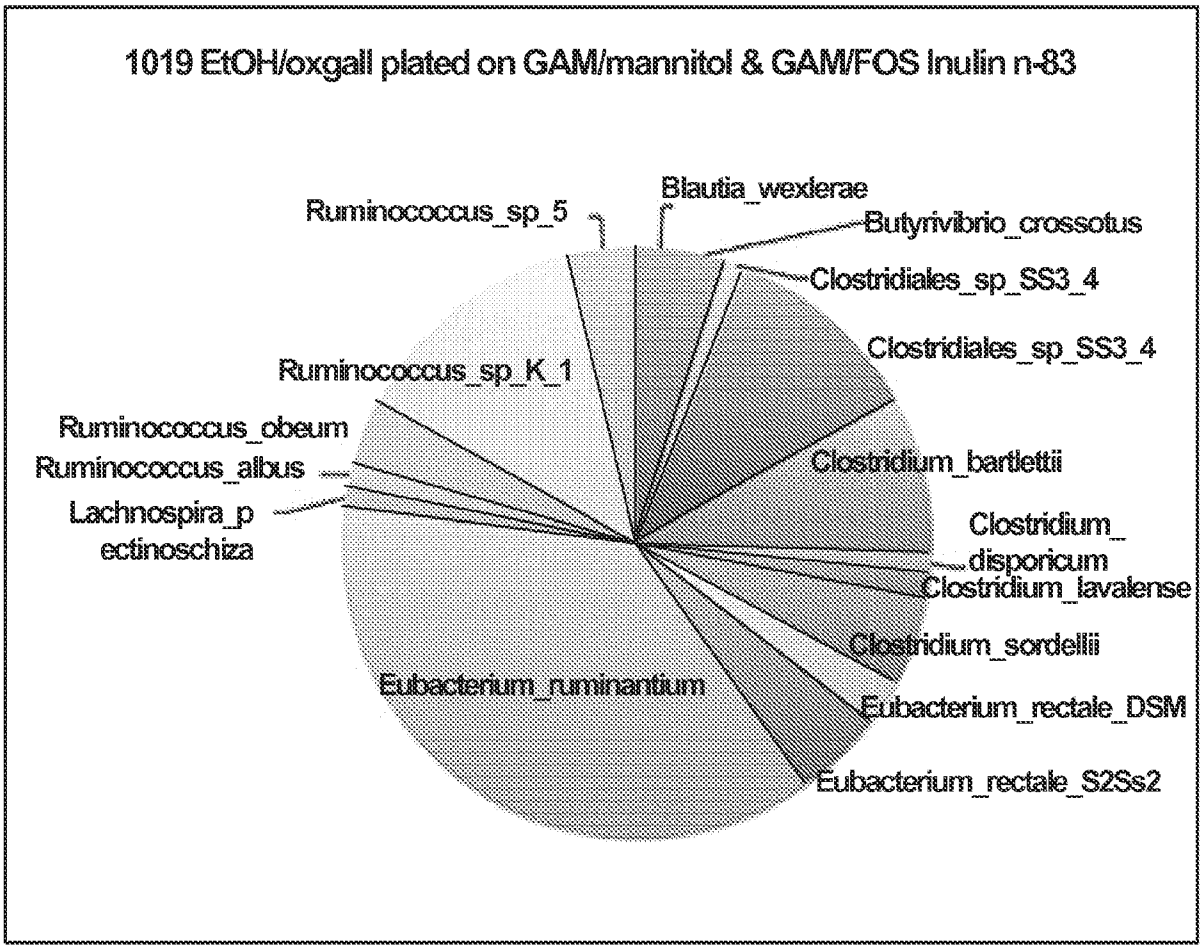

1.E+0.7
1.E+0.6
1.E+05
1.E+0.4
1.E+0.3
BBA
SwB
SwBLys
M2GSC
M2GSCLys
BHIS ox
Ca-DPA
RF
SGF
Muc
FBS
thi
1.E+0.6
1.E+05
1.E+0.4
1.E+0.3
BBA
SwB
SwBLys
M2GSC
M2GSCLys
BHIS ox
Ca-DPA
RF
SGF
Muc
FBS
thi

FIG. 11


1019 EtOH/oxgall plated on GAM/mannitol & GAM/FOS Inulin n-83
Ruminococcus_sp_5
Blautia_wexlerae
Butyrivibrio_crossotus
Clostridiales_sp_SS3_4
Clostridiales_sp_SS3_4
Ruminococcus_sp_K_1
Ruminococcus_obeum
Ruminococcus_albus
Lachnospira_p
ectinoschiza
Clostridium_bartlettii
Clostridium_
disporicum
Clostridium_lavalense
Clostridium_sordellii
Eubacterium_ruminantium
Eubacterium_rectale_DSM
Eubacterium_rectale_S2Ss2

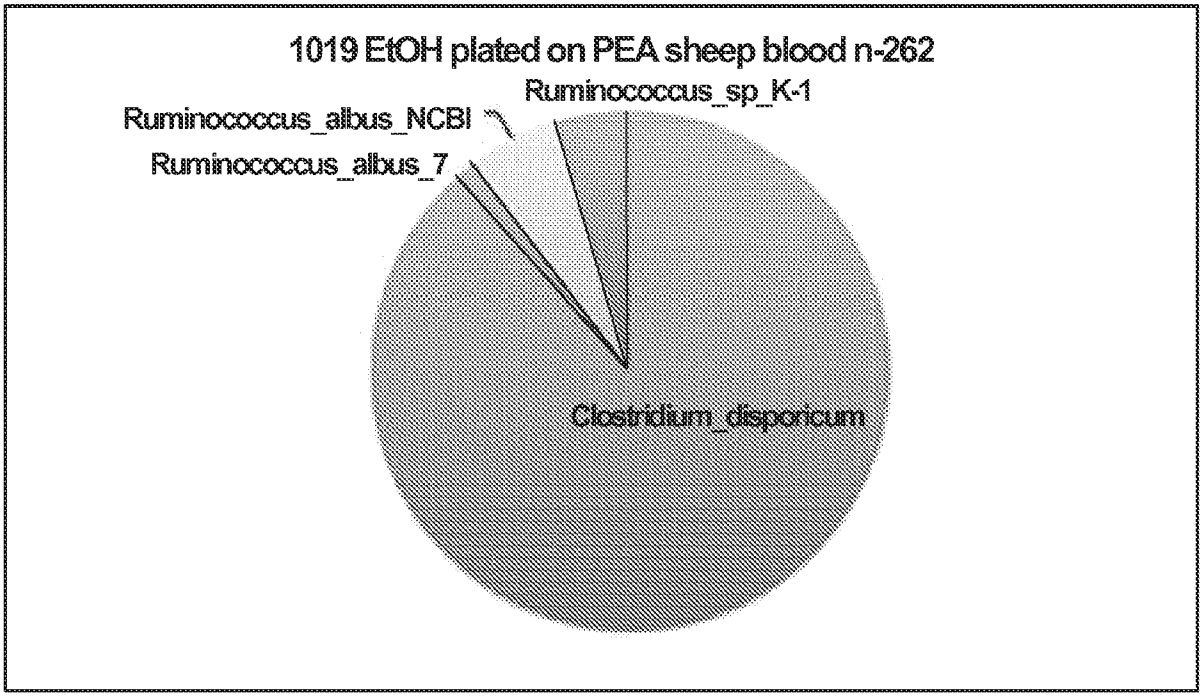

1019 EtOH plated on PEA sheep blood n-262
Ruminococcus_sp_K-1
Ruminococcus_albus_NCBI
Ruminococcus_albus_7
Clostridium_disporicum

FIG. 12

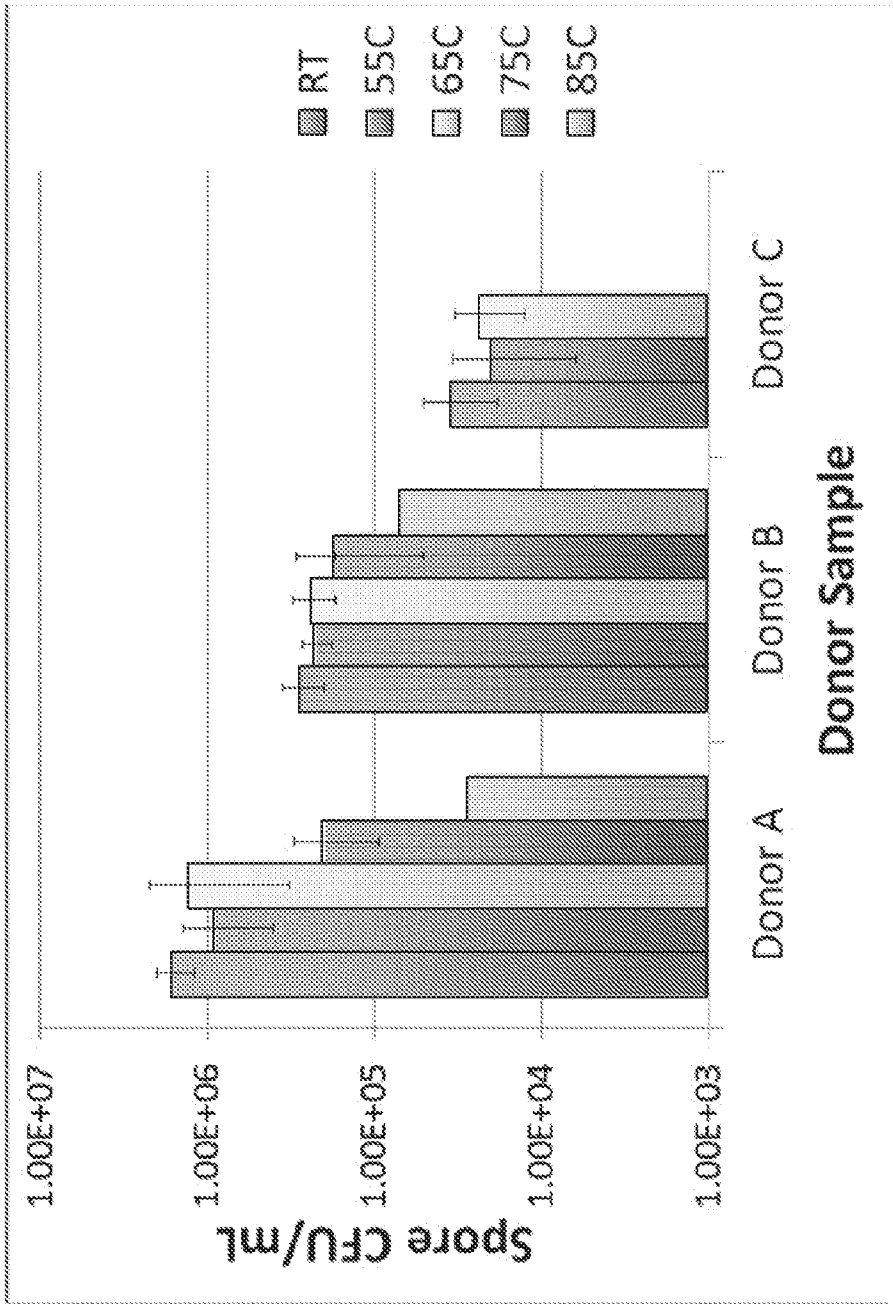

RT
55C
65C
75C
85C
1.00E+07
1.00E+06
1.00E+05
1.00E+04
1.00E+03
Spore CFU/mL
Donor A
Donor B
Donor C
Donor Sample

FIG. 13

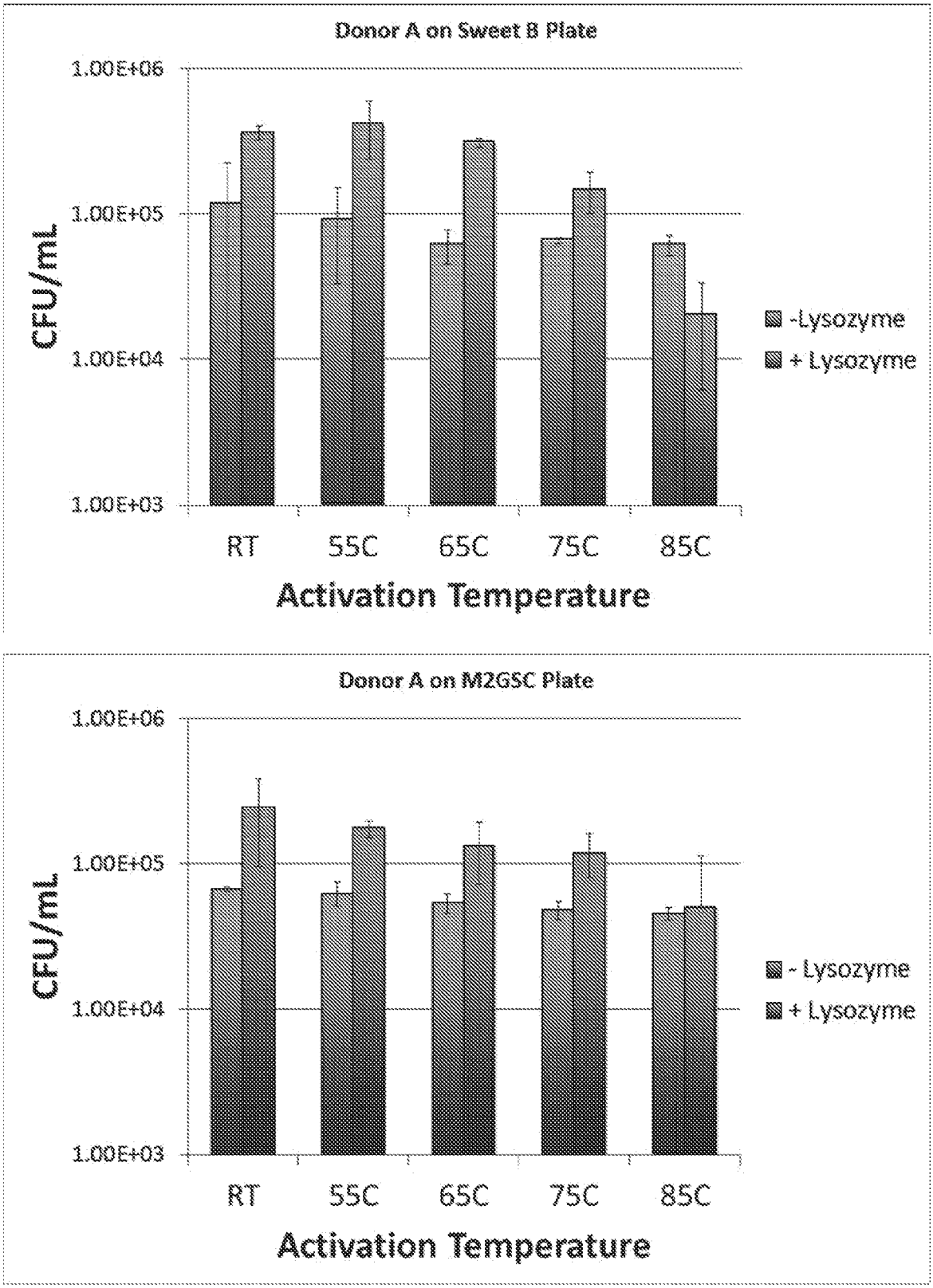

Donor A on Sweet B Plate
1.00E+06
1.00E+05
1.00E+04
1.00E+03
CFU/mL
RT
55C
65C
75C
85C
Activation Temperature
-Lysozyme
+ Lysozyme
Donor A on M2GSC Plate
1.00E+06
1.00E+05
1.00E+04
1.00E+03
CFU/mL
RT
55C
65C
75C
85C
Activation Temperature
- Lysozyme
+ Lysozyme

FIG. 14

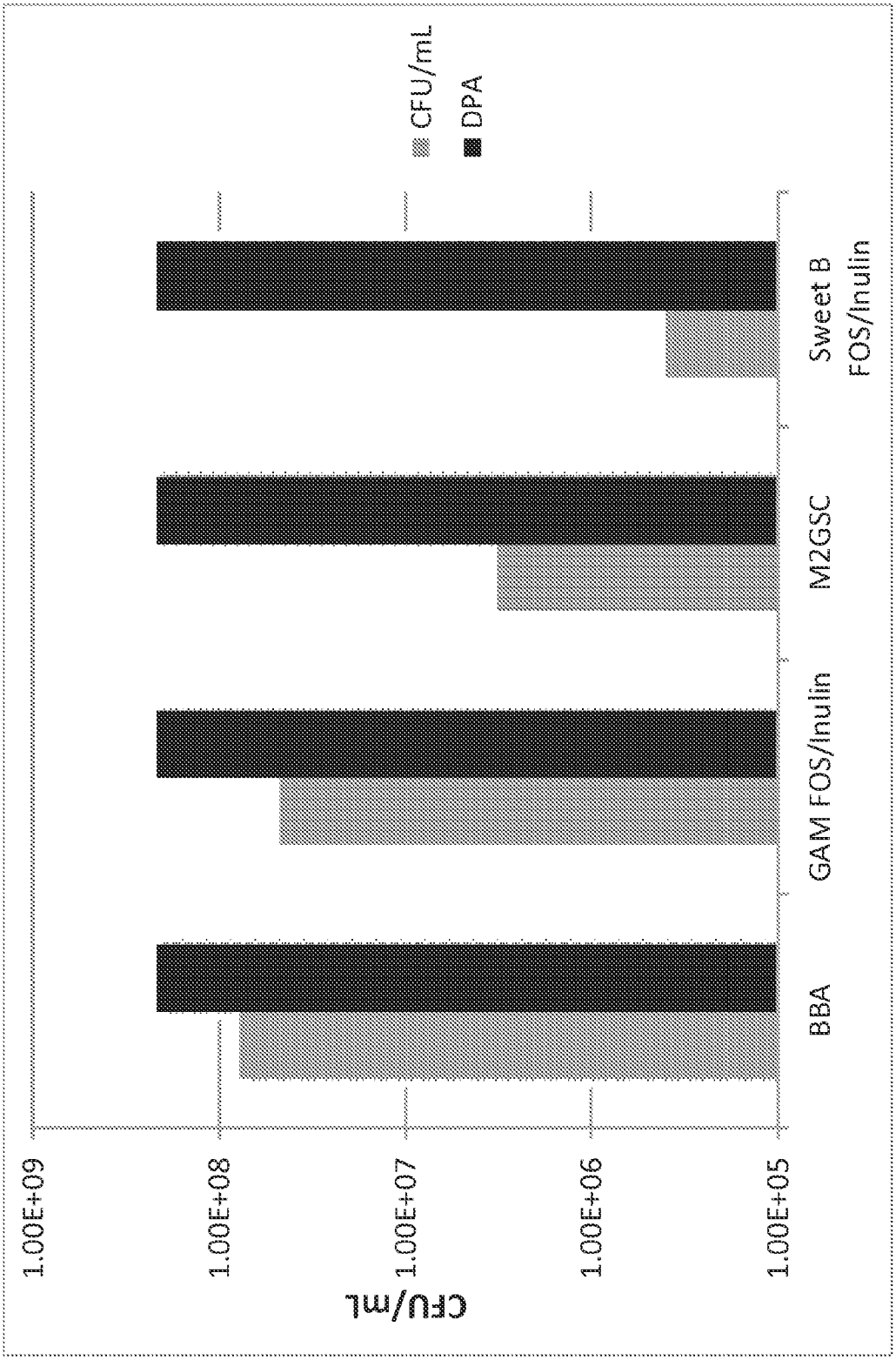

CFU/mL
DPA
CFU/mL
1.00E+09
1.00E+08
1.00E+07
1.00E+06
1.00E+05
BBA
GAM FOS/Inulin
M2GSC
Sweet B FOS/Inulin

FIG. 15

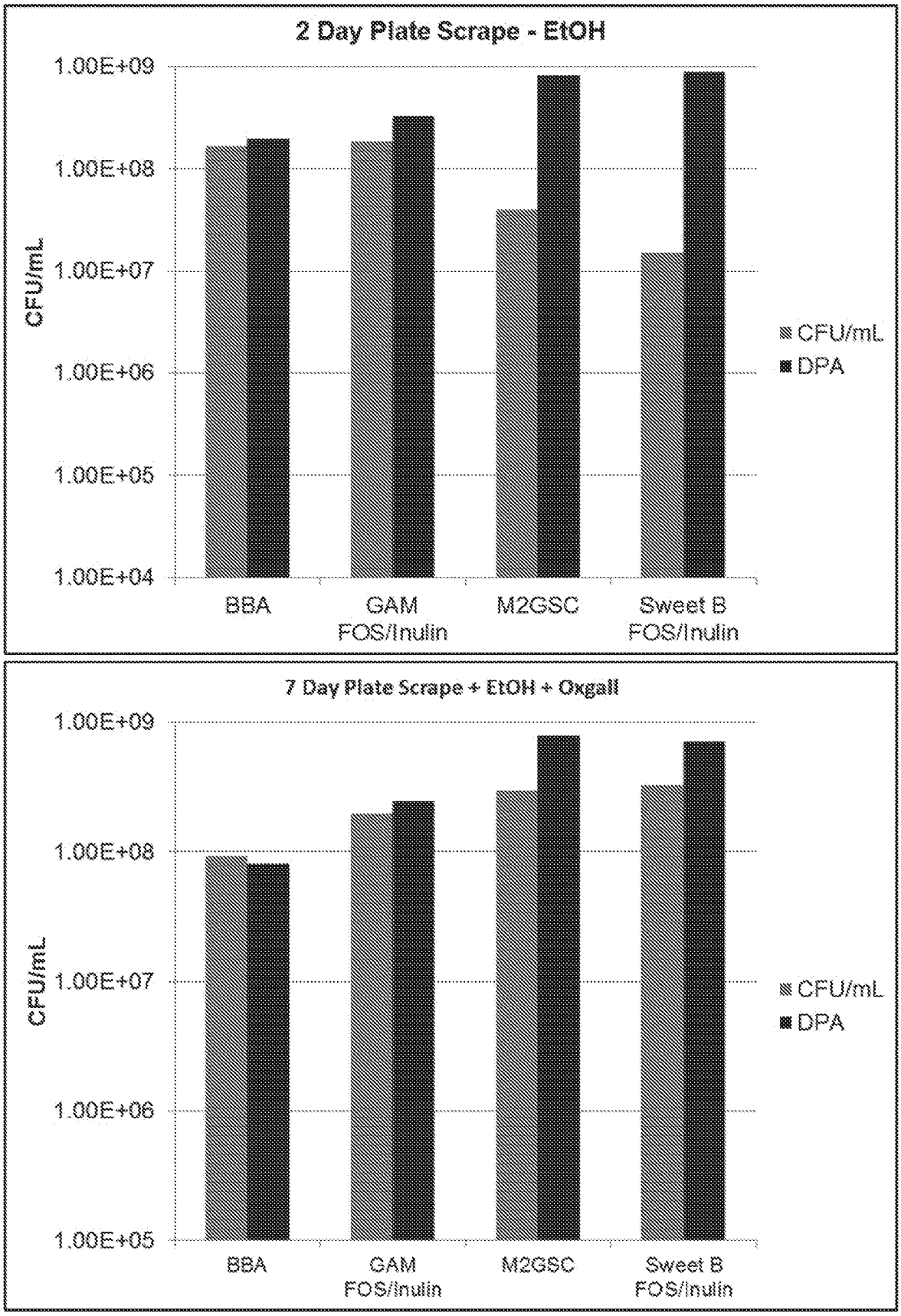

2 Day Plate Scrape - EtOH
1.00E+09
1.00E+08
1.00E+07
1.00E+06
1.00E+05
1.00E+04
CFU/mL
BBA
GAM FOS/Inulin
M2GSC
Sweet B FOS/Inulin
CFU/mL
DPA
7 Day Plate Scrape + EtOH + Oxgall
1.00E+09
1.00E+08
1.00E+07
1.00E+06
1.00E+05
CFU/mL
BBA
GAM FOS/Inulin
M2GSC
Sweet B FOS/Inulin
CFU/mL
DPA

FIG. 16

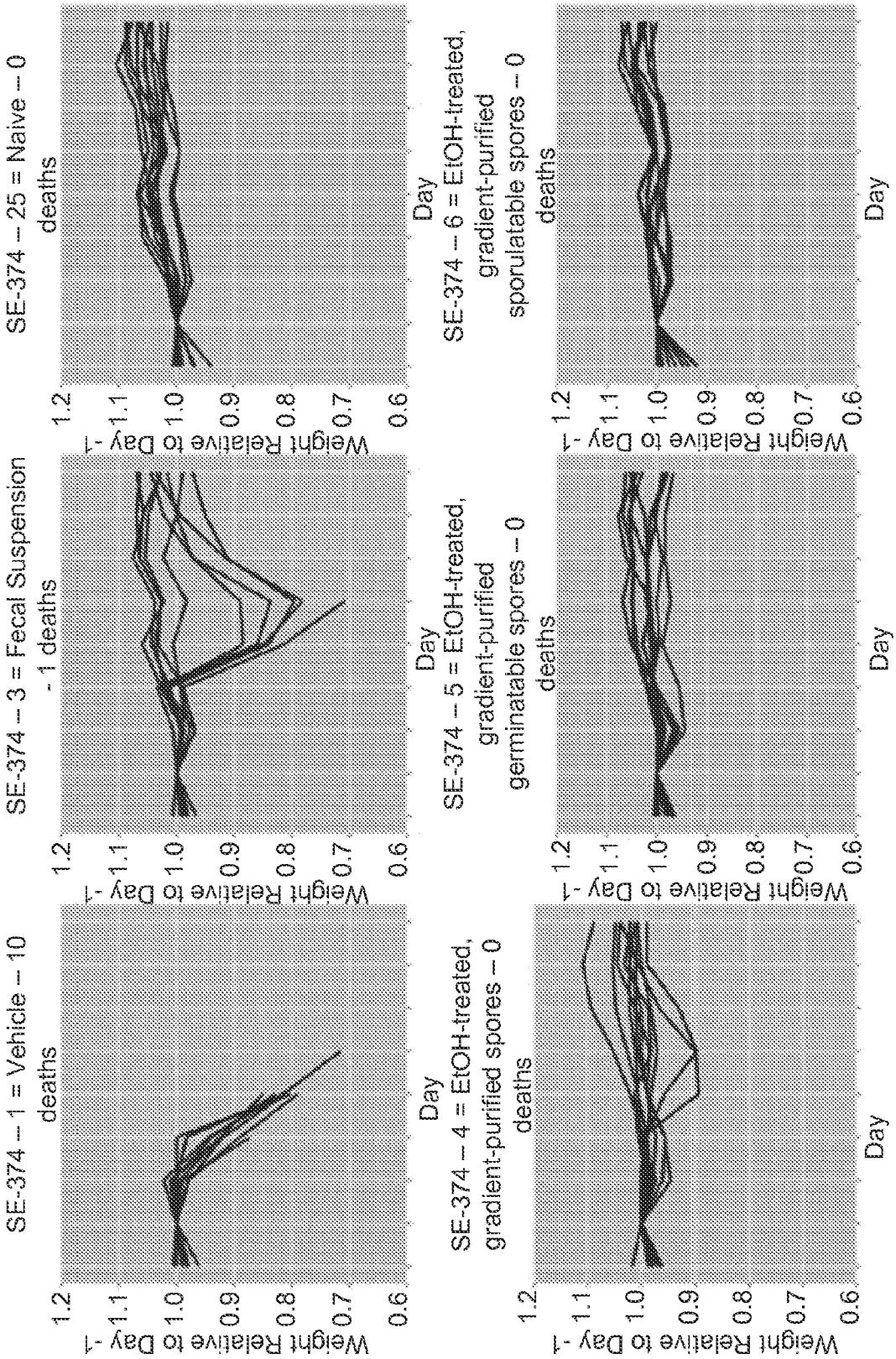

SE-374 – 1 = Vehicle – 10 deaths
SE-374 – 3 = Fecal Suspension - 1 deaths
SE-374 – 25 = Naive – 0 deaths
SE-374 – 4 = EtOH-treated, gradient-purified spores – 0 deaths
SE-374 – 5 = EtOH-treated, gradient-purified germinatable spores – 0 deaths
SE-374 – 6 = EtOH-treated, gradient-purified sporulatable spores – 0 deaths
Weight Relative to Day -1
Day
1.2
1.1
1.0
0.9
0.8
0.7
0.6

FIG. 17

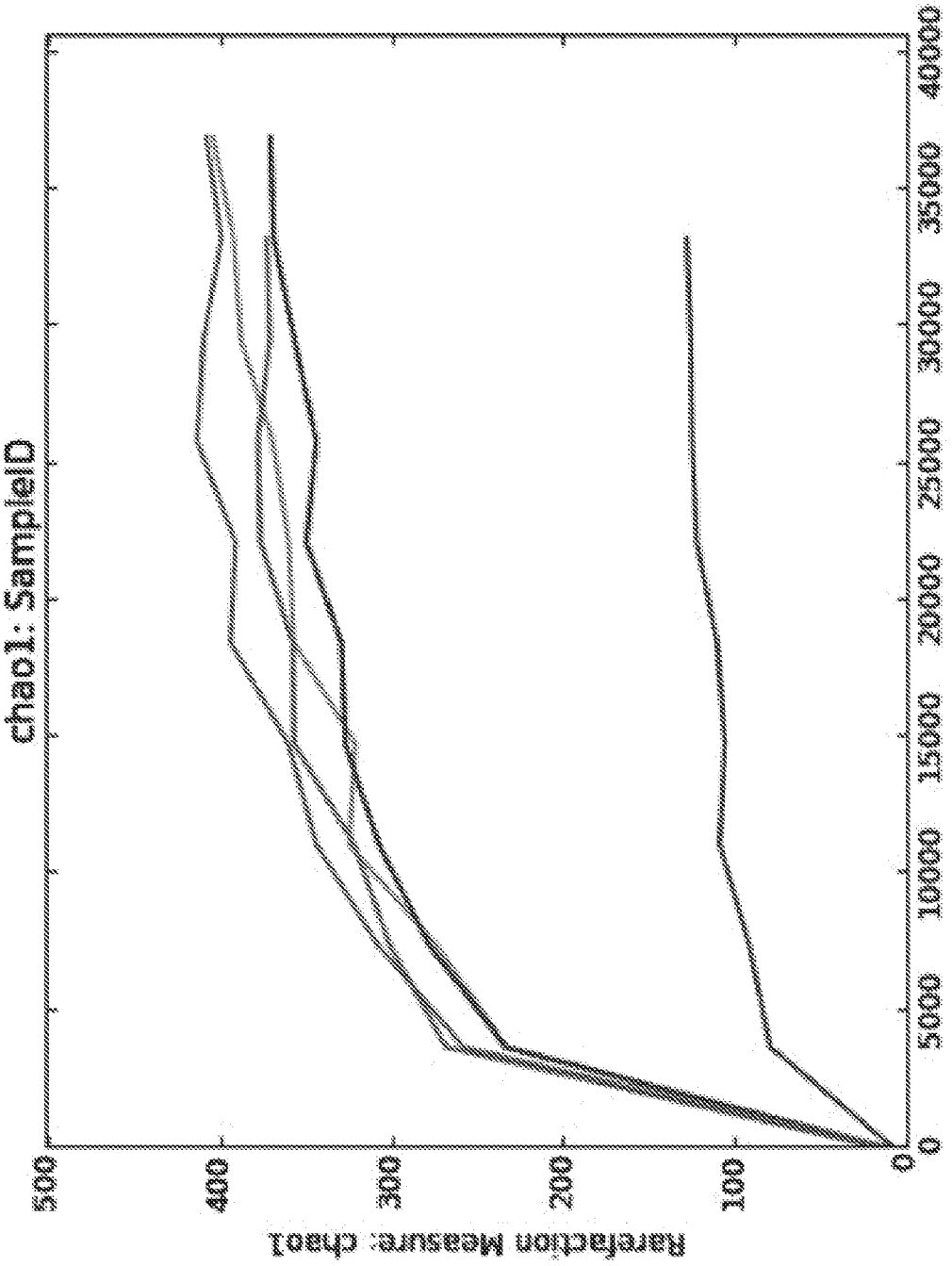

chao1: SampleID
Rarefaction Measure: chao1
Sequences Per Sample
0
5000
10000
15000
20000
25000
30000
35000
40000
100
200
300
400
500

FIG. 18

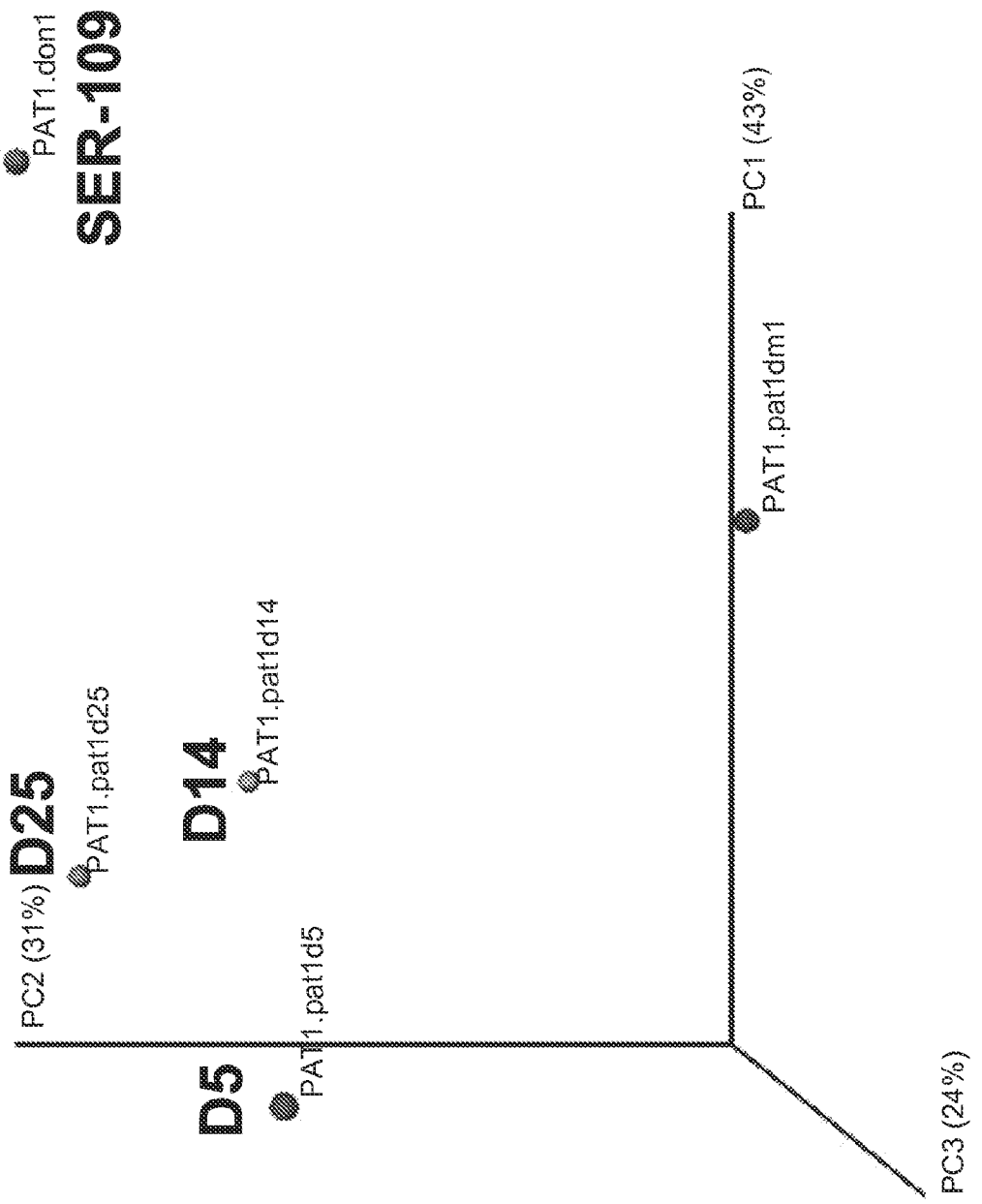

PAT1.don1
SER-109
PC1 (43%)
PAT1.pat1dm1
PAT1.pat1d14
D14
PAT1.pat1d25
D25
PC2 (31%)
PAT1.pat1d5
D5
PC3 (24%)

FIG. 19

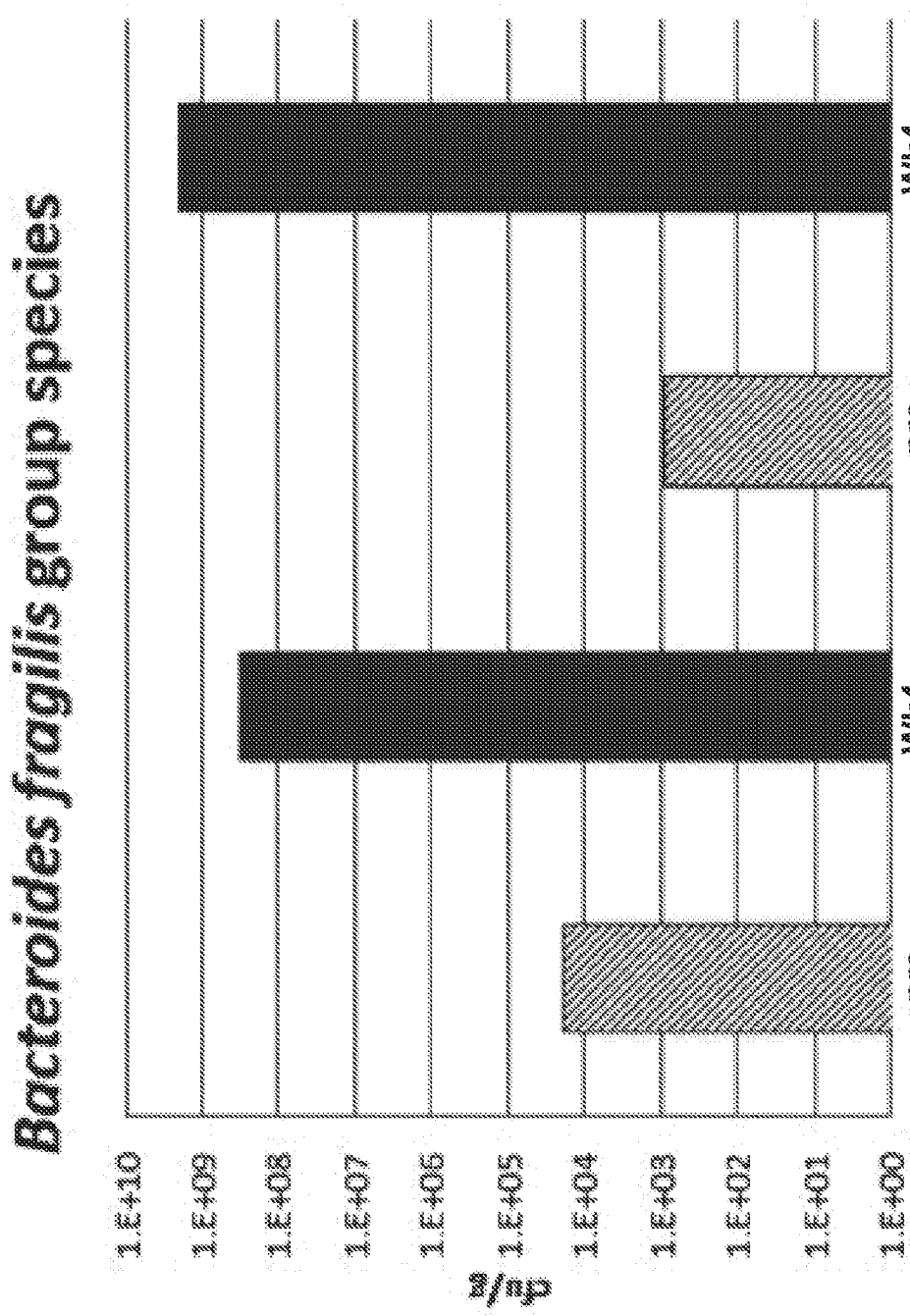

Bacteroides fragilis group species
1.E+10
1.E+09
1.E+08
1.E+07
1.E+06
1.E+05
1.E+04
1.E+03
1.E+02
1.E+01
1.E+00
pre
Wk4
Pt_01
pre
Wk4
Pt_02

FIG. 20

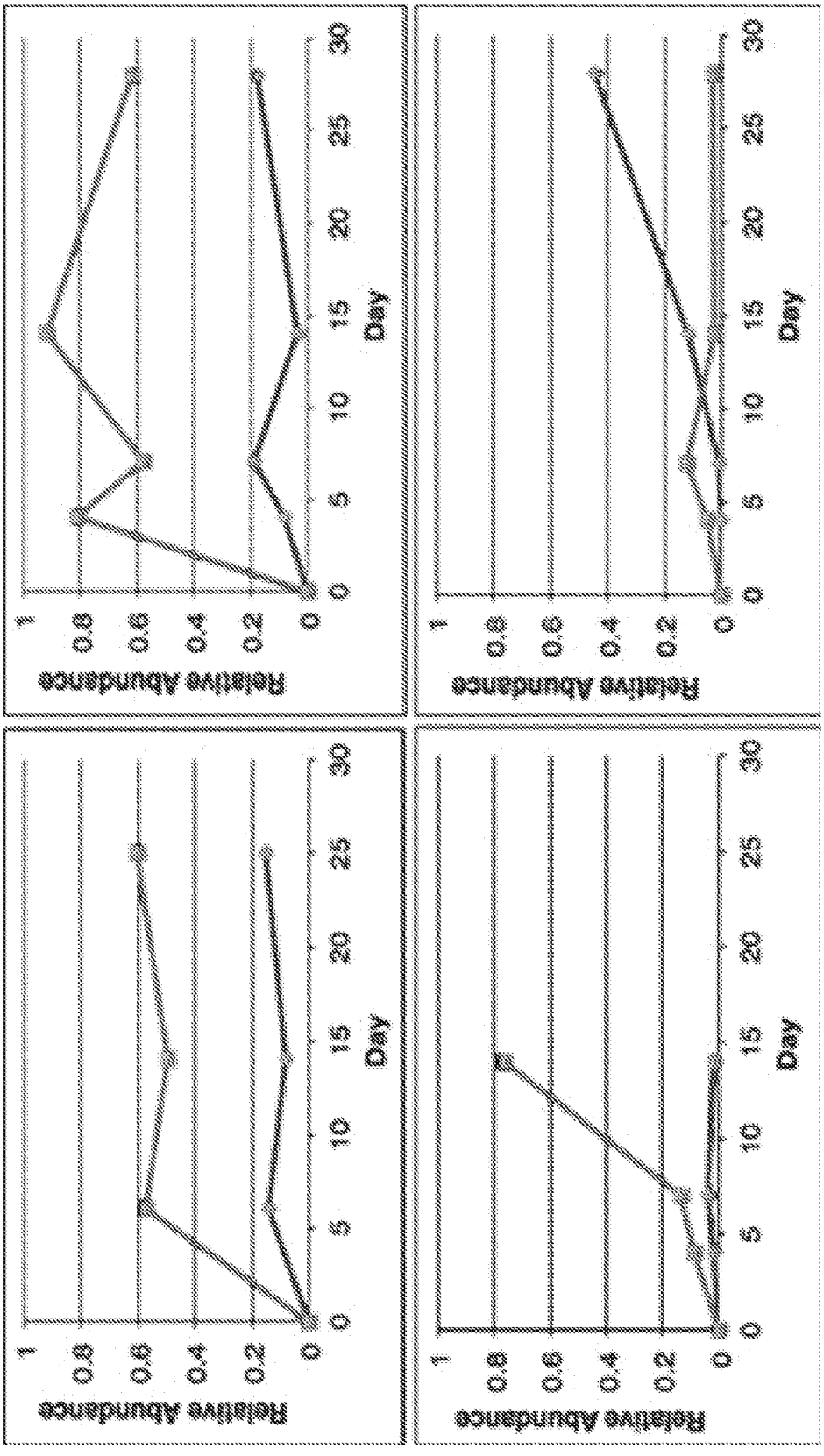


FIG. 21

SEQUENCE LISTING

<110> SERES HEALTH, INC.

<120> COMPOSITIONS AND METHODS

<130> 28413-25970

<140>
<141>

<150> 61/926,918
<151> 2014-01-13

<150> 61/760,584
<151> 2013-02-04

<150> 61/760,585
<151> 2013-02-04

<150> 61/760,574
<151> 2013-02-04

<150> 61/760,606
<151> 2013-02-04

<160> 2032

<170> PatentIn version 3.5

<210> 1
<211> 1532
<212> DNA
<213> Abiotrophia defectiva

<400> 1
atgagagttt gatcctggct caggatgaac gctggcggcg tgcctaacac atgcaagtcg 60

aacggagatt acggacggaa gttttcggat ggaagcctgt aattcttagt ggcggacggg 120

tgagtaacgc gtgggcaacc tgccctatac aggggatag cagctggaaa cggctggtaa 180

gaccgcataa gtcggttaaa tcgcatgatt tgatcgggaa atgagcaatc aggtatagga 240

tgggcccgcg tccgattagc cagttggcag ggtaaaagcc taccaaagcg acgatcggta 300

gccggactga gaggtcggac ggccacattg ggactgagac acggcccaaa ctcctacggg 360

aggcagcagt gggggatatt gcacaatgga ggaaactctg atgcagcgac gccgcgtgag 420

tgaagaagta tttcggtatg taaagctcta tcagcaggga agatgatgac ggtacctgac 480

taagaagccc cggctaacta cgcgccagca gccgcggtaa tacgtagggg gcaagcgtta 540

tccggattta ctgggtgtaa agggagcgca ggcggttttg caagttgaga gtggaagcag 600

ggggctcaac cccctgactg ctcccaaaac tgtaaaactt gagtatggga gaggcaggcg 660

gaattcctag tgtagcggtg aaatgcttag atattaggaa gaacaccggt ggcgaaggcg 720

gcctgctgga ccaaaactga cgctgaggct cgaaagcgtg ggtagcaaac aggattagat 780

accctggtag tccacgctgt aaacgatgaa tactaggtgc tgggatgcat aagcatttcg 840

gtgccgtcgc aaacgcatta agtattccac ctggggagta cgttcgcaag aatgaaactc 900

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gacgcaacgc 960

gaagaacctt acccggtctt gagatcctcc tgaatactga gtaatgtcag tagtccttcg 1020

ggacaggaga gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccctattttt agtagccagc ggttcggccg ggcactctaa 1140

agagactgcc gaggataact cggaggaagg cggggatgac gtcaaatcat catgcccctt 1200

atgaccgggg ctacacacgt gctacaatgg cagttacaga gggaagcgaa ggcgtgagcc 1260

ggagcaaatc tcagaaaggc tgcctcagtt cggattgtag tctgcaactc gactacatga 1320

agctggaatc gctagtaatc gcgaatcaga atgtcgcggt gaatacgttc ccgggtcttg 1380

tacacaccgc ccgtcacacc atgggagtcg gaaatgcccg aagtcagtgg cctaaccgta 1440

agggaggagc tgccgaaggc aggtctggtg actggggtga agtcgtaaca aggtagccgt 1500

atcggaaggt gcggctggat cacctccttt ct 1532

<210> 2
<211> 1407
<212> DNA
<213> Abiotrophia para-adiacens

<400> 2
agagtttgat catggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gagagcgacc ggtgcttgca ctggtcaatc tagtggcgaa cgggtgagta acacgtgggt 120

aacctgccca tcagaggggg ataacattcg gaaacggatg ctaaaaccgc ataggtcttc 180

gaaccgcatg gtttgaagag gaaaagaggc gcaagcttct gctgatggat ggacccgcgg 240

tgcattagct agttggtgag gtaacggctc accaaggccg tgatgcatag ccgacctgag 300

agggtgatcg gccacattgg gactgagaca cggcccaaac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gcaagtctga cggagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaaactctgt tgttagagaa gaacaagtgc tagagtaact gttagcgcct 480

tgacggtatc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttgtccgga tttattgggc gtaaagcgag cgcaggcggt tccttaagtc 600

tgatgtgaaa gcccccggct caaccgggga gggtcattgg aaactgggga acttgagtgc 660

agaagaggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cagtggcgaa ggcgactctc tggtctgtaa ctgacgctga ggctcgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttggagg 840

gtttccgccc ttcagtgctg cagttaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg acccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccaag tcttgacatc ctttgaccac tctagagata 1020

gagctttccc ttcggggaca aagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttat tactagttgc cagcattgag 1140

ttgggcactc tagtgagact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgactt gggctacaca cgtgctacaa tggatggtac aacgagcagc 1260

gaactcgcga gggtaagcga atctcttaaa gccattctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagccgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggtc ttgtacacac cgcccgt 1407

<210> 3
<211> 1328
<212> DNA
<213> Abiotrophia sp. oral clone P4PA_155 P1

<400> 3
gacgaacgct ggcggtgtgc ctaatacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgggt aacctacctc atagtggggg ataacagtcg gaaacgactg ctaataccgc 120

atagggaaag tcgctaagag atggacccgc ggtgcattag ctggttggta gggtaaaggc 180

ctaccaaggc gatgatgcat agccgacctg agagggtgat cggccacatt gggactgaga 240

ctcggcccag actcctacgg gaggcagcag tagggaatct tccgcaatgg acgcaagtct 300

gacggagcaa cgccgcgtga gtgaagaagg tcttcggatc gtaaagctct gttgttggag 360

aagatgacgg tatctaaccg gaaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc gagcgttgtc cggatttatt gggcgtaaag ggagtgtagg cggtctttta 480

agtctgatgt gaaagcccac ggctcaaccg tggagggtca ttggaaactg ggagacttga 540

gtgcagaaga ggagagcgga attccatgtg tagcggtgaa atgcgtagat atatggagga 600

acaccagtgg cgaaggcggc tctctggtct gactgacgct gaggctcgaa agcgtgggga 660

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttgga 720

gcttcagtgc tggagttaac gcaataagca ctccgcctgg ggagtacggc cgcaaggctg 780

aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 840

caacgcgaag aaccttacca ggtcttgaca tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctataa ctagttgcca 960

gcatggggac tctagttaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1020

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggatggc aacgagcagc 1080

gaactcgcga gggtaagcga atctctacca ttctcagttc ggatgtagtc tgcaacccga 1140

ctacagaagc cggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa tacgttcccg 1200

ggtcttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag ccggtgccta 1260

gggagccgtc gaaggtggga tagatgattg gggtgaagtc gtaacaaggt agccgtatcg 1320

gaaggtgc 1328

<210> 4
<211> 1533
<212> DNA
<213> Acetanaerobacterium elongatum

<400> 4
gagtttgatc ctggctcagg acgaacgctg gcggcgcgcc taacacatgc aagtcgagcg 60

gagtaatgtc taacacagag cggtgaagga tgattcactg ttgtgtgtta gatgttactt 120

agcggcggac gggtgagtaa cacgtgagca atctgccttt cagaggggga taacgtttgg 180

aaacgaacgc taataccgca tgatatacct aggtcgcatg accttggtat caaaggagca 240

atccgctgaa agatgagctc gcgtccgatt aggtagttgg tgaggtaacg gcccaccaag 300

cctgcgatcg gtagccggac tgagaggtcg atcggccaca ttgggactga gacacggccc 360

agactcctac gggaggcagc agtgggggat attgcacaat ggaggaaact ctgatgcagc 420

gacgccgcgt gagggaagaa ggtcttcgga ttgtaaacct ctgtcttcgg ggacgataat 480

gacggtaccc gaggaggaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtggcaagcg ttgtccggaa ttactgggtg taaagggagc gtaggcgggc tcgcaagttg 600

aatgttaaat ctaccggctc aaccggtaac cgcgttcaaa actgcgagtc ttgagtgtag 660

tagaggcagg cggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacacca 720

gtggcgaagg cggcctgctg ggcttttact gacgctgatg ctcgaaagca tggggagcaa 780

acaggattag ataccctggt agtccatgcc gtaaacgatg attactaggt gtgggggggac 840

tgacccccttc cgtgccgcag ttaacacaat aagtaatcca cctggggagt acggccgcaa 900

ggttgaaact caaaggaatt gacgggggcc cgcacaagca gtggagtatg tggtttaatt 960

cgaagcaacg cgaagaacct taccaggtct tgacatcgca cgcattacct agagataggg 1020

aagcccttcg gggcgtgtag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttacagtta gttgctacgc aagagcactc 1140

taacaggact gccgttgaca aaacggagga aggtggggat gacgtcaaat catcatgccc 1200

cttatgacct gggccacaca cgtactacaa tggccatcaa cagaggggtg caaagccgcg 1260

aggcagagca aatctcaaaa aatggtctca gttcggattg caggctgcaa ctcgcctgca 1320

tgaagccgga attgctagta atcgcgaatc agcatgtcgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgagag ccggtaacac ccgaagcttg tagtctaacc 1440

gcaaggagga cgcaattgaa ggtggggctg gtaattgggg tgaagtcgta acaaggtagc 1500

cgtatcggaa ggtgcggctg gatcacctcc tta 1533

<210> 5
<211> 1464
<212> DNA
<213> Acetivibrio cellulolyticus

<400> 5
gacgaacgct ggcggcgtgc ttaacacatg caagtcgagc ggagaatata gcaatatatt 60

cttagcggcg gacgggtgag taacgcgtgg gcaatctgcc tcatacaggg ggataacact 120

gggaaactag tgctaatacc gcataaaata gtgaagtggc atcactttac tatcaaagga 180

gcaatccggt gtgagatgag cccgcgtccg attagctagt tggtggggta acggcccacc 240

aaggcgacga tcggtagccg aactgagagg ttgatcggcc acattgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcgc aatgggggaa accctgacgc 360

agcaacgccg cgtgaaggat gaaggttttc ggattgtaaa cttctttgat tggggacgat 420

aatgacggta cccaaaaaac aagccacggc taactacgtg ccagcagccg cggtaatacg 480

taggtggcaa gcgttgtccg gatttactgg gtgtaaaggg cgtgtaggcg gggatgcaag 540

tcagatgtga aattcggggc tcaaccccgg cgctgcatct gaaactgtat ctcttgagtg 600

ctggagagga aagcggaatt cctagtgtag cggtgaaatg cgtagatatt aggaggaaca 660

ccagtggcga aggcggcttt ctggacagta actgacgctg aggcgcgaaa gcgtggggag 720

cgaacaggat tagataccct ggtagtccac gccgtaaacg atggatacta ggtgtaggag 780

gtatcgaccc cttctgtgcc ggagttaaca caataagtat cccacctggg gagtacggcc 840

gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcagtggag tatgtggttt 900

aattcgaagc aacgcgaaga accttaccag ggcttgacat accattgacg tayctagaga 960

taggtatttc ttcgggacaa tggatacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caacccctgt tgttagttgc catcattaag 1080

ttgggcactc tagcgagact gccggtgaca aatcggagga aggtggggac gacgtcaaat 1140

catcatgccc cttatgtcct gggctacaca cgtactacaa tggctattac agagggaagc 1200

gaagccgtga ggtggagcaa atctccaaaa atagtcccag ttcagattgt aggctgaaac 1260

tcgcctacat gaagtcggaa ttgctagtaa tggcaggtca gcatactgcc gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgagagt ctgcaacacc cgaagtcagt 1380

agtctaactg taaagaggac gctgccgaag gtggggccga tgattggggt gaagtcgtaa 1440

caaggtagcc gtatcggaag gtgc 1464

<210> 6
<211> 1529
<212> DNA
<213> Acetivibrio ethanolgignens

<400> 6
tgatcctggc tcaggatgaa cgctggcggc gtgcttaaca catgcaagtc gaacgaagca 60

cttaaaacag attggaatag cttgctagga agagaagttt tatttgactg agtggcggac 120

gggtgagtaa cgcgtgggta acctgcctca cacaggggga taacagttag aaatgactgc 180

taataccgca taatatgcag cctcgcatga gactgctttg aaaactccgg tggtgtgaga 240

tgggcccgcg tctgattagc cagttggcag ggtaacggcc taccaaagcg acgatcagta 300

gccggcttga gagagtgaac ggccacattg ggactgagac acggcccaaa ctcctacggg 360

aggcagcagt ggggaatatt gcacaatggg ggaaaccctg atgcagcgac gccgcgtgag 420

tgaagaagta tttcggtatg taaagctcta tcagcaggga agataatgac ggtacctgac 480

taagaagccc cggctaacta cgtgccagca gccgcggtaa tacgtagggg gcaagcgtta 540

tccggattta ctgggtgtaa agggagcgta ggtggttcgg caagtctgat gtgaaagccc 600

ggggctcaac cccgggactg cattggaaac tgtcggactt gagtgctgga gaggtaagtg 660

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg 720

gcttactgga cagtaactga cactgaggct cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgccgt aaacgatgaa tactaggtgt cggggcccat aagggcttcg 840

gtgccgcagc taacgcaata agtattccac ctggggagta cgttcgcaag aatgaaactc 900

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 960

gaagaacctt accaggtctt gacatcccga cgaccggccc gtaacggggt cctttcttcg 1020

gaacgtcggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccctgttctt agtagccagc agttcggctg ggcactctag 1140

ggagactgcc agggataacc tggaggaagg tggggatgac gtcaaatcat catgcccctt 1200

atgatctggg ctacacacgt gctacaatgg cgtaaacaaa gggaagcgac cctgtgaagg 1260

taagcaaatc tcaaaaataa cgtctcagtt cggattgtag tctgcaactc gactacatga 1320

agctggaatc gctagtaatc gcaaatcaga atgttgcggt gaatacgttc ccgggtcttg 1380

tacacaccgc ccgtcacacc atgggagtcg gatatgcccg aagtcagtga cctaaccgca 1440

aggagggagc tgccgaaggt ggagccgatg actggggtga agtcgtaaca aggtagccgt 1500

atcggaaggt gcggctggat cacctcctt 1529

<210> 7
<211> 1480
<212> DNA
<213> Acetobacter aceti

<400> 7
gagtttgatt ctggctcaga gcgaacgctg gcggcatgct taacacatgc aagtcgcacg 60

aaggcttcgg ccttagtggc ggacgggtga gtaacgcgta ggaatctatc catgggtggg 120

ggataactcc gggaaactgg agctaatacc gcatgatacc tgagggtcaa aggcgcaagt 180

cgcctgtgga ggagtctgcg tttgattagc ttgttggtgg ggtaaaggcc taccaaggcg 240

atgatcaata gctggtctga gaggatgatc agccacactg ggactgagac acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt ggacaatggg ggcaaccctg atccagcaat 360

gccgcgtgtg tgaagaaggt tttcggattg taaagcactt tcggcgggga cgatgatgac 420

ggtacccgca gaagaagccc cggctaactt cgtgccagca gccgcggtaa tacgaagggg 480

gctagcgttg ctcggaatga ctgggcgtaa agggcgtgta ggcggtttgt acagtcagat 540

gtgaaatccc cgggcttaac ctgggagctg catttgatac gtgcagacta gagtatgaga 600

gagggttgtg gaattctcag tgtagaggtg aaattcgtag atattgggaa gaacaccggt 660

ggcgaaggcg gcaacctggc tcattactga cgctgaggcg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtg tgctggatgt tgggtaactt 780

agttactcag tgtcgtagct aacgcgataa gcacaccgcc tggggagtac ggccgcaagg 840

ttgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg cagaacctta ccagggcttg tatggagagg ctgtattcag agatggatat 960

ttcccgcaag ggacctcttg cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac ccttatcttt agttgccagc atgtttgggt 1080

gggcactcta aagagactgc cggtgacaag ccggaggaag gtggggatga cgtcaagtcc 1140

tcatggccct tatgtcctgg gctacacacg tgctacaatg gcggtgacag tgggaagcta 1200

gatggcgaca tcgtgccgat ctctaaaaac cgtctcagtt cggattgcac tctgcaactc 1260

gagtgcatga aggtggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc atgggagttg gtttgacctt aagccggtga 1380

gcgaaccgca aggacgcagc cgaccacggt cgggtcagcg actggggtga agtcgtaaca 1440

aggtagccgt aggggaacct gcggctggat cacctccttt 1480

<210> 8
<211> 1442
<212> DNA
<213> Acetobacter fabarum

<400> 8
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gaacctttcg gggttagtgg 60

cggacgggtg agtaacgcgt aggaatctgt ccacgggtgg gggataactc tgggaaactg 120

gagctaatac cgcatgatac ctgagggtca aaggcgcaag tcgcctgtgg aggagcctgc 180

gttcgattag ctagttggtg gggtaaaggc ctaccaaggc gatgatcgat agctggtttg 240

agaggatgat cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tggacaatgg gggcaaccct gatccagcaa tgccgcgtgt gtgaagaagg 360

tcttcggatt gtaaagcact ttcgacgggg acgatgatga cggtacccgt agaagaagcc 420

ccggctaact tcgtgccagc agccgcggta atacgaaggg ggctagcgtt gctcggaatg 480

actgggcgta aagggcgtgt aggcggttta cacagtcaga tgtgaaatcc ccgggcttaa 540

cctgggagct gcatttgata cgtgtagact agagtgtgag agagggttgt ggaattccca 600

gtgtagaggt gaaattcgta gatattggga agaacaccgg tggcgaaggc ggcaacctgg 660

ctcattactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 720

gtccacgctg taaacgatgt gtgctagatg ttgggtaact ttgttattca gtgtcgcagt 780

taacgcgtta agcacaccgc ctggggagta cggccgcaag gttgaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gcagaacctt 900

accagggctt gaatgtagag gctgtattca gagatggata tttcccgcaa gggacctcta 960

acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcaa cccctatctt tagttgccag catgtttggg tgggcactct agagagactg 1080

ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc ctcatggccc ttatgtcctg 1140

ggctacacac gtgctacaat ggcggtgaca gtgggaagct agatggtgac atcgtgctga 1200

tctctaaaag ccgtctcagt tcggattgca ctctgcaact cgagtgcatg aaggtggaat 1260

cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt ggtttgacct taagccggtg agcgaacccg caaggggcgc 1380

agccgaccac ggtcgggtca gcgactgggg tgaagtcgta acaaggtagc cgtaggggaa 1440

cc 1442

<210> 9
<211> 1443
<212> DNA
<213> Acetobacter lovaniensis

<400> 9
tgagttttga tcctggctca gagcgaacgc tggcggcatg cttaacacat gcaagtcgca 60

cgaacctttc ggggttagtg gcggacgggt gagtaacgcg taggaatctg tccacgggtg 120

ggggataact ctgggaaact ggagctaata ccgcatgata cctgagggtc aaaggcgcaa 180

gtcgcctgtg gaggagcctg cgttcgatta gctagttggt ggggtaaagg cctaccaagg 240

cgatgatcga tagctggttt gagaggatga tcagccacac tgggactgag acacggccca 300

gactcctacg ggaggcagca gtggggaata ttggacaatg ggggcaaccc tgatccagca 360

atgccgcgtg tgtgaagaag gtcttcggat tgtaaagcac tttcgacggg gacgatgatg 420

acggtacccg tagaagaagc cccggctaac ttcgtgccag cagccgcggt aatacgaagg 480

gggctagcgt tgctcggaat gactgggcgt aaagggcgtg taggcggttt acacagtcag 540

atgtgaaatc cccgggctta acctgggagc tgcatttgat acgtgtagac tagagtgtga 600

gagagggttg tggaattccc agtgtagagg tgaaattcgt agatattggg aagaacaccg 660

gtggcgaagg cggcaacctg gctcatgact gacgctgagg cgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgct gtaaacgatg tgtgctagat gttgggtaac 780

tttgttattc agtgtcgcag ttaacgcgtt aagcacaccg cctggggagt acggccgcaa 840

ggttgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgaagcaacg cgcagaacct taccagggct tgaatgtaga ggctgtattc agagatggat 960

atttcccgca agggacctct aacacaggtg ctgcatggct gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca acccctatct ttagttgcca gcatgtttgg 1080

gtgggcactc tagagagact gccggtgaca agccggagga aggtggggat gacgtcaagt 1140

cctcatggcc cttatgtcct gggctacaca cgtgctacaa tggcggtgac agtgggaagc 1200

tagatggtga catcatgctg atctctaaaa gccgtctcag ttcggattgc actctgcaac 1260

tcgagtgcat gaaggtggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt tggtttgacc ttaagccggt 1380

gagcgaaccc gcaaggggcg cagccgacca cggtcgggtc cagcgactgg ggtgaagtcg 1440

tac 1443

<210> 10

<211> 1442
<212> DNA
<213> Acetobacter malorum

<400> 10
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gaaggcttcg gccttagtgg 60

cggacgggtg agtaacgcgt aggaatctat ccacgggtgg gggataactc cgggaaactg 120

gagctaatac cgcatgatac ctgagggtca aaggcgcaag tcgcctgtgg aggagcctgc 180

gtttgattag cttgttggtg gggtaatggc ctaccaaggc gatgatcaat agctggtctg 240

agaggatgat cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tggacaatgg gggcaaccct gatccagcaa tgccgcgtgt gtgaagaagg 360

ttttcggatt gtaaagcact ttcggcgggg acgatgatga cggtacccgc agaagaagcc 420

ccggctaact tcgtgccagc agccgcggta atacgaaggg ggctagcgtt gctcggaatg 480

actgggcgta aagggcgtgt aggcggtttg tacagttaga tgtgaaatcc ccgggcttaa 540

cctgggagct gcatttaata cgtgcagact agagtgtgag agagggttgt ggaattccca 600

gtgtagaggt gaaattcgta gatattggga agaacaccgg tggcgaaggc ggcaacctgg 660

ctcattactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 720

gtccacgctg taaacgatgt gtgctggatg ttgggtaact tagttactca gtgtcgtagc 780

taacgcgata agcacaccgc ctggggagta cggccgcaag gttgaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gcagaacctt 900

accagggctt gtatgggtag gctgtgtcca gagatgggca tttcccgcaa gggacctacc 960

gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcaa cccctatctt tagttgccag catgtttggg tgggcactct agagagactg 1080

ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc ctcatggccc ttatgtcctg 1140

ggctacacac gtgctacaat ggcgatgaca atgggaagct agatggcgac atcgtgctga 1200

tctcaaaaag tcgtctcagt tcggattgca ctctgcaact cgagtgcatg aaggtggaat 1260

cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt ggtttgacct taagccggtg agcgaacccg caaggggcgc 1380

agccgaccac ggtcgggtca gcgactgggg tgaagtcgta acaaggtagc cgtaggggaa 1440

cc 1442

<210> 11
<211> 1401
<212> DNA
<213> Acetobacter orientalis

<400> 11
tgagtttgat cctggctcag agcgaacgct ggcggcatgc ttaacacatg caagtcgcac 60

gaaggtttcg gccttagtgg cggacgggtg agtaacgcgt aggaatctat ccatgggtgg 120

gggataactc tgggaaactg gagctaatac cgcatgatac ctgagggtca aaggcgcgag 180

tcgcctgtgg aggagcctgc gtttgattag cttgttggtg gggtaatggc ctaccaaggc 240

gatgatcaat agctggtctg agaggatgat cagccacact gggactgaga cacggcccag 300

actcctacgg gaggcagcag tggggaatat tggacaatgg gggcaaccct gatccagcaa 360

tgccgcgtgt gtgaagaagg ttttcggatt gtaaagcact ttcgacgggg acgatgatga 420

cggtacccgt agaagaagcc ccggctaact tcgtgccagc agccgcggta atacgaaggg 480

ggctagcgtt gctcggaatg actgggcgta aagggcgtgt aggcggtttg tacagtcaga 540

tgtgaaatcc ccgggcttaa cctgggagct gcatttgata cgtgcagact agagtgtgag 600

agagggttgt ggaattccca gtgtagaggt gaaattcgta gatattggga agaacaccgg 660

tggcgaaggc ggcaacctgg ctcataactg acgctgaggc gcgaaagcgt ggggagcaaa 720

caggattaga taccctggta gtccacgctg taaacgatgt gtgctagatg ttgggtaact 780

tagttattca gtgtcgcagt taacgcgtta agcacaccgc ctggggagta cggccgcaag 840

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 900

gaagcaacgc gcagaacctt accagggctt gtatgggtag gctgtgtcca gagatgggca 960

tttcccgcaa gggacctacc gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgca acgagcgcaa cccctatctt tagttgccag catgtttggg 1080

tgggcactct agagagactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1140

ctcatggccc ttatgtcctg ggctacacac gtgctacaat ggcggtgaca gtgggaagct 1200

agatggcgac atcgtgctga tctctaaaaa ccgtctcagt tcggattgta ctctgcaact 1260

cgagtacatg aaggtggaat cgctagtaat cgcggatcag catgccgcgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catgggagtt ggtttgacct taagccggtg 1380

agcgaacccg caaggggcgc a 1401

<210> 12
<211> 1479
<212> DNA
<213> Acetobacter pasteurianus

<400> 12
gagtttgatt ctggctcaga gcgaacgctg gcggcatgct taacacatgc aagtcgcacg 60

aaggtttcgg ccttagtggc ggacgggtga gtaacgcgta ggtatctatc catgggtggg 120

ggataacact gggaaactgg tgctaatacc gcatgacacc tgagggtcaa aggcgcaagt 180

cgcctgtgga ggagcctgcg tttgattagc tagttggtgg ggtaaaggcc taccaaggcg 240

atgatcaata gctggtttga gaggatgatc agccacactg ggactgagac acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt ggacaatggg ggcaaccctg atccagcaat 360

gccgcgtgtg tgaagaaggt cttcggattg taaagcactt tcgacgggga cgatgatgac 420

ggtacccgta gaagaagccc cggctaactt cgtgccagca gccgcggtaa tacgaagggg 480

gctagcgttg ctcggaatga ctgggcgtaa agggcgtgta ggcggtttgt acagtcagat 540

gtgaaatccc cgggcttaac ctgggagctg catttgatac gtgcagacta gagtgtgaga 600

gagggttgtg gaattcccag tgtagaggtg aaattcgtag atattgggaa gaacaccggt 660

ggcgaaggcg gcaacctggc tcattactga cgctgaggcg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtg tgctagatgt tgggtgactt 780

agtcattcag tgtcgcactt aacgcgttaa gcacaccgcc tggggagtac ggccgcaagg 840

ttgaaactca aaggaattga cgggggcccg cacaaggcgt ggagcatgtg gtttaattcg 900

aagcaacgcg cagaacctta ccagggcttg aatgtagagg ctgcaagcag agatgtttgt 960

ttcccgcaag ggacctctaa cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac ccctatcttt agttgccatc aggttgggct 1080

gggcactcta gagagactgc cggtgacaag ccggaggaag gtggggatga cgtcaagtcc 1140

tcatggccct tatgtcctgg gctacacacg tgctacaatg gcggtgagag tgggaagcta 1200

ggtggtgaca ccatggtgat ctctaaaagc cgtctcagtt cggattgcac tctgcaactc 1260

gagtgcatga aggtggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc atgggagttg gtttgacctt aagccggtga 1380

gcgaaccgca aggacgcagc gaccacggtc gggtcagcga ctggggtgaa gtcgtaacaa 1440

ggtagccgta ggggaacctg cggctggatc acctccttt 1479

<210> 13
<211> 1440
<212> DNA
<213> Acetobacter pomorum

<400> 13
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gaaggtttcg gccttagtgg 60

cggacgggtg agtaacgcgt aggtatctat ccatgggtgg gggataacac tgggaaactg 120

gtgctaatac cgcatgacac ctgagggtca aaggcgcaag tcgcctgtgg aggagcctgc 180

gtttgattag ctagttggtg gggtaaaggc ctaccaaggc gatgatcaat agctggtttg 240

agaggatgat cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tggacaatgg gggcaaccct gatccagcaa tgccgcgtgt gtgaagaagg 360

tcttcggatt gtaaagcact ttcgacgggg acgatgatga cggtacccgt agaagaagcc 420

ccggctaact tcgtgccagc agccgcggta atacgaaggg ggctagcgtt gctcggaatg 480

actgggcgta aagggcgtgt aggcggtttg tacagtcaga tgtgaaatcc ccgggcttaa 540

cctgggagct gcatttgata cgtgcagact agagtatgag agagggttgt ggaattccca 600

gtgtagaggt gaaattcgta gatattggga agaacaccgg tggcgaaggc ggcaacctgg 660

ctcattactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 720

gtccacgctg taaacgatgt gtgctagatg ttgggtaact tagttattca gtgtcgcagt 780

taacgcgtta agcacaccgc ctggggagta cggccgcaag gttgaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gcagaacctt 900

accagggctt gaatgtagag gctgcaagca gagatgtttg tttcccgcaa gggacctcta 960

acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcaa cccctatctt tagttgccat caggttgggc tgggcactct agagagactg 1080

ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc ctcatggccc ttatgtcctg 1140

ggctacacac gtgctacaat ggcggtgaca gtgggaagct aggtggtgac accatgctga 1200

tctctaaaag ccgtctcagt tcggattgca ctctgcaact cgagtgcatg aaggtggaat 1260

cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt ggtttgacct taagccggtg agcgaaccgc aaggacgcag 1380

ccgaccacgg tcgggtcagc gactggggtg aagtcgtaac aaggtagccg taggggaacc 1440

<210> 14
<211> 1412
<212> DNA
<213> Acetobacter syzygii

<400> 14
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gaacctttcg gggttagtgg 60

cggacgggtg agtaacgcgt aggaatctgt ccatgggtgg gggataactc tgggaaactg 120

gagctaatac cgcatgatac ctgagggtca aaggcgcaag tcgcctgtgg aggagcctgc 180

gttcgattag ctagttggtg gggtaaaggc ctaccaaggc gatgatcgat agctggtttg 240

agaggatgat cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tggacaatgg gggcaaccct gatccagcaa tgccgcgtgt gtgaagaagg 360

tcttcggatt gtaaagcact ttcgacgggg acgatgatga cggtacccgt agaagaagcc 420

ccggctaact tcgtgccagc agccgcggta atacgaaggg ggctagcgtt gctcggaatg 480

actgggcgta aagggcgtgt aggcggtttg tacagtcaga tgtgaaatcc ccgggcttaa 540

cctgggagct gcatttgata cgtacagact agagtgtgag agagggttgt ggaattccca 600

gtgtagaggt gaaattcgta gatattggga agaacaccgg tggcgaaggc ggcaacctgg 660

ctcattactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 720

gtccacgctg taaacgatgt gtgctagatg ttgggtgact ttgtcattca gtgtcgcagt 780

taacgcgtta agcacaccgc ctggggagta cggccgcaag gttgaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gcagaacctt 900

accagggctt gaatgtagag gctgtattca gagatggata tttcccgcaa gggacctcta 960

acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcaa cccctatctt tagttgccag catgtttggg tgggcactct agagagactg 1080

ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc ctcatggccc ttatgtcctg 1140

ggctacacac gtgctacaat ggcggtgaca gtgggaagct agatggtgac atcgtgctga 1200

tctctaaaag ccgtctcagt tcggattgca ctctgcaact cgagtgcatg aaggtggaat 1260

cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt ggtttgacct taagccggtg agcgaacccg caaggggcgc 1380

agccgaccac ggtcgggtca gcgactgggg tg 1412

<210> 15
<211> 1443
<212> DNA
<213> Acetobacter tropicalis

<220>
<221> modified_base
<222> (9)..(9)
<223> a, c, t, g, unknown or other

<400> 15
tgagttganc tggctcagag cgaacgctgg cggcatgctt aacacatgca agtcgcacga 60

aggtttcggc cttagtggcg gacgggtgag taacgcgtag gaatctatcc atgggtgggg 120

gataactctg ggaaactgga gctaataccg catgatacct gagggtcaaa ggcgcaagtc 180

gcctgtggag gagcctgcgt tcgattagct tgttggtggg gtaatggcct accaaggcga 240

tgatcgatag ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggg gcaaccctga tccagcaatg 360

ccgcgtgtgt gaagaaggtt ttcggattgt aaagcacttt cggcggggac gatgatgacg 420

gtacccgcag aagaagcccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg 480

ctagcgttgc tcggaatgac tgggcgtaaa gggcgtgtag gcggtttgta cagtcagatg 540

tgaaatcccc gggcttaacc tgggagctgc atttgatacg tgcagactag agtgtgagag 600

agggttgtgg aattcccagt gtagaggtga aattcgtaga tattgggaag aacaccggtg 660

gcgaaggcgg caacctggct catgactgac gctgaggcgc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgctgta aacgatgtgt gctggatgtt gggcaactta 780

gttgttcagt gtcgtagcta acgcgataag cacaccgcct ggggagtacg gccgcaaggt 840

tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac cagggcttgt atgtgtaggc tgtgtccaga gatgggcatt 960

tcccgcaagg gacctacagc acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1020

gttgggttaa gtcccgcaac gagcgcaacc cctatcttta gttgccagca tgtttgggtg 1080

ggcactctag agagactgcc ggtgacaagc cggaggaagg tggggatgac gtcaagtcct 1140

catggccctt atgtcctggg ctacacacgt gctacaatgg cggtgacagt gggaagctag 1200

atggcgacat cgtgctgatc tctaaaagcc gtctcagttc ggattgcact ctgcaactcg 1260

agtgcatgaa ggtggaatcg ctagtaatcg cggatcaagc atgccgcggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc atgggagttg gtttgacctt aagccggtga 1380

gcgaacccag ctaatggggc gcagccgacc acggtcgggt cagcgactgg ggtgaagtcg 1440

tac 1443

<210> 16
<211> 1475
<212> DNA
<213> Acetobacteraceae bacterium AT-5844

<400> 16
agagtttgat cctggctcag agtgaacgct ggcggcatgc ttaacacatg caagtcgtgc 60

gccccgcaag gggagcggcg gacgggtgag taacacgtag gaatgtgtcc ggaggtgggg 120

gataaccctg ggaaactagg gctaataccg catatgggct gaggcccaaa gccgtgaggc 180

gccatcggag tagcctgcgc ctgattagct agttggtggg gtaaaggcct accaaggcga 240

cgatcagtag ctggtctgag aggacgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggc gcaagcctga tccagcaatg 360

ccgcgtgtgt gaagaaggtc ttcggatcgt aaagcacttt cggcggggac gatgatgacg 420

gtacccgcag aagaagcccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg 480

ctagcgttac tcggaattac tgggcgtaaa gggcgcgtag gcggcgttcc aagttaggcg 540

tgaaagtcct gggctcaacc tgggaactgc gcttaagact ggagtgcttg aggatggaag 600

agggttgtgg aattcccagt gtagaggtga aattcgtaga tattgggaag aacaccggtg 660

gcgaaggcgg caacctggtc cattactgac gctgaggcgc gatagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgtgc gctggatgtt gggggtccta 780

gaccttcagt gtcgtagcta acgcgataag cgcaccgcct ggggagtacg gccgcaaggt 840

tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac cagctcttga catgggtagg accggtgcag agatgcactt 960

ttcccgcaag ggacctaccg cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac cctcgccttt agttgccagc atgtttgggt 1080

gggcactcta aaggaactgc cggtgacaag ccggaggaag gtggggatga cgtcaagtcc 1140

tcatggccct tatgggctgg gctacacacg tgctacaatg gcggtgacaa cgggatgcca 1200

ggcagcgatg ccgagccgat cccaaaaagc cgtctcagtt cagattgcag cctgcaactc 1260

ggctgcatga aggtggaatc gctagtaatc gcggatcagc acgccgcggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc atgggagttg gttttacctt aagtcggtgc 1380

ggtaaccgca aggagctagc cgaccacggt aggatcagtg actggggtga agtcgtaaca 1440

aggtagccgt aggggaacct gcggctggat cacct 1475

<210> 17
<211> 1506
<212> DNA
<213> Acholeplasma laidlawii

<400> 17
tatatggaga gtttgatcct ggctcaggat gaacgctggc ggcgtgccta atacatgcaa 60

gtcgaacgaa gcatcttcgg atgcttagtg gcgaacgggt gagtaacacg tagataacct 120

acctttaact cgaggataac tccgggaaac tggagctaat actggatagg atgtgtgcat 180

gaaaaaaaca catttaaaga tttatcggtt taagaggggt ctgcggcgca ttagttagtt 240

ggtggggtaa aagcctacca agacgatgat gcgtagccgg actgagaggt ctaccggcca 300

cattgggact gagaacggcc caaactccta cgggaggcag cagtagggaa ttttcggcaa 360

tgggggaaac cctgaccgag caacgccgcg tgaacgacga agtacttcgg tatgtaaagt 420

tcttttatat gggaagaaaa attaaaaatt gacggtacca tatgaataag ccccggctaa 480

ctatgtgcca gcagccgcgg taatacatag ggggcgagcg ttatccggat ttactgggcg 540

taaagggtgc gtaggtggtt ataaaagttt gtggtgtaag tgcagtgctt aacgctgtga 600

ggctatgaaa actatataac tagagtgaga cagaggcaag tggaattcca tgtgtagcgg 660

taaaatgcgt aaatatatgg aggaacacca gtggcgaagg cggcttgctg ggtctatact 720

gacactgatg cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 780

gtaaacgatg agaactaagt gttggccaaa aggtcagtgc tgcagttaac gcattaagtt 840

ctccgcctga gtagtacgta cgcaagtatg aaactcaaag gaattgacgg gaccccgcac 900

aagcggtgga tcatgttgtt taattcgaag atacacgaaa aaccttacca ggtcttgaca 960

tactctgcaa aggcttagaa ataagttcgg aggctaacag atgtacaggt ggtgcacggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt 1080

gctagttacc atcattaagt tggggactct agcgagactg ccagtgataa attggaggaa 1140

ggtggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacaaac gtgatacaat 1200

ggctggaaca aagagaagcg atagggtgac ctggagcgaa actcacaaaa acagtctcag 1260

ttcggattgg agtctgcaac tcgactccat gaagtcggaa tcgctagtaa tcgcaaatca 1320

gcatgttgcg gtgaatacgt tctcggggtt tgtacacacc gcccgtcaaa ccacgaaagt 1380

gggcaatacc caacgccggt ggcctaaccc gaaagggagg gagccgtcta aggtagggtc 1440

catgattggg gttaagtcgt aacaaggtat ccctacggga acgtggggat ggatcacctc 1500

ctttct 1506

<210> 18
<211> 1523
<212> DNA
<213> Achromobacter denitrificans

<220>
<221> modified_base
<222> (847)..(847)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1509)..(1509)
<223> a, c, t, g, unknown or other

<400> 18
agagtttgat catggctcag attgaacgct agcgggatgc cttacacatg caagtcgaac 60

ggcagcacgg acttcggtct ggtggcgagt ggcgaacggg tgagtaatgt atcggaacgt 120

gcccagtagc gggggataac tacgcgaagg cgtagctaat accgcatacg ccctacgggg 180

gaaagcaggg gatcgcaaga ccttgcacta ttggagcggc cgatatcgga ttagctagtt 240

ggtggggtaa cggctcacca aggcgacgat ccgtagctgg tttgagagga cgaccagcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga attttggaca 360

atgggggaaa ccctgatcca gccatcccgc gtgtgcgatg aaggccttcg ggttgtaaag 420

cacttttggc aggaaagaaa cgtcgcgggt taataccccg gggaactgac ggtacctgca 480

gaataagcac cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcaagcgtta 540

atcggaatta ctgggcgtaa agcgtgcgca ggcggttcgg aaagaaagat gtgaaatccc 600

agagcttaac tttggaactg catttttaac taccgggcta gagtgtgtca gagggaggtg 660

gaattccgcg tgtagcagtg aaatgcgtag atatgcggag gaacaccgat ggcgaaggca 720

gcctcctggg ataacactga cgctcatgca cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgccct aaacgatgtc aactagctgt tggggccttc gggccttggt 840

agcgcancta acgcgtgaag ttgaccgcct ggggagtacg gtcgcaagat taaaactcaa 900

aggaattgac ggggacccgc acaagcggtg gatgatgtgg attaattcga tgcaacgcga 960

aaaaccttac ctacccttga catgtctgga atcctgaaga gatttaggag tgctcgcaag 1020

agaaccggaa cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttgtcatt agttgctacg aaagggcact ctaatgagac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaag tcctcatggc ccttatgggt 1200

agggcttcac acgtcataca atggtcggga cagagggtcg ccaacccgcg aggggagcc 1260

aatcccagaa acccgatcgt agtccggatc gcagtctgca actcgactgc gtgaagtcgg 1320

aatcgctagt aatcgcggat cagcatgtcg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gtgggtttta ccagaagtag ttagcctaac cgcaaggagg 1440

gcgattacca cggtaggatt catgactggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtgcggnt ggatcacctc ctt 1523

<210> 19
<211> 1534
<212> DNA
<213> Achromobacter piechaudii

<400> 19
ttaaactgaa gagtttgatc ctggctcaga ttgaacgcta gcgggatgcc ttacacatgc 60

aagtcgaacg gcagcacgga cttcggtctg gtggcgagtg gcgaacgggt gagtaatgta 120

tcggaacgtg cctagtagcg ggggataact acgcgaaagc gtagctaata ccgcatacgc 180

cctacggggg aaagcagggg atcgtaagac cttgcactat tagagcggcc gatatcggat 240

tagctagttg gtggggtaat ggctcaccaa ggcgacgatc cgtagctggt ttgagaggac 300

gaccagccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

ttttggacaa tgggggaaac cctgatccag ccatcccgcg tgtgcgatga aggccttcgg 420

gttgtaaagc acttttggca ggaaagaaac gtcatgggct aataccccgt gaaactgacg 480

gtacctgcag aataagcacc ggctaactac gtgccagcag ccgcggtaat acgtagggtg 540

caagcgttaa tcggaattac tgggcgtaaa gcgtgcgcag gcggttcgga aagaaagatg 600

tgaaatccca gagcttaact ttggaactgc atttttaact accgagctag agtgtgtcag 660

agggaggtgg aattccgcgt gtagcagtga aatgcgtaga tatgcggagg aacaccgatg 720

gcgaaggcag cctcctggga taacactgac gctcatgcac gaaagcgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgcccta aacgatgtca actagctgtt ggggccttcg 840

ggccttggta gcgcagctaa cgcgtgaagt tgaccgcctg gggagtacgg tcgcaagatt 900

aaaactcaaa ggaattgacg gggacccgca caagcggtgg atgatgtgga ttaattcgat 960

gcaacgcgaa aaaccttacc tacccttgac atgtctggaa ttccgaagag atttggaagt 1020

gctcgcaaga gaactggaac acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttgtcatta gttgctacga aagggcactc 1140

taatgagact gccggtgaca aaccggagga aggtggggat gacgtcaagt cctcatggcc 1200

cttatgggta gggcttcaca cgtcatacaa tggtcgggac agagggtcgc caacccgcga 1260

gggggagcca atcccagaaa cccgatcgta gtccggatcg cagtctgcaa ctcgactgcg 1320

tgaagtcgga atcgctagta atcgcggatc agcatgtcgc ggtgaatacg ttcccgggtc 1380

ttgtacacac cgcccgtcac accatgggag tgggttttac cagaagtagt tagcctaacc 1440

gcaaggggg cgattaccac ggtaggattc atgactgggg tgaagtcgta acaaggtagc 1500

cgtatcggaa ggtgcggctg gatcacctcc tttc 1534

<210> 20
<211> 1534
<212> DNA
<213> Achromobacter xylosoxidans

<400> 20
ttaaactgaa gagtttgatc ctggctcaga ttgaacgcta gcgggatgcc ttacacatgc 60

aagtcgaacg gcagcacgga cttcggtctg gtggcgagtg gcgaacgggt gagtaatgta 120

tcggaacgtg cccagtagcg ggggataact acgcgaaagc gtagctaata ccgcatacgc 180

cctacggggg aaagcagggg atcgcaagac cttgcactat tggagcggcc gatatcggat 240

tagctagttg gtggggtaac ggctcaccaa ggcgacgatc cgtagctggt ttgagaggac 300

gaccagccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

ttttggacaa tgggggaaac cctgatccag ccatcccgcg tgtgcgatga aggccttcgg 420

gttgtaaagc acttttggca ggaaagaaac gtcgcgggtt aatacctcgc gaaactgacg 480

gtacctgcag aataagcacc ggctaactac gtgccagcag ccgcggtaat acgtagggtg 540

caagcgttaa tcggaattac tgggcgtaaa gcgtgcgcag gcggttcgga aagaaagatg 600

tgaaatccca gagcttaact ttggaactgc atttttaact accgggctag agtgtgtcag 660

agggaggtgg aattccgcgt gtagcagtga aatgcgtaga tatgcggagg aacaccgatg 720

gcgaaggcag cctcctggga taacactgac gctcatgcac gaaagcgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgcccta aacgatgtca actagctgtt ggggccttcg 840

ggccttggta gcgcagctaa cgcgtgaagt tgaccgcctg gggagtacgg tcgcaagatt 900

aaaactcaaa ggaattgacg gggacccgca caagcggtgg atgatgtgga ttaattcgat 960

gcaacgcgaa aaaccttacc tacccttgac atgtctggaa tgccgaagag atttggcagt 1020

gctcgcaaga gagccggaac acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttgtcatta gttgctacga aagggcactc 1140

taatgagact gccggtgaca aaccggagga aggtggggat gacgtcaagt cctcatggcc 1200

cttatgggta gggcttcaca cgtcatacaa tggtcgggac agagggtcgc caacccgcga 1260

gggggagcca atcccagaaa cccgatcgta gtccggatcg cagtctgcaa ctcgactgcg 1320

tgaagtcgga atcgctagta atcgcggatc agcatgtcgc ggtgaatacg ttcccgggtc 1380

ttgtacacac cgcccgtcac accatgggag tgggttttac cagaagtagt tagcctaacc 1440

gcaaggggg cgattaccac ggtaggattc atgactgggg tgaagtcgta acaaggtagc 1500

cgtatcggaa ggtgcggctg gatcacctcc tttc 1534

<210> 21
<211> 1545
<212> DNA
<213> Acidaminococcus fermentans

<400> 21
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggagaacttt cttcggaatg ttcttagtgg cgaacgggtg agtaacgcgt aggcaacctg 120

ccctctggtt ggggacaaca ttccgaaagg gatgctaata ccgaatgaga tcctctttcc 180

gcatggagag aggatgaaag atggcctcta cttgtaagct atcgccagaa gatgggcctg 240

cgtctgatta gcttgtaggt gaggtaacgg ctcacctagg cgatgatcag tagccggtct 300

gagaggatga acggccacat tgggactgag acacggccca aactcctacg ggaggcagca 360

gtggggaatc ttccgcaatg gacgaaagtc tgacggagca acgccgcgtg agtgatgaag 420

gccttcgggt tgtaaaactc tgttgtcagg gacgaaagca ccgatctata atacattttg 480

gtgttgacgg tacctgacga ggaagccacg gctaactacg tgccagcagc cgcggtaata 540

cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag agcatgtagg cgggctttta 600

agtccgacgt gaaaatgcgg ggcttaaccc cgtatggcgt tggatactgg aagtcttgag 660

tgcaggagag gaaaggggaa ttcccagtgt agcggtgaaa tgcgtagata ttgggaggaa 720

caccagtggc gaaggcgcct ttctggactg tgtctgacgc tgagatgcga aagccagggt 780

agcaaacggg attagatacc ccggtagtcc tggccgtaaa cgatgggtac taggtgtagg 840

aggtatcgac cccttctgtg ccggagttaa cgcaataagt accccgcctg gggactacga 900

tcgcaagatt gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agtatgtggt 960

ttaattcgac gcaacgcgaa gaaccttacc aaggcttgac attgagtgaa agacccagag 1020

atgggtcccc ttcttcggaa gcacgaaaac aggtggtgca tggctgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tatcctatgt taccagcacg 1140

taatggtggg gactcatagg agactgccag ggataacctg gaggaaggcg gggatgacgt 1200

caagtcatca tgcccccttat gtcttgggct acacacgtac tacaatggtc ggcaacaaag 1260

ggcagcgaag ccgcgaggcg gagccaatcc cagaaacccg accccagttc ggatcgcagg 1320

ctgcaacccg cctgcgtgaa gttggaatcg ctagtaatcg caggtcagca tactgcggtg 1380

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgaaagttgg taacacccga 1440

agccggtgag ataacctttt aggagtcagc tgtctaaggt ggggccgatg attggggtga 1500

agtcgtaaca aggtagccgt tcgagaacga gcggctggat cacct 1545

<210> 22
<211> 1489
<212> DNA
<213> Acidaminococcus intestini

<400> 22
ctggcggcgt gcttaacaca tgcaagtcga acggagaact tatttcggta agttcttagt 60

ggcgaacggg tgagtaacgc gtgggcaacc tgccctccag ttggggacaa cattccgaaa 120

gggatgctaa taccgaatgt cctccctcct ccgcatggag gagggaggaa agatggcctc 180

tgcttgcaag ctatcgctgg aagatgggcc cgcgtctgat tagctagttg gtggggtaac 240

ggctcaccaa ggcgatgatc agtagccggt ctgagaggat gaacggccac attgggactg 300

agacacggcc caaactccta cgggaggcag cagtggggaa tcttccgcaa tggacgaaag 360

tctgacggag caacgccgcg tgagtgatga aggtcttcgg attgtaaaac tctgttgtta 420

gggacgaaag caccgtgttc gaacaggtca tggtgttgac ggtacctaac gaggaagcca 480

cggctaacta cgtgccagca gccgcggtaa tacgtaggtg gcaagcgttg tccggaatta 540

ttgggcgtaa agagcatgta ggcgggcttt taagtctgac gtgaaaatgc ggggcttaac 600

cccgtatggc gttggatact ggaagtcttg agtgcaggag aggaaagggg aattcccagt 660

gtagcggtga aatgcgtaga tattgggagg aacaccagtg gcgaaggcgc ctttctggac 720

tgtgtctgac gctgagatgc gaaagccagg gtagcaaacg ggattagata ccccggtagt 780

cctggccgta aacgatggat actaggtgta ggaggtatcg accccttctg tgccggagtt 840

aacgcaataa gtatcccgcc tggggactac gatcgcaaga ttgaaactca aaggaattga 900

cgggggcccg cacaagcggt ggagtatgtg gtttaattcg acgcaacgcg aagaacctta 960

ccaaggcttg acattgagtg aaagacctag agataggtcc ctcccttcgg ggacacgaaa 1020

acaggtggtg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cctatcctat gttaccagcg cgtaaaggcg gggactcata ggagactgcc 1140

agggataact tggaggaagg cggggatgac gtcaagtcat catgcccctt atgtcttggg 1200

ctacacacgt actacaatgg tcggcaacaa agggcagcga aaccgcgagg tggagcaaat 1260

cccagaaacc cgaccccagt tcggatcgta ggctgcaacc cgcctacgtg aagttggaat 1320

cgctagtaat cgcaggtcag catactgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacac cacgaaagtt ggtaacaccc gaagccggtg agataacctt ttaggagtca 1440

gctgtctaag gtggggccga tgattggggt gaagtcgtaa caaggtagc 1489

<210> 23
<211> 1556
<212> DNA
<213> Acidaminococcus sp. D21

<400> 23
ttggagagtt tgatcctggc tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc 60

gaacggagaa cttatttcgg taagttctta gtggcgaacg ggtgagtaac gcgtgggcaa 120

cctgccctcc agttggggac aacattccga aagggatgct aataccgaat gtcctccctc 180

ctccgcatgg aggagggagg aaagatggcc tctgcttgca agctatcgct ggaagatggg 240

cccgcgtctg attagctagt tggtggggta acggctcacc aaggcgatga tcagtagccg 300

gtctgagagg atgaacggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

agcagtgggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg cgtgagtgat 420

gaaggtcttc ggattgtaaa actctgttgt tagggacgaa agcaccgtgt tcgaacaggt 480

catggtgttg acggtaccta acgaggaagc cacggctaac tacgtgccag cagccgcggt 540

aatacgtagg tggcaagcgt tgtccggaat tattgggcgt aaagagcatg taggcgggct 600

tttaagtctg acgtgaaaat gcggggctta accccgtatg gcgttggata ctggaagtct 660

tgagtgcagg agaggaaagg ggaattccca gtgtagcggt gaaatgcgta gatattggga 720

ggaacaccag tggcgaaggc gcctttctgg actgtgtctg acgctgagat gcgaaagcca 780

gggtagcaaa cgggattaga taccccggta gtcctggccg taaacgatgg atactaggtg 840

taggaggtat cgacccccttc tgtgccggag ttaacgcaat aagtatcccg cctggggact 900

acgatcgcaa gattgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagtatg 960

tggtttaatt cgacgcaacg cgaagaacct taccaaggct tgacattgag tgaaagacct 1020

agagataggt ccctcccttc ggggacacga aaacaggtgg tgcatggctg tcgtcagctc 1080

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatcct atgttaccag 1140

cgcgtaaagg cggggactca taggagactg ccagggataa cttggaggaa ggcggggatg 1200

acgtcaagtc atcatgcccc ttatgtcttg ggctacacac gtactacaat ggtcggcaac 1260

aaagggcagc gaaaccgcga ggtggagcaa atcccagaaa cccgacccca gttcggatcg 1320

taggctgcaa cccgcctacg tgaagttgga atcgctagta atcgcaggtc agcatactgc 1380

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accacgaaag ttggtaacac 1440

ccgaagccgg tgagataacc ttttaggagt cagctgtcta aggtggggcc gatgattggg 1500

gtgaagtcgt aacaaggtag ccgttcgaga acgagcggct ggatcacctc ctttct 1556

<210> 24
<211> 1451
<212> DNA
<213> Acidilobus saccharovorans

<400> 24
tccggttgat cctgccggac ccgactgcta tcggggtgag gctaagccat gggagtcgcg 60

cgcccagccg ccgctgggcg ggcgcacggc tgagtaacac gtagctaacc taccctcggg 120

acggggataa ccccgggaaa ctggggctaa tccccgatag gcgaggggggc ctggaatggt 180

ccctcgccga aagggaccct ggggggttat cgcctggggt ccgcccgagg atggggctgc 240

ggcccatcat ggtagttggc ggggtaatgg cccgccaagc cgacgacggg taggggccgt 300

gggagcggga gcccccagat gggccctgag acaagggccc aggccctacg gggcgcacca 360

ggcgcgaaac ctccgcaatg cgggaaaccg tgacggggtc accccgagtg ctcccgtaag 420

ggagcttttc cccgctgcaa ggaggcgggg gaataagcgg ggggcaagtc tggtgtcagc 480

cgccgcggta ataccagccc cgcgagtggt cgggacgtct actgggccta aagcgcccgt 540

agccggcccc gtaagtccct cctgaaagcc ctgggctcaa cccagggagt ggggggggata 600

ctgcggggct agggggcggg agaggccggg ggtaccccag gggtaggggc gaaatccgat 660

aatccctggg ggaccaccag tggcgaaagc gcccggctgg aacgcgcccg acggtgaggg 720

gcgaaagccg ggggagcgaa ccggattaga tacccgggta gtcccggctg taaacgatgc 780

gggctaggtg tcgggcgggc gttagagccc gcccggtgcc gcagggaagc cgttaagccc 840

gccgcctggg gagtacggcc gcaaggctga aactttaagg aattggcggg ggggcacaca 900

aggggtggag cctgcggctc aattggagtc aacgccggga acctcaccgg gggcgacagc 960

aggatgacgg ccaggctaac gaccttgccc gacgcgctga ggggaggtgc atggccgtcg 1020

ccagctcgtg ctgtgaagtg tcctgttaag tcaggcaacg agcgagaccc ccgcccctag 1080

ttgcgacccg gcgggagacc gttggggcac actaggggga ctgccgccgc taaggcggag 1140

gaaggagggg gccacggcag gtcagcatgc ccctaaaccc cgggttgcac gcgggctaca 1200

atggcgggra cagcgggatc cgaccccgaa agggggaggc aatccctcaa accccgccgt 1260

agtcgggatt gggggctgta actcgccccc atgaacctgg aatccctagt aaccgcgcgt 1320

caacatcgcg cggtgaatac gtccctgccc cttgtacaca ctgcccgtcg ctccacctga 1380

gagaaggagg ggtgaggctt cctccttcgg gagggagtcg aacccctcct tctcgagggg 1440

ggagaagtcg t 1451

<210> 25
<211> 1524
<212> DNA
<213> Acidithiobacillus ferrivorans

<400> 25
agagtttgat cctggctcag attgaacgct ggcggcatgc ctaacacatg caagtcgaac 60

ggtagcaggc cttcgggtgc tgacgagtgg cggacgggtg agtaatgcgt aggaatctgt 120

cttttagtgg gggacaaccc agggaaactt gggctaatac cgcatgagcc ctgaggggga 180

aagcggggga tcttcggacc tcgcgctaag agaagagcct acgtctgatt agctagttgg 240

tagggtaaag gcctaccaag gcgacgatca gtagctggtc tgagaggacg accagccaca 300

ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat ttttcgcaat 360

gggggcaacc ctgacgaagc aatgccgcgt ggatgaagaa ggccttcggg ttgtaaagtc 420

ctttcgtggg ggacgaaaag gtggttccta atacgagctg ctgttgacgt gaacccaaga 480

agaagcaccg gctaactccg tgccagcagc cgcggtaata cgggggggtgc aagcgttaat 540

cggaatcact gggcgtaaag ggtgcgtagg cggtacgtta ggtctgtcgt gaaatccccg 600

ggctcaacct gggaatggcg gtagaaaccg gcgaactaga gtatgggaga gggtggtgga 660

attccaggtg tagcggtgaa atgcgtagag atctggagga acatcagtgg cgaaggcggc 720

cacctggccc aatactgacg ctgaggcacg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgccctaa acgatgaata ctagatgttt ggtacctagc gtactgagtg 840

tcgtagctaa cgcgataagt attccgcctg ggaagtacgg ccgcaaggtt aaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa 960

gaaccttacc tgggcttgac atgtccggaa tcctgcagag atgcgggagt gcccttcggg 1020

gaatcggaac acaggtgctg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttgtcctta gttgccagcg gttcggccgg gcactctagg 1140

gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaagtcctc atggccttta 1200

tgtccagggc tacacacgtg ctacaatggc gcgtacagag ggacgccaaa ccgcgaggtg 1260

gagcagaccc cagaaagcgc gtcgtagttc ggattgcagt ctgcaactcg actgcatgaa 1320

gtcggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacca tgggagtaga ttgtaccaga agcggctagc ctaaccttcg 1440

ggagggcggt taccacggta tggtttatga ctggggtgaa gtcgtaacaa ggtagccgta 1500

ggggaacctg cggctggatc acct 1524

<210> 26
<211> 1332
<212> DNA
<213> Acidovorax sp. 98-63833

<400> 26
tgagtttgat cctggctcag attgaacgct ggcggcatgc cttacacatg caagtcgaac 60

gagtggcgaa cgggtgagta atacatcgga acgtgcctag tagtggggga taactactcg 120

aaagagtggc taataccgca tgaggaaagg tgctactaga gcggccgatg gcagattagg 180

tagttggtgg gataaaagct taccaagcca acgatctgta gctggtctga gaggacgatc 240

agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatttt 300

ggacaatggg cgaaagcctg atccagcaat gccgcgtgca ggatgaaggc cttcgggttg 360

taaactgctt ttgtacggaa cgatgacggt accgtaagaa taagcaccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggtgca agcgttaatc ggaattactg ggcgtaaagc 480

gtgcgcaggc ggttttgtaa gacagaggtg aaatccccgg gctcaacctg ggaactgcct 540

ttgtgactgc aaggctagag tacggcagag ggggatggaa ttccgcgtgt agcagtgaaa 600

tgcgtagata tgcggaggaa caccgatggc gaaggcaatc ccctgggcct actgacgctc 660

atgcacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccctaaacg 720

atgtcaactg gttgttgggt actcagtaac gaagctaacg cgtgaagttg accgcctggg 780

gagtacggcc gcaaggttga aactcaaagg aattgacggg gacccgcaca agcggtggat 840

gatgtggttt aattcgatgc aacgcgaaaa accttaccca cctttgacat gcacaggtgc 900

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgccat tagttgctac ggcactctaa tgggactgcc ggtgacaaac cggaggaagg 1020

tggggatgac gtcaagtcct catggcccct ataggtgggg ctacacacgt catacaatgg 1080

ctggcaaagg gttgccaacc cgcgaggggg agctaatccc atccagtcgt agtccggacg 1140

cagtctgcaa ctcgactgcg gaagtcggaa tcgctagtaa tcgtggatca gcatgtcacg 1200

gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccatgggagc gggtctcgcc 1260

agaagtaggt gcctagggcg cttaccacgg cggggttcgt gactggggtg aagtcgtaac 1320

aaggtagccg ta 1332

<210> 27
<211> 1539
<212> DNA
<213> Acinetobacter baumannii

<400> 27
tttaactgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg ggggaaggta gcttgctacc ggacctagcg gcggacgggt gagtaatgct 120

taggaatctg cctattagtg ggggacaaca tctcgaaagg gatgctaata ccgcatacgt 180

cctacgggag aaagcagggg atcttcggac cttgcgctaa tagatgagcc taagtcggat 240

tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc tgtagcgggt ctgagaggat 300

gatccgccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattggacaa tgggggggaac cctgatccag ccatgccgcg tgtgtgaaga aggccttatg 420

gttgtaaagc actttaagcg aggaggaggc tactttagtt aatacctaga gatagtggac 480

gttactcgca gaataagcac cggctaactc tgtgccagca gccgcggtaa tacagagggt 540

gcgagcgtta atcggattta ctgggcgtaa agcgtgcgta ggcggcttat taagtcggat 600

gtgaaatccc cgagcttaac ttgggaattg cattcgatac tggtgagcta gagtatggga 660

gaggatggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccgat 720

ggcgaaggca gccatctggc ctaatactga cgctgaggta cgaaagcatg gggagcaaac 780

aggattagat accctggtag tccatgccgt aaacgatgtc tactagccgt tggggccttt 840

gaggctttag tggcgcagct aacgcgataa gtagaccgcc tggggagtac ggtcgcaaga 900

ctaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctggccttg acatactaga aactttccag agatggattg 1020

gtgccttcgg gaatctagat acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttttcctta cttgccagca tttcggatgg 1140

gaactttaag gatactgcca gtgacaaact ggaggaaggc ggggacgacg tcaagtcatc 1200

atggccctta cggccagggc tacacacgtg ctacaatggt cggtacaaag ggttgctaca 1260

cagcgatgtg atgctaatct caaaaagccg atcgtagtcc ggattggagt ctgcaactcg 1320

actccatgaa gtcggaatcg ctagtaatcg cggatcagaa tgccgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcacacca tgggagtttg ttgcaccaga agtagctagc 1440

ctaactgcaa agagggcggt taccacggtg tggccgatga ctggggtgaa gtcgtaacaa 1500

ggtagccgta ggggaacctg cggctggatc acctcctta 1539

<210> 28
<211> 1607
<212> DNA
<213> Acinetobacter calcoaceticus

<400> 28
cactactcac gcgttgggag ctctcccata tggtcgacct gcaggcggcc gcgaattcac 60

tagtgattag agtttgatta tggctcagat tgaacgctgg cggcaggctt aacacatgca 120

agtcgagcgg agtgatggtg cttgcactat cacttagcgg cggacgggtg agtaatgctt 180

aggaatctgc ctattagtgg gggacaacat ttcgaaagga atgctaatac cgcatacgtc 240

ctacgggaga aagcagggga tcttcggacc ttgcgctaat agatgagcct aagtcggatt 300

agctagttgg tggggtaaag gcctaccaag gcgacgatct gtagcgggtc tgagaggatg 360

atccgccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 420

attggacaat gggcgcaagc ctgatccagc catgccgcgt gtgtgaagaa ggccttatgg 480

ttgtaaagca ctttaagcga ggaggaggct actgaagtta ataccttcag atagtggacg 540

ttactcgcag aataagcacc ggctaactct gtgccagcag ccgcggtaat acagagggtg 600

caagcgttaa tcggatttac tgggcgtaaa gcgcgcgtag gcggctaatt aagtcaaatg 660

tgaaatcccc gagcttaact tgggaattgc attcgatact ggttagctag agtgtgggag 720

aggatggtag aattccaggt gtagcggtga aatgcgtaga gatctggagg aataccgatg 780

gcgaaggcag ccatctggcc taacactgac gctgaggtgc gaaagcatgg ggagcaaaca 840

ggattagata ccctggtagt ccatgccgta aacgatgtct actagccgtt ggggcctttg 900

aggctttagt ggcgcagcta acgcgataag tagaccgcct ggggagtacg gtcgcaagac 960

taaaactcaa atgaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 1020

tgcaacgcga agaaccttac ctggccttga catagtaaga actttccaga gatggattgg 1080

tgccttcggg aacttacata caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg 1140

ttgggttaag tcccgcaacg agcgcaaccc ttttccttat ttgccagcga gtaatgtcgg 1200

gaactttaag gatactgcca gtgacaaact ggaggaaggc ggggacgacg tcaagtcatc 1260

atggccctta cggccagggc tacacacgtg ctacaatggt cggtacaaag ggttgctacc 1320

tagcgatagg atgctaatct caaaaagccg atcgtagtcc ggattggagt ctgcaactcg 1380

actccatgaa gtcggaatcg ctagtaatcg cggatcagaa tgccgcggtg aatacgttca 1440

cgggccttgt acacaccgcc cgtcacacca tgggagtttg ttgcaccaga agtaggtagt 1500

ctaaccgcaa gggggacgct taccacggtg tggccgatga ctggggtgaa gtcgtaacaa 1560

ggtaaccgta aatcgaattc ccgcggccgc catggcggcc ggagctg 1607

<210> 29
<211> 1296
<212> DNA
<213> Acinetobacter genomosp. C1

<400> 29
attgaacgct ggcggcaggc ttaacacatg caagtcgagc gagcggcgga cgggtgagta 60

atgcttagga atctgcctat tagtgggggа caacattccg aaaggaatgc taataccgca 120

tacggaaagg cgctaataga tgagcctaag tcggattagc tagttggtgg ggtaaaggcc 180

taccaaggcg acgatctgta gcgggtctga gaggatgatc cgccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt ggacaatggg cggaagcctg 300

atccagtcat gccgcgtgtg tgaggaaggc cttttggttg taaagcactt taagcgagga 360

ggaggacgtt actcgcagaa taagcaccgg ctaactctgt gccagcagcc gcggtaatac 420

agagggtgcg agcgttaatc ggatttactg ggcgtaaagc gtgcgtaggc ggctgattaa 480

gtcggatgtg aaatccctga gcttaactta ggaattgcat tcgatactgg tcagctagag 540

tatgggagag gatggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa 600

taccgatggc gaaggcagcc atctggccta actgacgctg aggtacgaaa gcatggggag 660

caaacaggat tagataccct ggtagtccat gccgtaaacg atgtctacta gccgttgggg 720

ctttagtggc gcggctaacg cgataagtag accgcctggg gagtacggtc gcaagactaa 780

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 840

aacgcgaaga accttacctg gccttgacat atacaggtgc tgcatggctg tcgtcagctc 900

gtgccgtgag atgttgggtt aagtcccgca acgagcgcaa ccctttтcct tacttgccag 960

catatgggaa ctttaaggat actgccagtg acaaactgga ggaaggcggg gacgacgtca 1020

agtcatcatg gcccttacgg ccagggctac acacgtgcta caatggtcgg caaagggttg 1080

ctacctagcg ataggatgct aatctcaacc gatcgtagtc cggatggagt ctgcaactcg 1140

actccagaag tcggaatcgc tagtaatcgc ggatcagaat gccgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccat gggagtttgt tgcaccagaa gtaggtgtct 1260

aggacgctta ccacggtgtg gccgatgact ggggtg 1296

<210> 30
<211> 1540
<212> DNA
<213> Acinetobacter haemolyticus

<400> 30
ttaaactgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg gggaagtgta gcttgctaca ttacctagcg gcggacgggt gagtaatgct 120

taggaatctg cctattagtg ggggacaaca ttccgaaagg aatgctaata ccgcatacgt 180

cctacgggag aaagcagggg atcttcggac cttgcgctaa tagatgagcc taagtcggat 240

tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc tgtagcgggt ctgagaggat 300

gatccgccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattggacaa tgggcggaag cctgatccag ccatgccgcg tgtgtgaaga aggcctttg 420

gttgtaaagc actttaagcg aggaggaggc tactctagtt aatacctaga gatagtggac 480

gttactcgca gaataagcac cggctaactc tgtgccagca gccgcggtaa tacagagggt 540

gcgagcgtta atcggattta ctgggcgtaa agcgtgcgta ggcggctgat taagtcggat 600

gtgaaatccc tgagcttaac ttaggaattg cattcgatac tggtcagcta gagtatggga 660

gaggatggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccgat 720

ggcgaaggca gccatctggc ctaatactga cgctgaggta cgaaagcatg gggagcaaac 780

aggattagat accctggtag tccatgccgt aaacgatgtc tactagccgt tggggccttt 840

gaggctttag tggcgcagct aacgcgataa gtagaccgcc tggggagtac ggtcgcaaga 900

ctaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctggtcttg acatagtaag aactttccag agatggattg 1020

gtgccttcgg gaacttacat acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttttcctta tttgccagcg ggttaagccg 1140

ggaactttaa ggatactgcc agtgacaaac tggaggaagg cggggacgac gtcaagtcat 1200

catggccctt acgaccaggg ctacacacgt gctacaatgg tcggtacaaa gggttgctac 1260

ctagcgatag gatgctaatc tcaaaaagcc gatcgtagtc cggattggag tctgcaactc 1320

gactccatga agtcggaatc gctagtaatc gcggatcaga atgccgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacacc atgggagttt gttgcaccag aagtaggtag 1440

tctaaccgta aggaggacgc ttaccacggt gtggccgatg actggggtga agtcgtaaca 1500

aggtagccgt aggggaacct gcggctggat cacctcctta 1540

<210> 31
<211> 1447
<212> DNA
<213> Acinetobacter johnsonii

<400> 31
cctagcggcg gacgggtgag taatgcttag gaatctgcct attagtgggg gacaacattc 60

cgaaaggaat gctaataccg catacgccct acgggggaaa gcaggggatc ttcggacctt 120

gcgctaatag atgagcctaa gtcagattag ctagttggtg gggtaaaggc ctaccaaggc 180

gacgatctgt agcgggtctg agaggatgat ccgccacact gggactgaga cacggcccag 240

actcctacgg gaggcagcag tggggaatat tggacaatgg gcgaaagcct gatccagcca 300

tgccgcgtgt gtgaagaagg ccttttggtt gtaaagcact ttaagcgagg aggaggctac 360

ttagattaat actctaggat agtggacgtt actcgcagaa taagcaccgg ctaactctgt 420

gccagcagcc gcggtaatac agagggtgcg agcgttaatc ggatttactg ggcgtaaagc 480

gtgcgtaggc ggcttcttaa gtcggatgtg aaatccctga gcttaactta ggaattgcat 540

tcgatactgg gaagctagag tatgggagag gatggtagaa ttccaggtgt agcggtgaaa 600

tgcgtagaga tctggaggaa taccgatggc gaaggcagcc atctggccta atactgacgc 660

tgaggtacga aagcatgggg agcaaacagg attagatacc ctggtagtcc atgccgtaaa 720

cgatgtctac tagccgttgg ggcctttgag gctttagtgg cgcagctaac gcgataagta 780

gaccgcctgg ggagtacggt cgcaagacta aaactcaaat gaattgacgg gggcccgcac 840

aagcggtgga gcatgtggtt taattcgatg caacgcgaag aaccttacct ggtcttgaca 900

tagtaagaac tttccagaga tggattggtg ccttcgggaa cttacataca ggtgctgcat 960

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt 1020

ttccttattt gccagcgggt taagccggga actttaagga tactgccagt gacaaactgg 1080

aggaaggcgg ggacgacgtc aagtcatcat ggcccttacg accagggcta cacacgtgct 1140

acaatggtcg gtacaaaggg ttgctaccta gcgataggat gctaatctca aaaagccgat 1200

cgtagtccgg attggagtct gcaactcgac tccatgaagt cggaatcgct agtaatcgcg 1260

gatcagaatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg 1320

ggaatttgtt gcaccagaag taggtagtct aaccgcaagg aggacgctta ccacggtgtg 1380

gccgatgact ggggtgaagt cgtaacaagg tagccgtagg ggaacctgcg gctggatcac 1440

ctcctta 1447

<210> 32
<211> 1537
<212> DNA
<213> Acinetobacter junii

<400> 32
aactgaagag tttgatcatg gctcagattg aacgctggcg gcaggcttaa cacatgcaag 60

tcgagcggag atgaggtgct tgcaccttat cttagcggcg gacgggtgag taatgcttag 120

gaatctgcct attagtgggg gacaacattc cgaaaggaat gctaataccg catacgtcct 180

acgggagaaa gcaggggatc ttcggacctt gcgctaatag atgagcctaa gtcggattag 240

ctagttggtg gggtaaaggc ctaccaaggc gacgatctgt agcgggtctg agaggatgat 300

ccgccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 360

tggacaatgg ggggaaaccc tgatccagcc atgccgcgtg tgtgaagaag gccttatggt 420

tgtaaagcac tttaagcgag gaggaggcta ctgagactaa tactcttgga tagtggacgt 480

tactcgcaga ataagcaccg gctaactctg tgccagcagc cgcggtaata cagagggtgc 540

gagcgttaat cggatttact gggcgtaaag cgtgcgtagg cggcttttta agtcggatgt 600

gaaatccccg agcttaactt gggaattgca ttcgatactg ggaagctaga gtatgggaga 660

ggatggtaga attccaggtg tagcggtgaa atgcgtagag atctggagga ataccgatgg 720

cgaaggcagc catctggcct aatactgacg ctgaggtacg aaagcatggg gagcaaacag 780

gattagatac cctggtagtc catgccgtaa acgatgtcta ctagccgttg gggcctttga 840

ggctttagtg gcgcagctaa cgcgataagt agaccgcctg gggagtacgg tcgcaagact 900

aaaactcaaa tgaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat 960

gcaacgcgaa gaaccttacc tggccttgac atactagaaa ctttccagag atggattggt 1020

gccttcggga atctagatac aggtgctgca tggctgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaacga gcgcaaccct tttccttact tgccagcatt tcggatggga 1140

actttaagga tactgccagt gacaaactgg aggaaggcgg ggacgacgtc aagtcatcat 1200

ggcccttacg gccagggcta cacacgtgct acaatggtcg gtacaaaggg ttgctacaca 1260

gcgatgtgat gctaatctca aaaagccgat cgtagtccgg attggagtct gcaactcgac 1320

tccatgaagt cggaatcgct agtaatcgcg gatcagaatg ccgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtttgtt gcaccagaag taggtagtct 1440

aaccgcaagg aggacgctta ccacggtgtg gccgatgact ggggtgaagt cgtaacaagg 1500

tagccgtagg ggaacctgcg gctggatcac ctcctta 1537

<210> 33
<211> 1449
<212> DNA
<213> Acinetobacter lwoffii

<400> 33
gacctagcgg cggacgggtg agtaatgctt aggaatctgc ctattagtgg gggacaacat 60

ctcgaaaggg atgctaatac cgcatacgtc ctacgggaga aagcagggga ccttcgggcc 120

ttgcgctaat agatgagcct aagtcggatt agctagttgg tggggtaaag gcctaccaag 180

gcgacgatct gtagcgggtc tgagaggatg atccgccaca ctgggactga gacacggccc 240

agactcctac gggaggcagc agtggggaat attggacaat gggggggaacc ctgatccagc 300

catgccgcgt gtgtgaagaa ggccttttgg ttgtaaagca ctttaagcga ggaggaggct 360

accgagatta atactcttgg atagtggacg ttactcgcag aataagcacc ggctaactct 420

gtgccagcag ccgcggtaat acagagggtg caagcgttaa tcggatttac tgggcgtaaa 480

gcgcgcgtag gtggccaatt aagtcaaatg tgaaatcccc gagcttaact tgggaattgc 540

attcgatact ggttggctag agtatgggag aggatggtag aattccaggt gtagcggtga 600

aatgcgtaga gatctggagg aataccgatg gcgaaggcag ccatctggcc taatactgac 660

actgaggtgc gaaagcatgg ggagcaaaca ggattagata ccctggtagt ccatgccgta 720

aacgatgtct actagccgtt ggggcctttg aggctttagt ggcgcagcta acgcgataag 780

tagaccgcct ggggagtacg gtcgcaagac taaaactcaa atgaattgac gggggcccgc 840

acaagcggtg gagcatgtgg tttaattcga tgcaacgcga agaaccttac ctggtcttga 900

catagtaaga actttccaga gatggattgg tgccttcggg aacttacata caggtgctgc 960

atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1020

ttttccttat ttgccagcgg gttaagccgg gaactttaag gatactgcca gtgacaaact 1080

ggaggaaggc ggggacgacg tcaagtcatc atggccctta cgaccagggc tacacacgtg 1140

ctacaatggt cggtacaaag ggttgctacc tcgcgagagg atgctaatct caaaaagccg 1200

atcgtagtcc ggattggagt ctgcaactcg actccatgaa gtcggaatcg ctagtaatcg 1260

cggatcagaa tgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1320

tgggagtttg ttgcaccaga agtaggtagt ctaaccttag gggggacgct taccacggtg 1380

tggcagatga ctggggtgaa gtcgtaacaa ggtagccgta ggggaacctg cggctggatc 1440

acctcctta 1449

<210> 34
<211> 1517
<212> DNA
<213> Acinetobacter parvus

<400> 34
agagtttgat catggctcag attgaacgct ggcggcaggc ttaacacatg caagtcgagc 60

ggggattggg tgcttgcacc taatcttagc ggcggacggg tgagtaatgc ttaggaatct 120

gccatttagt gggggacaac attccgaaag ggatgctaat accgcatacg ccctacgggg 180

gaaagcaggg gatcttcgga ccttgcgcta aatgatgagc ctaagtcgga ttagctagtt 240

ggtggggtaa aggcctacca aggcgacgat ctgtagcggg tctgagagga tgatccgcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga atattggaca 360

atgggcggaa gcctgatcca gccatgccgc gtgtgtgaag aaggcctttt ggttgtaaag 420

cactttaagc gaggaggagg ctacctggat taatactcta ggatagtgga cgttactcgc 480

agaataagca ccggctaact ctgtgccagc agccgcggta atacagaggg tgcgagcgtt 540

aatcggattt actgggcgta aagcgtgcgt aggcggctga ttaagtcgga tgtgaaatcc 600

ctgagcttaa cttaggaatt gcattcgata ctggtcagct agagtatggg agaggatggt 660

agaattccag gtgtagcggt gaaatgcgta gagatctgga ggaataccga tggcgaaggc 720

agccatctgg cctaatactg acgctgaggt acgaaagcat ggggagcaaa caggattaga 780

taccctggta gtccatgccg taaacgatgt ctactagccg ttggggcctt tgaggcttta 840

gtggcgcagc taacgcgata agtagaccgc ctggggagta cggtcgcaag actaaaactc 900

aaatgaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc 960

gaagaacctt acctggcctt gacatagtag aaactttcca gagatggatt ggtgccttcg 1020

ggaatctaca tacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttttcctt acttgccagc atttcggatg ggaactttaa 1140

ggatactgcc agtgacaaac tggaggaagg cggggacgac gtcaagtcat catggccctt 1200

acggccaggg ctacacacgt gctacaatgg tcggtacaaa gggttgctac ctagcgatag 1260

gatgctaatc tcaaaaagcc gatcgtagtc cggattggag tctgcaactc gactccatga 1320

agtcggaatc gctagtaatc gcggatcaga atgccgcggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcacacc atgggagttt gttgcaccag aagtaggtag tctaacctta 1440

ggggggacgc ttaccacggt gtggccgatg actggggtga agtcgtaaca aggtagccgt 1500

aggggaacct gcggctg 1517

<210> 35
<211> 1539
<212> DNA
<213> Acinetobacter radioresistens

<400> 35
tttaactgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg gatgaaggta gcttgctacc ggattcagcg gcggacgggt gagtaatgct 120

taggaatctg cctattagtg ggggacaacg ttccgaaagg agcgctaata ccgcatacgt 180

cctacgggag aaagcagggg acctttgggc cttgcgctaa tagatgagcc taagtcggat 240

tagctagttg gtagggtaaa ggcctaccaa ggcgacgatc tgtagcgggt ctgagaggat 300

gatccgccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattggacaa tgggggaac cctgatccag ccatgccgcg tgtgtgaaga aggcctttg 420

gttgtaaagc actttaagcg aggaggaggc tacctagatt aatactttag gatagtggac 480

gttactcgca gaataagcac cggctaactc tgtgccagca gccgcggtaa tacagagggt 540

gcgagcgtta atcggattta ctgggcgtaa agcgtgcgta ggcggccaat taagtcaaat 600

gtgaaatccc cgagcttaac ttgggaattg cattcgatac tggttggcta gagtatggga 660

gaggatggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccgat 720

ggcgaaggca gccatctggc ctaatactga cgctgaggta cgaaagcatg gggagcaaac 780

aggattagat accctggtag tccatgccgt aaacgatgtc tactagccgt tggggccctt 840

gaggctttag tggcgcagct aacgcgataa gtagaccgcc tggggagtac ggtcgcaaga 900

ctaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctggccttg acatacagag aactttccag agatggattg 1020

gtgccttcgg gaactctgat acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttttcctta tttgccagca cttcgggtgg 1140

gaactttaag gatactgcca gtgacaaact ggaggaaggc ggggacgacg tcaagtcatc 1200

atggccctta cggccagggc tacacacgtg ctacaatggt cggtacaaag ggttgctaca 1260

cagcgatgtg atgctaatct caaaaagccg atcgtagtcc ggattggagt ctgcaactcg 1320

actccatgaa gtcggaatcg ctagtaatcg cggatcagaa tgccgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcacacca tgggagtttg ttgcaccaga agtaggtagt 1440

ctaaccgcaa ggaggacgct taccacggtg tggccgatga ctggggtgaa gtcgtaacaa 1500

ggtagccgta ggggaacctg cggctggatc acctcctta 1539

<210> 36
<211> 1466
<212> DNA
<213> Acinetobacter schindleri

<400> 36
ggcggcaggc ttaacacatg caagtcgagc ggggaaaggt accttgctac ctgacctagc 60

ggcggacggg tgagtaatgc ttaggaatct gcctattagt gggggacaac gttccgaaag 120

gaacgctaat accgcatacg ccctacgggg gaaagcaggg gatcttcgga ccttgcgcta 180

atagatgagc ctaagtcgga ttagctagtt ggtggggtaa aggcctacca aggcgacgat 240

ctgtagcggg tctgagagga tgatccgcca cactgggact gagacacggc ccagactcct 300

acgggaggca gcagtgggga atattggaca atgggcggaa gcctgatcca gccatgccgc 360

gtgtgtgaag aaggcctttt ggttgtaaag cactttaagc gaggaggagg ctcctttagt 420

taatacctaa agagagtgga cgttactcgc agaataagca ccggctaact ctgtgccagc 480

agccgcggta atacagaggg tgcgagcgtt aatcggattt actgggcgta aagcgtgcgt 540

aggcggcttt ttaagtcgga tgtgaaatcc ctgagcttaa cttaggaatt gcattcgata 600

ctggaaagct agagtatggg agaggatggt agaattccag gtgtagcggt gaaatgcgta 660

gagatctgga ggaataccga tggcgaaggc agccatctgg cctaatactg acgctgaggt 720

acgaaagcat ggggagcaaa caggattaga taccctggta gtccatgccg taaacgatgt 780

ctactagccg ttggggcctt tgaggcttta gtggcgcagc taacgcgata agtagaccgc 840

ctggggagta cggtcgcaag actaaaactc aaatgaattg acgggggccc gcacaagcgg 900

tggagcatgt ggtttaattc gatgcaacgc gaagaacctt acctggcctt gacatactaa 960

gaactttcca gagatggatt ggtgccttcg ggaacttaga tacaggtgct gcatggctgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttttcctt 1080

atttgccatc gggtaatgcc gggaacttta aggatactgc cagtgacaaa ctggaggaag 1140

gcggggacga cgtcaagtca tcatggccct tacggccagg gctacacacg tgctacaatg 1200

gtcggtacaa agggttgcta cctcgcgaga ggatgctaat ctcaaaaagc cgatcgtagt 1260

ccggatcgca gtctgcaact cgactgcgtg aagtcggaat cgctagtaat cgcggatcag 1320

aatgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgggagtt 1380

tgttgcacca gaagtaggta gtctaaccgc aaggaggacg cttaccacgg tgtggccgat 1440

gactgggacg aagtcgtaac aaggta 1466

<210> 37
<211> 1291
<212> DNA
<213> Acinetobacter sp. 56A1

<400> 37
gcttgctact ggacctagcg gcggacgggt gagtaatgct taggaatctg cctattagtg 60

ggggacaaca tctcgaaagg gatgctaata ccgcatacgt cctacgggag aaagcagggg 120

atcttcggac cttgcgctaa tagatgagcc taagtcggat tagctagttg gtggggtaaa 180

ggcctaccaa ggcgacgatc tgtagcgggt ctgagaggat gatccgccac actgggactg 240

agacacggcc cagactccta cgggaggcag cagtggggaa tattggacaa tgggggaac 300

cctgatccag ccatgccgcg tgtgtggaag aaggccttat ggttgtaaag cactttaagc 360

gaggaggagg ctactttagt taatacctag agatagtgga cgttactcgc agaataagca 420

ccggctaact ctgtgccagc agccgcggta atacagaggg tgcgagcgtt aatcggattt 480

actgggcgta aagcgtgcgt aggcggctta ttaagtcgga tgtgaaatcc ccgagcttaa 540

cttgggaatt gcattcgata ctggtgagct agagtatggg agaggatggt agaattccag 600

gtgtagcggt gaaatgcgta gagatctgga ggaataccga tggcgaaggc agccatctgg 660

cctaatactg acgctgaggt acgaaagcat ggggagcaaa caggattaga taccctggta 720

gtccatgccg taaacgatgt ctactagccg ttggggcctt tgaggcttta gtggcgcagc 780

taacgcgata agtagaccgc ctggggagta cggtcgcaag actaaaactc aaatgaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc gaagaacctt 900

acctggcctt gacatactag aaactttcca gagatggatt ggtgccttcg ggaatctaga 960

tacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1020

cgagcgcaac ccttttcctt acttgccagc atttcggatg ggaactttaa ggatactgcc 1080

agtgacaaac tggaggaagg cggggacgac gtcaagtcat catggccctt acggccaggg 1140

ctacacacgt gctacaatgg tcggtacaaa gggttgctac acagcgatgt gatgctaatc 1200

tcaaaaagcc gatcgtagtc cggattggag tctgcaactc gactccatga agtcggaatc 1260

gctagtaatc gcggatcaga atgccgcggt g 1291

<210> 38
<211> 1513
<212> DNA
<213> Acinetobacter sp. CIP 101934

<400> 38
ctcagattga acgctggcgg caggcttaac acatgcaagt cgagcgggga aggttgcttc 60

ggtaactgac ctagcggcgg acgggtgagt aatgcttagg aatctgccta ttagtggggg 120

acaacgttcc gaaaggaacg ctaataccgc atacgcccta cgggggaaag caggggatct 180

tcggaccttg cgctaataga tgagcctaag tcggattagc tagttggtgg ggtaaaggcc 240

taccaaggcg acgatctgta gcgggtctga gaggatgatc cgccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgcaagcctg 360

atccagccat gccgcgtgtg tgaagaaggc cttttggttg taaagcactt taagcgagga 420

ggaggctcct ttagttaata cctaaagtga gtggacgtta ctcgcagaat aagcaccggc 480

taactctgtg ccagcagccg cggtaataca gagggtgcga gcgttaatcg gatttactgg 540

gcgtaaagcg tgcgtaggcg gcttttttaag tcggatgtga aatccctgag cttaacttag 600

gaattgcatt cgatactgga aagctagagt atgggagagg atggtagaat tccaggtgta 660

gcggtgaaat gcgtagagat ctggaggaat accgatggcg aaggcagcca tctggcctaa 720

tactgacgct gaggtacgaa agcatgggga gcaaacagga ttagataccc tggtagtcca 780

tgccgtaaac gatgtctact agccgttggg gcctttgagg ctttagtggc gcagctaacg 840

cgataagtag accgcctggg gagtacggtc gcaagactaa aactcaaatg aattgacggg 900

ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttacctg 960

gccttgacat actaagaact ttccagagat ggattggtgc cttcgggaac ttagatacag 1020

gtgctgcatg gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1080

gcaacccttt tccttatttg ccagcgggta atgccgggaa ctttaaggat actgccagtg 1140

acaaactgga ggaaggcggg gacgacgtca agtcatcatg gcccttacgg ccagggctac 1200

acacgtgcta caatggtcgg tacaaagggt tgctacctcg cgagaggatg ctaatctcaa 1260

aaagccgatc gtagtccgga tcgcagtctg caactcgact gcgtgaagtc ggaatcgcta 1320

gtaatcgcgg atcagaatgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtttgttg caccagaagt aggtagtcta accgcaagga ggacgcttac 1440

cacggtgtgg ccgatgactg gggtgaagtc gtaacaaggt agccgtaggg gaacctgcgg 1500

ttggatcacc tcc 1513

<210> 39
<211> 1494
<212> DNA
<213> Acinetobacter sp. CIP 102143

<400> 39
tggctcagat tgaacgctgg cggcaggctt aacacatgca agtcgagcgg ggattgggtg 60

cttgcaccta atcttagcgg cggacgggtg agtaatgctt aggaatctgc catttagtgg 120

gggacaacat tccgaaaggg atgctaatac cgcatacgcc ctacggggga aagcagggga 180

tcttcggacc ttgcgctaaa tgatgagcct aagtcggatt agctagttgg tggggtaaag 240

gcctaccaag gcgacgatct gtagcgggtc tgagaggatg atccgccaca ctgggactga 300

gacacggccc agactcctac gggaggcagc agtggggaat attggacaat gggggaagc 360

ctgatccagc catgccgcgt gtgtgaagaa ggcctttgg ttgtaaagca ctttaagcga 420

ggaggaggct acctggatta atactctagg atagtggacg ttactcgcag aataagcacc 480

ggctaactct gtgccagcag ccgcggtaat acagagggtg cgagcgttaa tcggatttac 540

tgggcgtaaa gcgtgcgtag gcggctgatt aagtcggatg tgaaatccct gagcttaact 600

taggaattgc attcgatact ggtcagctag agtatgggag aggatggtag aattccaggt 660

gtagcggtga aatgcgtaga gatctggagg aataccgatg gcgaaggcag ccatctggcc 720

taatactgac gctgaggtac gaaagcatgg ggagcaaaca ggattagata ccctggtagt 780

ccatgccgta aacgatgtct actagccgtt ggggcctttg aggctttagt ggcgcagcta 840

acgcgataag tagaccgcct ggggagtacg gtcgcaagac taaaactcaa atgaattgac 900

gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgcaacgcga agaaccttac 960

ctggccttga catagtagaa actttccaga gatggattgg tgccttcggg aatctacata 1020

caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttttccttac ttgccagcat ttcggatggg aactttaagg atactgccag 1140

tgacaaactg gaggaaggcg gggacgacgt caagtcatca tggcccttac ggccagggct 1200

acacacgtgc tacaatggtc ggtacaaagg gttgctacct agcgatagga tgctaatctc 1260

aaaaagccga tcgtagtccg gattggagtc tgcaactcga ctccatgaag tcggaatcgc 1320

tagtaatcgc ggatcagaat gccgcggtga atacgttccc gggccttgta cacaccgccc 1380

gtcacaccat gggagtttgt tgcaccagaa gtaggtagtc taaccttagg ggggacgctt 1440

accacggtgt ggccgatgac tggggtgaag tcgtaacaag gtagccgtag ggga 1494

<210> 40
<211> 1465
<212> DNA
<213> Acinetobacter sp. CIP 53.82

<400> 40
acatgcaagt cgagcgggga tagggtgctt gcacctgatt cctagcggcg gacgggtgag 60

taaagcttag gaatctgcct attagtgggg gacaacattc cgaaagggat gctaataccg 120

catacgccct acgggggaaa gcaggggatc ttcggacctt gcgctaatag atgagcctaa 180

gtcggattag ctagttggtg gggtaaaggc ctaccaaggc gacgatctgt agcgggtctg 240

agaggatgat ccgccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tggacaatgg ggggaaccct gatccagcca tgccgcgtgt gtgaagaagg 360

ccttttggtt gtaaagcact ttaagcgagg aggaggcgct ctaggataat accctagatg 420

cgtggacgtt actcgcagaa taagcaccgg ctaactctgt gccagcagcc gcggtaatac 480

agagggtgcg agcgttaatc ggatttactg ggcgtaaagc gcgcgtaggt ggctaattaa 540

gtcaaatgtg aaatccccga gcttaacttg ggaattgcat tcgatactgg ttagctagag 600

tatgggagag gatggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa 660

taccgatggc gaaggcagcc atctggccta atactgacac tgaggtgcga aagcatgggg 720

agcaaacagg attagatacc ctggtagtcc atgccgtaaa cgatgtctac tagccgttgg 780

ggcctttgag gctttagtgg cgcagctaac gcgataagta gaccgcctgg ggagtacggt 840

cgcaagacta aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 900

taattcgatg caacgcgaag aaccttacct ggccttgaca tacagagaac tttccagaga 960

tggattggtg ccttcgggaa ctctgataca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt ttccttactt gccagcattt 1080

cggatgggaa ctttaaggat actgccagtg acaaactgga ggaaggcggg gacgacgtca 1140

agtcatcatg gcccttacgg ccagggctac acacgtgcta caatggtcgg tacaaagggt 1200

tgctacacag cgatgtgatg ctaatctcaa aaagccgatc gtagtccgga ttggagtctg 1260

caactcgact ccatgaagtc ggaatcgcta gtaatcgcgg atcagaatgc cgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtttgttg caccagaagt 1380

aggtagtcta accttaggga ggacgcttac cacggtgtgg ccgatgactg gggtgaagtc 1440

gtaacaaggt agccgtaggg gaacc 1465

<210> 41
<211> 1280
<212> DNA
<213> Acinetobacter sp. M16-22

<220>
<221> modified_base
<222> (489)..(489)
<223> a, c, t, g, unknown or other

<400> 41
cgagcggacg ggtgagtgat gcttgggagt ctgcctgtta gtgggggaca acttcttaca 60

ggggatgcta ataccgccca catcctaccg gagaaagcag gggatcttcc ttccttgctc 120

tagtagatga acctgcctcg gattaactag ttggtggggt aaaggcctac ccaggcgacc 180

atctatcccg ggtctgagag gatgatccac cacactggga ctgagacaca gcccagactc 240

ctaccggagg caggagtggg gaatatagga caatgggggg aaccctgatc catgcatgcc 300

gcgtgtgtga agaaggcctt atggttgtaa agcactttaa tcgaggagga ggctacttta 360

gttagtacct agagatagtg gacgttactc gcagaataag caccggctaa ctctgtgcca 420

ccagccgcgg taatacagag ggtgcgagcg ttaatcggat ttactgggcg taaagcgcgc 480

gcaggcggnt atcaagtcgg atgtgaaatc cccgagctca acttgggaat tgcattcgat 540

actggcgagc tagagtatgg gagaggaggg tagaattcca ggtgtagcgg tgaaatgcgt 600

agagatctgg aggaataccg atggcgaagg cagccatctg gcctaatact gacgctgagg 660

tacgaaagca tggggagcaa acaggattag ataccctggt agtccatgcc gtaaacgatg 720

tctactagcc ggtggtgcct ttgaggcgtt agttgcgcag ctaacgcgat aagtagaccg 780

cctggggagt acggtcgcaa gattaaaact caaatgaatt gacggggcc cgcacaagcg 840

gtggagcatg tggtttaatt cgatgcaacg cgaagaacct tacctggcct tgacatacta 900

gaaactttcc agagatggat tggtgccttc gggaatttag atacaggtgc tgcatggctg 960

tcgtcagctc gtgttgtgag atgttgggtt aagtcccgca acgagcgcaa ccctttcct 1020

tacttgccag catttcggat gggaacttta aggatactgc cagtgacaaa ctggaggaag 1080

gcggggacga cgtcaagtca tcatggccct tacggccagg gctacacacg tgctacaatg 1140

gtcggtacaa agggatgcta cacagcgagg tcatgctaat ctcaaaaagc cgatcgtagt 1200

ccggattgga gtctgcaact cgactccatg aagtcggaat cgctagtaat cgcggatcag 1260

aatgccgcgg tgaatacgtt 1280

<210> 42
<211> 1540
<212> DNA
<213> Acinetobacter sp. RUH2624

<400> 42
tttaactgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg ggggaaggta gcttgctacc ggacctagcg gcggacgggt gagtaatgct 120

taggaatctg cctattagtg ggggacaaca tctcgaaagg gatgctaata ccgcatacgt 180

cctacgggag aaagcagggg atcttcggac cttgcgctaa tagatgagcc taagtcggat 240

tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc tgtagcgggt ctgagaggat 300

gatccgccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattggacaa tgggcgcaag cctgatccag ccatgccgcg tgtgtgaaga aggccttatg 420

gttgtaaagc actttaagcg aggaggaggc tactttagat aatacctaga gatagtggac 480

gttactcgca gaataagcac cggctaactc tgtgccagca gccgcggtaa tacagagggt 540

gcaagcgtta atcggattta ctgggcgtaa agcgcgcgta ggcggctaat taagtcaaat 600

gtgaaatccc cgagcttaac ttgggaattg cattcgatac tggttagcta gagtgtggga 660

gaggatggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccgat 720

ggcgaaggca gccatctggc ctaacactga cgctgaggtg cgaaagcatg gggagcaaac 780

aggattagat accctggtag tccatgccgt aaacgatgtc tactagccgt tggggccttt 840

gaggctttag tggcgcagct aacgcgataa gtagaccgcc tggggagtac ggtcgcaaga 900

ctaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctggccttg acatagtaag aactttccag agatggattg 1020

gtgccttcgg gaacttacat acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttttcctta tttgccagcg agtaatgtcg 1140

ggaactttaa ggatactgcc agtgacaaac tggaggaagg cggggacgac gtcaagtcat 1200

catggccctt acggccaggg ctacacacgt gctacaatgg tcggtacaaa gggttgctac 1260

acagcgatgt gatgctaatc tcaaaaagcc gatcgtagtc cggattggag tctgcaactc 1320

gactccatga agtcggaatc gctagtaatc gcggatcaga atgccgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacacc atgggagttt gttgcaccag aagtagctag 1440

cctaactgca aagagggcgg ttaccacggt gtggccgatg actggggtga agtcgtaaca 1500

aggtagccgt aggggaacct gcggctggat cacctcctta 1540

<210> 43
<211> 1540
<212> DNA
<213> Acinetobacter sp. SH024

<400> 43
tttaactgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg gagagaggta gcttgctact gatcttagcg gcggacgggt gagtaatgct 120

taggaatctg cctattagtg ggggacaaca tttcgaaagg aatgctaata ccgcatacgt 180

cctacgggag aaagcagggg atcttcggac cttgcgctaa tagatgagcc taagtcggat 240

tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc tgtagcgggt ctgagaggat 300

gatccgccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattggacaa tgggcgcaag cctgatccag ccatgccgcg tgtgtgaaga aggccttatg 420

gttgtaaagc actttaagcg aggaggaggc tactttagat aatacctaga gatagtggac 480

gttactcgca gaataagcac cggctaactc tgtgccagca gccgcggtaa tacagagggt 540

gcaagcgtta atcggattta ctgggcgtaa agcgcgcgta ggcggctaat taagtcaaat 600

gtgaaatccc cgagcttaac ttgggaattg cattcgatac tggttagcta gagtgtggga 660

gaggatggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccgat 720

ggcgaaggca gccatctggc ctaacactga cgctgaggtg cgaaagcatg gggagcaaac 780

aggattagat accctggtag tccatgccgt aaacgatgtc tactagccgt tggggccttt 840

gaggctttag tggcgcagct aacgcgataa gtagaccgcc tggggagtac ggtcgcaaga 900

ctaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctggccttg acatagtaag aactttccag agatggattg 1020

gtgccttcgg gaacttacat acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttttcctta tttgccagcg agtaatgtcg 1140

ggaactttaa ggatactgcc agtgacaaac tggaggaagg cggggacgac gtcaagtcat 1200

catggccctt acggccaggg ctacacacgt gctacaatgg tcggtacaaa gggttgctac 1260

ctagcgatag gatgctaatc tcaaaaagcc gatcgtagtc cggattggag tctgcaactc 1320

gactccatga agtcggaatc gctagtaatc gcggatcaga atgccgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacacc atgggagttt gttgcaccag aagtagctag 1440

cctaactgca aagagggcgg ttaccacggt gtggccgatg actggggtga agtcgtaaca 1500

aggtagccgt aggggaacct gcggctggat cacctcctta 1540

<210> 44
<211> 1362
<212> DNA
<213> Actinobacillus actinomycetemcomitans

<400> 44

attgaacgct ggcggcaggc ttaacacatg caagtcggac ggtagcagga gaaagcttgc 60

tttcttgctg acgagtggcg gacgggtgag taatgcttgg ggatctgtct tatggagggg 120

gataacgacg ggaaactgtc gctaataccg cgtagagtcg ggagacgaaa gtgcgggacc 180

ttagggccgc atgccatgag atgagcccaa gtgtgattag gtagttggtg gggtaaaggc 240

ctaccaagcc gacgatcgct agctggtctg agaggatggc cagccacacc gggactgaga 300

cacggcccgg actcctacgg gaggcagcag tggggaatat tgcgcaatgg gggcaaccct 360

gacgcagcca tgccgcgtga atgaagaagg ccttcgggtt gtaaagttct ttcggtgatg 420

aggaaggttg gtgtgttaat agcatgccaa cttgacgtta aatacagaag aagcaccggc 480

taactccgtg ccagcagccg cggtaatacg gggggtgcta gcgttaatcg gaataactgg 540

gcgtaaaggg cacgtaggcg gacctttaag tgaggtgtga aatccccggg cttaacctgg 600

gaattgcatt tcatactggg ggtctggagt actttaggga ggggtagaat tccacgtgta 660

gcggtgaaat gcgtagagat gtggaggaat accgaaggcg aaggcagccc cttggggatg 720

tactgacgct gatgtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgctgtaaac ggtgtcgatt tggggattgg ggtttagccc tggtgcccga agctaacgtg 840

ataaatcgac cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg 900

cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctact 960

cttgacatcc gaagaagaac tcagagatgg gtttgtgcct tagggagctt tgagacaggt 1020

gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc 1080

aacccttatc ctttgttgcc agcgattagg tcgggaactc aaaggagact gccggtgata 1140

aaccggagga aggtggggat gacgtcaagt catcatggcc cttacgagta gggctacaca 1200

cgtgctacaa tggcgtatac agagggtaac caaccagcga tggggagtga atctcagaaa 1260

gtgcgtctaa gttcggattg gagtctgcaa ctcgactcca tgaagtcgga atcgctagta 1320

atcgcgaatc agaatgttgc ggtgaatacg ttcccgggcc tt 1362

<210> 45
<211> 1542
<212> DNA
<213> Actinobacillus minor

<400> 45
gaattgaaga gtttgatcat ggctcagatt gaacgctggc ggcaggctta acacatgcaa 60

gtcgaacggt aacagggaga aagcttgctt tctttgctga cgagtggcgg acgggtgagt 120

aatgcttggg aatctggctt atggaggggg ataactacgg gaaactgtag ctaataccgc 180

gtaatatctt cggattaaag ggtgggaccg taaggccacc tgccataaga tgagcccaag 240

tgggattagg tagttggtgg ggtaaaggcc taccaagccg acgatctcta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg gggaaccctg atgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtgatga ggaaggcagg taagttaata gcttacttga 480

ttgacgttag tcacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aatgactggg cgtaaagggc acgcaggcgg tgacttaagt 600

gagatgtgaa agccccgggc ttaacctggg aattgcattt catactgggt cgctagagta 660

ttttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatat actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 840

ctttgagctt ggtgcccgta gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca aagaagaact cagagatgag 1020

tttgtgcctt cgggaacttt gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcggttaggc 1140

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca gagggaagca 1260

atatggcgac atggagcaaa tctcacaaag tacgtctaag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgcaaatca gaatgttgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc agaagtagat 1440

agcttaacgg aaacgggggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct ta 1542

<210> 46
<211> 1538
<212> DNA
<213> Actinobacillus pleuropneumoniae

<400> 46
gaattgaaga gtttgatcat ggctcagatt gaacgctggc ggcaggctta acacatgcaa 60

gtcgaacggt aacgggaagg gagcttgctt tctttgccga cgagtggcgg acgggtgagt 120

aatgcttggg aatctggctt atggaggggg ataactacgg gaaactgtag ctaataccgc 180

gtaatatcta tggattaaag ggtgggactt tcgggccacc tgccataaga tgagcccaag 240

tgggattagg tagttggtta ggtaaaggct gaccaagccg acgatctcta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ggggaacctg atgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtagcga ggaaggtatc aaatttaata gatttggtaa 480

ttgacgttaa ctacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aataactggg cgtaaagggc acgcaggcgg tgtgattaag 600

tgagatgtga aagccccggg cttaacctgg gattgcatta catactggtc aactagagta 660

ctttagggag ggggagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatgt actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattgga 840

ctgtgagtct ggtgcccgaa gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca tggaatcttg tagagatacg 1020

agagtgcctt cgggaaccat gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcgattaggt 1140

cgggaactca aaggagactg ccggtgataa accggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca gagggaagca 1260

agatggcgac atggagcaaa tctcacaaag tacgtctaag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgcaaatca gaatgttgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc agaagtagat 1440

agcttaaccg aaaggggggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctc 1538

<210> 47
<211> 1536
<212> DNA
<213> Actinobacillus succinogenes

<400> 47
agagtttgat catggctcag attgaacgct ggcggcaggc ttaacacatg caagtcgaac 60

ggtaacgggt ggaaagcttg ctttccatgc tgacgagtgg cggacgggtg agtaatgctt 120

ggggatctgg cttatggagg gggataacga cgggaaactg tcgctaatac cgcgtaatgt 180

ctaaggacta aagggtggga ttttcggacc gcccgccata agatgagccc aagtgggatt 240

aggtagttgg tggggtaaag gcctaccaag ccgacgatct ctagctggtc tgagaggatg 300

accagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 360

attgcgcaat gggggcaacc ctgacgcagc catgccgcgt gaatgaagaa ggccttcggg 420

ttgtaaagtt ctttcggtgg tgaggaaggc gaataagtta acagcttatt cgattgacgt 480

tagccacaga agaagcaccg gctaactccg tgccagcagc cgcggtaata cggagggtgc 540

gagcgttaat cggaataact gggcgtaaag ggcacgcagg cggctattta agtgagatgt 600

gaaatccccg ggcttaacct gggaactgca tttcagactg ggtagctaga gtactttagg 660

gaggggtaga attccacgtg tagcggtgaa atgcgtagag atgtggagga ataccgaagg 720

cgaaggcagc cccttgggaa cgtactgacg ctcatgtgcg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgctgtaa acgctgtcga tttggggatt gggcgataag 840

cctggtgccc gaagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat cctcagaatc cggtagagat atcggagtgc 1020

cttcgggaac tgagagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcatgta gagatgggaa 1140

ctcaaaggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcgta tacagaggga aacgagcctg 1260

cgaggggggag tgaatctcag aaagtgcgtc gtagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgcga atcagcatgt cgcggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggttg taccagaagt agatagctta 1440

accgaaaggg ggggcgttta ccacggtatg attcatgact ggggtgaagt cgtaacaagg 1500

taaccgtagg ggaacctgcg gttggatcac ctcctt 1536

<210> 48
<211> 1543
<212> DNA
<213> Actinobacillus ureae

<400> 48
ttgaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtaacaggga ttagcttgct aatttgctga cgagtggcgg acgggtgagt 120

aatgcttggg aatttggctc atggaggggg ataactacgg gaaactgtag ctaataccgc 180

gtaatatctt aggattaaag tgtgggaccg caaggccaca tgccatgaga tgagcccaag 240

tgggattagg tagttggtgg ggtaaaggcc taccaagccg acgatctcta gctggtctga 300

gaggatgatc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ggggaccctg atgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtagcga ggaaggtatc aaatttaata gatttggtaa 480

ttgacgttaa ctacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aataactggg cgtaaagggc acgcaggcgg ttgattaagt 600

gagatgtgaa agccctgggc ttaacctggg aattgcattt catactggtc aactagagta 660

ctttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatgt actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 840

ctttgagctt ggtgcccgta gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca tggaatcttg tagagatacg 1020

agagtgcctt cgggaaccat gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcgatttggt 1140

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca gagggaagca 1260

atatggcgac atggagcaaa tctcacaaag tacgtctaag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgcaaatca gaatgttgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc agaagtagat 1440

agcttaaccg caaggggggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct tac 1543

<210> 49
<211> 1500
<212> DNA
<213> Actinobaculum massiliae

<400> 49
agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca agtcgaacgg 60

aaaggccctt ccttttttgg ttgggtgctc gagtggcgaa cgggtgagta ttacgtgagt 120

aacctgccct caactgtggg ataagcctgg gaaactgggt ctaatactgc atattcttct 180

ttcaccgcat ggtgggggtt ggaaagtttt ttcggttggg gatgggctcg cggcctatca 240

gcttgttggt ggggtgatgg cctaccaagg cggtgacggg tagccggcct gagagggtgg 300

tcggccacat tgggactgag atacggccca gactcctacg ggaggcagca gtgggggata 360

ttgcacaatg ggcgcaagcc tgatgcagcg acgccgcgtg agggatgaag gctttcgggt 420

tgtaaacctc tttcggtaca gaacaaggca cgtttttgc gtgtggaggg tatgtgcaga 480

agaagcgccg gctaactacg tgccagcagc cgcggtaata cgtagggcgc gagcgttgtc 540

cggaattatt gggcgtaaag ggctcgtagg cggcttgttg cgcctgctgt gaaaacgcgg 600

ggcttaactc cgcgcgtgca gtgggtacgg gcaggcttga gtgtggtagg ggtgactgga 660

attccrggtg tagcggtgga atgcgcagat atctggagga acaccgatgg cgaaggcagg 720

tcactgggcc attactgacg ctgaggagcg aaagcgtggg tagcgaacag gattagatac 780

cctggtagtc cacgctgtaa acgttgggaa ctaggtgtgg ggccctttc cggggttctg 840

cgccgtagct aacgcattaa gttccccgcc tggggagtac ggccgcaagg ctaaaactca 900

aaggaattga cgggggcccg cacaagcggc ggagcatgcg gattaattcg atgcaacgcg 960

aagaacctta ccaaggcttg acatacaccg ggagcatgca gagatgtgtg tgccttttg 1020

gctggtgtac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tgtctcgtgt tgccagcgcg ttatggtggg gactcacgag 1140

agactgccgg ggttaactcg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1200

gtcttgggct tcacgcatgc tacaatggcc ggtacagtgg gttgcgatac tgtgaggtgg 1260

agcgaatctc tgaaagccgg tctcagttcg gatcggggtc tgcaactcga cctcgtgaag 1320

tcggagtcgc tagtaatcgc ggatcagcat tgccgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacgtca cgaaagttgg caacacccga agcccgtggc ctaacctttt 1440

gggggggagcg gtcgaaggtg gggttggcga ttgggacgaa gtcgtaacaa ggtagccgta 1500

<210> 50
<211> 1487
<212> DNA
<213> Actinobaculum schaalii

<400> 50
ggttcaggac gaacgctggc ggcgtgctta acacatgcaa gtcgaacgat gaaacctagc 60

aatctttggt tgttgggtgg attagtggcg aacgggtgag taatacgtgg gtaacctgcc 120

ctccttttg ggataagcct tggaaacggg gtctaatacc gaatattctg gatgattcgc 180

atggattgtt tgggaaagct tttgtgaagg gggatgggct cgcggcctat cagcttgttg 240

gtggggtgat ggcctaccaa ggcggtgacg ggtagccggc ctgagagggt gaccggccac 300

attgggactg agatacggcc cagactccta cgggaggcag cagtggggga tattgcacaa 360

tgggcgaaag cctgatgcag cgacgccgcg tgggggatga aggctttcgg gttgtaaacc 420

tctttcgcta tcgaacaagg ctcactatag ggtgggttga gggtaggtgg agaagaagcg 480

ccggctaact acgtgccagc agccgcggta atacgtaggg cgcgagcgtt gtccggaatt 540

attgggcgta aagggcttgt aggcggcttg ttgcgcctgc tgtgaaaacg cggggcttaa 600

cttcgcgcgt gcagtgggta cgggcaggct tgagtgtggt aggggtgact ggaattccag 660

gtgtagcggt ggaatgcgca gatatctgga ggaacaccga tggcgaaggc aggtcactgg 720

gccattactg acgctgagga gcgaaagcat gggtagcgaa caggattaga taccctggta 780

gtccatgctg taaacgttgg gaactaggtg tgggggcct ttccaggttt tctgcgccgt 840

agctaacgca ttaagttccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgcggattaa ttcgatgcaa cgcgaagaac 960

cttaccaagg cttgacatac accgcggggc tgcagagatg tggttgcatt tggttggtgg 1020

tgtacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccttgtct cgtgttgcca gcatgttgtg gtggggactc acgagagact 1140

gccggggtta actcggagga aggtggggat gacgtcaaat catcatgccc cttatgtctt 1200

gggcttcacg catgctacaa tggccggtac agagggttgc gatatcgtaa ggtggagcka 1260

atcccttaaa gctggtctca gttcggatcg gggtctgcaa ctcgacctcg tgaagtcgga 1320

gtcgctagta atcgcggatc agcattgccg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca cgtcacgaaa gttggtaaca cccgtagctc gtggcctaac cattttatgt 1440

gggggggagcg gtcgaaggtg gggctggcga ttgggacgaa gtcgtaa 1487

<210> 51
<211> 1283
<212> DNA
<213> Actinobaculum sp. BM#101342

<400> 51
atggaaacgg ggtctaatac tggatattcc tgtctggtcg catggctggg tggggaaagt 60

tttttcggtg ggggatgggc tcgcggccta tcagcttgtt ggtggggtga tggcctacca 120

aggcgtcgac gggtagccgg cctgagaggg tgaccggcca cactgggact gagatacggc 180

ccagactcct acgggaggca gcagtggggg atattgcaca atgggcgcaa gcctgatgca 240

gcgacgccgc gtgggggatg acggctttcg ggttgtaaac ctctttcgtc gggggacaag 300

gctctgcttg gtggtggggt tgagggtacc cggtgaagaa gcgccggcta actacgtgcc 360

agcagccgcg gtaatacgta gggcgcgagc gttgtccgga attattgggc gtaaagggct 420

cgtaggcggc ttgtcgcgtc tgctgtgaaa atgcggggct taactccgta cgtgcagtgg 480

gtacgggcag gctagagtgc ggtaggggtg actggaattc ctggtgtagc ggtggaatgc 540

gcagatatca ggaggaacac cgatggcgaa ggcaggtcac tgggctgtta ctgacgctga 600

ggagcgaaag cgtggggagc gaacaggatt agataccctg gtagtccatg ctgtaaacgt 660

tgggaactag gtgtggggtt ctttccacgg attctgcgcc ggagctaacg cattaagttc 720

cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca 780

agcggcggag catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat 840

acgctgggac ggtgcagaga tgtgctggct tttgctggtg tacaggtggt gcatggttgt 900

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtctcg 960

tgttgccagc aggttgggct ggggactcac gggagactgc cggggttaac tcggaggaag 1020

gtggggatga cgtcaaatca tcatgcccct tatgtcttgg gcttcacgca tgctacaatg 1080

gccggtacag agggttgcga tatcgtgagg tggagcgaat cccttaaagt cggtctcagt 1140

tcggatcggg gtctgcaact cgaccccgtg aagtcggagt cgctagtaat cgcggatcag 1200

caacgccgcg gtgaatacgt tctcgggcct tgtacacacc gcccgtcacg tcacgaaagt 1260

tggcaacacc cgaagctcgt ggc 1283

<210> 52
<211> 1313
<212> DNA
<213> Actinobaculum sp. P2P_19 P1

<400> 52
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

atacgtgagt aacctgccct cttctttggg ataagccttg gaaacggggt ctaatactgg 120

atattgaaag cggtggggga tgggctcgcg gcctatcagc ttgttggtgg ggtgatggcc 180

taccaaggcg tcgacgggta gccggcctga gagggtgacc ggccacactg ggactgagat 240

acggcccaga ctcctacggg aggcagcagt gggggatatt gcacaatggg cgcaagcctg 300

atgcagcgac gccgcgtggg ggatgacggc tttcgggttg taaacctctt tcgtcggggg 360

acatgagggt acccggtgaa gaagcgccgg ctaactacgt gccagcagcc gcggtaatac 420

gtagggcgcg agcgttgtcc ggaattattg ggcgtaaagg gctcgtaggc ggcttgtcgc 480

gtctgctgtg aaaatgcggg gcttaactcc gtacgtgcag tgggtacggg caggctagag 540

tgcggtaggg gtgactggaa ttcctggtgt agcggtggaa tgcgcagata tcaggaggaa 600

caccgatggc gaaggcaggt cactgggctg actgacgctg aggagcgaaa gcgtggggag 660

cgaacaggat tagataccct ggtagtccat gctgtaaacg ttgggaacta ggtgtggggt 720

attctgcgcc ggagctaacg cattaagttc cccgcctggg gagtacggcc gcaaggctaa 780

aactcaaagg gattgacggg ggcccgcaca agcggcggag catgcggatt aattcgatgc 840

aacgcgaaga accttaccaa ggcttgacat atacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctc gtgttgccag 960

cagctgggga ctcacgggag actgccgggg ttaactcgga ggaaggtggg gatgacgtca 1020

aatcatcatg ccccttatgt cttgggcttc acgcatgcta caatggccgg cagagggttg 1080

cgatatcgtg aggtggagcg aatccctttc ggtctcagtt cggacggggt ctgcaactcg 1140

accccggaag tcggagtcgc tagtaatcgc ggatcagcaa cgccgcggtg aatacgttct 1200

cgggccttgt acacaccgcc cgtcacgtca cgaaagttgg caacacccga agctcgtgcc 1260

tagggagcgg tcgaaggtgg ggttggcgat tgggacgaag tcgtaacaag gta 1313

<210> 53
<211> 1526
<212> DNA
<213> Actinomyces cardiffensis

<400> 53
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

atgatgcggt gcgtgcaccg ttgattagtg gcgaacgggt gagtaacacg tgagtaacct 120

gccctcttct ttgggataac ggtctgaaag ggctgctaat actgaatatt cacatgtctt 180

cgcatggggg tgtgtggaaa gagatgcttt tgggtgtttt tggtggggga tgggctcgcg 240

gcctatcagc ttgttggtgg ggtagtggcc taccaaggct ttgacgggta accggcctga 300

gagggtgacc ggtcacattg ggactgagat acggcccaga ctcctacggg aggcagcagt 360

ggggaatttt gcacaatgga cgcaagtctg atgcagcgac gccgcgtgag ggatgtaggc 420

cttcgggttg tgaacctctt tcgctcatgg tcaagccgca gctttgggtt gtggtgaggg 480

tagtgggtaa agaagcgccg gctaactacg tgccagcagc cgcggtaata cgtagggcgc 540

gagcgttgtc cggaattatt gggcgtaaag ggcttgtagg cggttggtcg cgtctgccgt 600

gaaatcctct ggcttaactg ggggcgtgcg gtgggtacgg gctggcttga gtgcggtagg 660

ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga acaccggtgg 720

cgaaggcggg tctctgggcc gttactgacg ctgaggagcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgctgtaa acgttgggca ctaggtgtgg gggccacccg 840

tggtttctgc gccgtagcta acgctttaag tgccccgcct ggggagtacg gccgcaaggc 900

taaaactcaa aggaattgac gggggcccgc acaagcggcg gagcatgcgg attaattcga 960

tgcaacgcga agaaccttac caaggcttga catgcgccct gacgctgcag agatgtggtg 1020

gcatttggtt gggggtgtac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaacga gcgcaaccct tgccctatgt tgccagcacg ttgtggtggg 1140

gactcgtggg ggactgccgg ggttaactcg gaggaaggtg gggatgacgt caaatcatca 1200

tgccccttat gtcttgggct tcacgcatgc tacaatggct ggtacagagg gttgcgatgt 1260

cgtaaggcgg agcgaatccc ttaaagctgg tctcagttcg gattggggtc tgcaactcga 1320

ccccatgaag gtggagtcgc tagtaatcgc agatcagcaa cgctgcggtg aatacgttct 1380

cgggccttgt acacaccgcc cgtcacgtca cgaaagttgg taacacccga agctcatggc 1440

ctaaccggtt tgtctggggg gagtggtcga aggtgggatt ggcgattggg acgaagtcgt 1500

aacaaggtag ccgtaccgga aggtgc 1526

<210> 54
<211> 1410
<212> DNA
<213> Actinomyces europaeus

<220>
<221> modified_base
<222> (318)..(318)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (325)..(325)
<223> a, c, t, g, unknown or other

<400> 54
cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gggatccaaa 60

ggctttttgt ttttggtgag agtggcgaac gggtgagtaa cacgtgagta acctgccccc 120

ttcttttgga taaccgcatg aaagtgtggc taatacagga tattccaggc tggtcgcatg 180

attggtttgg gaaatggttt ggtctggtgg gggatgggct cgcggcctat cagcttgttg 240

gtggggtgat ggcctaccaa ggcggtgacg ggtagccggc ctgagagggt gggcggtcac 300

actgggactg agatacgncc cagantccta cgggaggcag cagtgggggа ttttgcacaa 360

tgggcgcaag cctgatgcag cgacgccgcg tgagggatga aggccttcgg gttgtaaacc 420

tctttcgctg ggttgaaagg ccatgctttg ggtgtggttg atttgaactg gtaaagaagt 480

accggctaac tacgtgccag cagccgcggt aatacgtagg gtactagcgt tgtccggatt 540

tattgggcgt aaagggcttg taggtggttt gtcgcgtctg tcgtgaaatc ctgtggctta 600

accatgggct tgcggtgggt acgggcaggc ttgagtgcgg taggggagac tggaattcct 660

ggtgtagcgg tggaatgcgc agatatcagg aggaacaccg gtggcgaagg cgggtctctg 720

ggccgttact gacactgagg agcgaaagcg tggggagcga acaggattag ataccctggt 780

agtccatgct gtaaacgttg ggcactaggt gtgggggccg tgtggtttct gcgccgtagc 840

taacgcatta agtgtcccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg 900

acggggaccc gcacaagcgg cggagcatgc ggattaattc gatgcaacgc gaagaacctt 960

accaaggctt gacatgcacc ggtacagtgt agagatatgc tggccttttt ggctggtgtg 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtctcgtg ttgccagcat ttggttgggg actctcgaga gactgccggg 1140

gttaactcgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg tcttgggctt 1200

cacgcatgct acaatggatg gtacagaggg ttgcgatact gtgaggtgga gctaatccct 1260

taaagctgtt ctcagttcgg atcgtagtct gcaactcgac tacgtgaagg tggagtcgct 1320

agtaatcgca gatcagcaac gctgcggtga atacgttctc gggtcttgta cacaccgccc 1380

gtcacgtcac gaaagttggt aacacccgaa 1410

<210> 55
<211> 1503
<212> DNA
<213> Actinomyces funkei

<400> 55
atcatggctc aggacgaacg ctggcggcgt gcttaacaca tgcaagtcga acggactggc 60

cttgagcttg cttggggttg gtgagtggcg aacgggtgag taacacgtga gtaacctgcc 120

ctcttctttg ggataacggt cggaaacggc tgctaatact ggatattcac tcattggcgc 180

atgttggtgg gtggaaagat gcacttttgg tgtttttggt gggggatggg ctcgcggcct 240

atcagcttgt tggtggggtg atggcctacc aaggctttga cgggtaaccg gcctgagagg 300

gtgaccggtc acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 360

aattttgcac aatgggcgca agcctgatgc agcgacgccg cgtgagggat ggaggccttc 420

gggttgtgaa cctctttcgc tcatggtcaa gccgcgactt tgggttgtgg tgagggtagt 480

gggtaaagaa gcgccggcta actacgtgcc agcagccgcg gtaatacgta gggcgcgagc 540

gttgtccgga attattgggc gtaaagggct tgtaggcggt tggtcgcgtc tgccgtgaaa 600

tcctctggct taactggggg cgtgcggtgg gtacgggtcg acttgagtgc ggtaggggag 660

actggaattc ctggtgtagc ggtggaatgc gcagatatca ggaggaacac cggtggcgaa 720

ggcgggtctc tgggccgtta ctgacgctga ggagcgaaag cgtggggagc gaacaggatt 780

agataccctg gtagtccacg ctgtaaacgt tgggcactag gtgtgggggc cacccgtggt 840

ttctgcgccg tagctaacgc tttaagtgcc ccgcctgggg agtacggccg caaggctaaa 900

actcaaagga attgacgggg gcccgcacaa gcggcggagc atgcggatta attcgatgca 960

acgcgaagaa ccttaccaag gcttgacatg catcctgagc cttcagagat ggaggtgcat 1020

ttggttgggg gtgtgcaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccttgcc ctatgttgcc agcacgttgt ggtggggact 1140

cgtgggggac tgccggggtt aactcggagg aaggtgggga tgacgtcaaa tcatcatgcc 1200

ccttatgtct tgggcttcac gcatgctaca atggctggta cagagggttg cgatgctgtg 1260

aggcggagcg aatcccttaa agccggtctc agttcggatt ggggtctgca actcgacccc 1320

atgaaggtgg agtcgctagt aatcgcagat cagcaacgct gcggtgaata cgttctcggg 1380

ccttgtacac accgcccgtc acgtcacgaa agttggtaac acccgaagct catggcctaa 1440

ccgccttttt ggtgggggga gtggtcgaag gtgggattgg cgattgggac gaagtcgtaa 1500

caa 1503

<210> 56
<211> 1326
<212> DNA
<213> Actinomyces genomosp. C1

<400> 56
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

tcacgtgagt aacctgccct tcggtcctgg ataaccgctt gaaagggcgg ctaatacggg 120

gtggtgatag tcggcggggg atgggctcgc ggcctatcag cttgttggtg gggtgatggc 180

ctaccaaggc ggtgacgggt agccggcctg agagggtggg cggccacact gggactgaga 240

tacggcccag actcctgcgg gaggcagcag tgggggggtat tgcacaatgg gcggaagcct 300

gatgcagcga cgtcgcgtga gggatggagg ccttcgggtt gtgaacctct gtttccggtg 360

gtgatgacgg tagccgggga tgaagcgccg gctaactacg tgccagcagc cgcggtaata 420

cgtagggcgc gagcgttgtc cggaattatt gggcgtaaag ggcttgtagg cggctggtcg 480

cgtctgccgt gaaattctcc ggctcaaccg ggggcttgcg gtgggtacgg gccagctgga 540

gtgcggtagg ggaggctgga actcctggtg tagcggtgga atgcgcagat atcaggagga 600

acaccggtgg cgaaggcggg tctctgggcc gactgacgct gaggagcgaa agcgtgggga 660

gcgaacagga ttagataccc tggtagtcca cgccgtaaac gttgggcact aggtgtgggc 720

cggtccgcgc cgcagctaac gcattaagtg ccccgcctgg ggagtacggc cgcaaggcta 780

aaactcaaag gaattgacgg gggcccgcac aagcgacgga gcatgcggat taattcgatg 840

caacgcgaag aaccttacca gggcttgaca tgtgcaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctgtcc cgtgttgcca 960

gcgcgcgggg actctcggga gactgccggg gtcaactcgg aggagggtgg ggacgacgtc 1020

aaatcatcat gcccctgacg tcctgggctt cacgcatgct acaatggccg gcagagggtt 1080

gcgatgccgt gaggcggggc gaatcccttc cggtctcagt tcggacggtg tctgcaactc 1140

gacaccggaa gtcggagtcg ctagtaatcg cagatcagca ttgctgcggt gaatacgttc 1200

tcgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gtgacgcccg aagcccgtgc 1260

gagcggtcga aggcggggcc ggtgattggg acgaagtcgt aacaaggtag ccgtaccgga 1320

aggtgc 1326

<210> 57
<211> 1331
<212> DNA
<213> Actinomyces genomosp. C2

<400> 57
gacgaacgct ggcggcgtgc ttaacacatg yaagtcgaac gagtggcgaa cgggtgagta 60

acacgtgagt aacctgcccc cttctttggg ataacgcccg gaaacgggtg ctaatactgg 120

atattgaaag ctggtggggg atgggctcgc ggcctatcag cttgttggtg gggtgatggc 180

ctaccaaggc tttgacgggt agccggcctg agagggtgac cggtcacatt gggactgaga 240

tacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 300

gatgcagcga cgccgcgtga gggatggagg ccttcgggtt gtgaacctct ttcgctcatg 360

gtcatgaggg tagtgggtaa agaagcgccg gctaactacg tgccagcagc cgcggtaata 420

cgtagggcgc gagcgttgtc cggaattatt gggcgtaaag ggcttgtagg cggttggtcg 480

cgtctgccgt gaaatcctct ggcttaactg ggggcgtgcg gtgggtacgg gctgacttga 540

gtgcggtagg ggagactgga actcctggtg tagcggtgga atgcgcagat atcaggaaga 600

acaccggtgg cgaaggcggg tctctgggcc gactgacgct gaggagcgaa agcgtgggga 660

gcgaacagga ttagataccc tggtagtcca cgctgtaaac gttgggcact aggtgtgggg 720

gtttctgcgc cgtagctaac gctttaagtg ccccgcctgg ggagtacggc cgcaaggcta 780

aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg 840

caacgcgaag aaccttacca aggcttgaca tgtgcaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgccc tatgttgcca 960

gcacgtgggg actcgtgggg gactgccggg gttaactcgg aggaaggtgg ggatgacgtc 1020

aaatcatcat gccccttatg tcttgggctt cacgcatgct acaatggttg gcagagggtt 1080

gcgatactgt gaggtggagc gaatcccttc cagtctcagt tcggatgggg tctgcaactc 1140

gaccccagaa ggtggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc 1200

tcgggccttg tacacaccgc ccgtcacgtc acgaaagttg gtaacacccg aagcccatgc 1260

ctagggagtg gtcgaaggtg ggattggcga ttgggacgaa gtcgtaacaa ggtagccgta 1320

ccggaaggtg c 1331

<210> 58
<211> 1290
<212> DNA
<213> Actinomyces genomosp. P1 oral clone MB6_C03

<400> 58
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

tcacgtgagt aacctgccct cctctcctgg ataaccgctt gagagggcgg ctaatacggg 120

gtggtgatag tcggtggggg atgggctcgc ggcctatcag cttgttggtg gggtgatggc 180

ccaccaaggc ggtgacgggt agccggcctg agagggtggg cggccacact gggactgaga 240

cacggcccag actcctgcgg gaggcagcag tgggggggtat tgcacaatgg gcggaagcct 300

gatgcagcga cgtcgcgtga gggatggagg ccttcgggtt gtgaacctct gttcccggtg 360

gtgatgacgg tagccgggta tgaagcgccg gctaactacg tgccagcagc cgcggtaata 420

cgtagggccc aagcgttgtc cggaattatt gggcgtaaag ggcttgtagg cggccggccg 480

cgtccgtcgt gaaatcctcc ggctcaaccg ggggcttgcg gtgggtacgg gtcggctgga 540

gtgcggcagg ggaggctgga actcctggtg tagcggtgga atgcgcagat atcaggagga 600

acaccggtgg cgaaggcggg tctctgggcc gactgacgct gaggagcgaa agcgtgggga 660

gcgaacagga ttagataccc tggtagtcca cgccgtaaac gttgggcact aggtgtgggg 720

cgctccgcgc cgtagctaac gcattaagtg ccccgcctgg ggagtacggc cgcaaggcta 780

aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg 840

caacgcgaag aaccttacca gggcttgaca tgcgcaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctgtcc cgtgttgcca 960

gcgcgcgggg actctcggga gactgccggg gtcaactcgg aggagggtgg ggacgacgtc 1020

aaatcatcat gcccctgacg tcctgggctt cacgcatgct acaatggccg gcagagggtt 1080

gcgatgccgc gaggcggggc gaatcccttc cggtctcagt tcggacggtg tctgcaactc 1140

gacaccggaa gtcggagtcg ccagtaatcg cagatcagca ctgctgcggt gaatacgttc 1200

tcgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gcgacgcccg aagcccgtgc 1260

gagcggtcga aggcggggcc ggtgattggg 1290

<210> 59
<211> 1427
<212> DNA
<213> Actinomyces georgiae

<400> 59
acacatgcag tcgaacgctg aagcctggct ttgtgttggg tggatgagtg gcgaacgggt 60

gagtaacacg tgagtaacct gccctcttct tcgggataac ggtctgaaag ggctgctaat 120

accgggtatt cactggtcct cgcatggggg ttggtggaaa ggtttttttct ggtgggggat 180

gggctcgcgg cctatcagct tgttggtggg gtgatggcct accaaggctt tgacgggtag 240

ccggcctgag agggtgaccg gtcacattgg gactgagata cggcccagac tcctacggga 300

ggcagcagtg gggaatattg cacaatgggc ggaagcctga tgcagcgacg ccgcgtgagg 360

gatggaggcc ttcgggttgt gaacctcttt cgcccgtggt caagccgcaa ctgtgggttg 420

tggtgagggt agtgggtaaa gaagcgccgg ctaactacgt gccagcagcc gcggtaatac 480

gtagggcgcg agcgttgtcc gggaattatt gggcgtaaag ggcttgtagg cggctggtcg 540

cgtctgccgt gaaatcctct ggctcaactg ggggcgtgcg gtgggtacgg gctggcttga 600

gtgcggtagg ggaggctgga actcctggtg tagcggtgga atgcgcagat atcaggaaga 660

acaccggtgg cgaaggcggg tctctgggcc gttactgacg ctgaggagcg aaagcgtggg 720

gagcgaacag gattagatac cctggtagtc cacgctgtaa acgttgggca ctaggtgtgg 780

gggccacccg tggtttccgc gccgtagcta acgctttaag tgccccgcct ggggagtacg 840

gccgcaaggc taaaactcaa aggaattgac gggggcccgc acaagcggcg gagcatgcgg 900

attaattcga tgcaacgcga agaaccttac caaggcttga catgcgcccc gggcgcgcgg 960

agacgcgcgc gcatttggtt gggggtgtgc aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgccctatgt tgccagcgcg 1080

ttatggcggg gactcgtggg ggactgccgg ggttaactcg gaggaaggtg gggatgacgt 1140

caaatcatca tgccccttat gtcttgggct tcacgcatgc tacaatggct ggtacagagg 1200

gttgcgatgc cgtgaggcgg ggcgaatccc ttaaagccgg tctcagttcg gattggggtc 1260

tgcaactcga ccccatgaag gtggagtcgc tagtaatcgc agatcagcaa cgctgcggtg 1320

aatacgttct cgggccttgt acacaccgcc cgtcacgtca cgaaagttgg taacgcccga 1380

agcccatggc ccaaccggct cttgctgggg ggagtggtcg aaggtgg 1427

<210> 60
<211> 1446
<212> DNA
<213> Actinomyces israelii

<400> 60
cgtgcttaac acatgcaagt cgaacgggtc tgccttgttt tttgcggggt gggtcagtgg 60

cgaacgggtg agtaacacgt gagtaacctg cccctcactt ctggataacc gcttgaaagg 120

gtggctaata cggggtgttc tggctgtgcc gcatggtgtg gctgggaaag attcactttt 180

gtggtgtttt ggtgggggat gggctcgcgg cctatcagct tgttggtggg gtgatggcct 240

gccaaggctt tgacgggtag ccggcctgag agggtgggcg gtcacactgg gactgagata 300

cggcccagac tcctgcggga ggcagcagtg gggggtattg cacaatgggc ggaagcctga 360

tgcagcgacg tcgcgtgagg gatggaggcc ttcgggttgt gaacctcttt cgccggtgaa 420

gaaggtcctg ttctttgtgg tggggctgac ggtagccggg ttatgaagcg ccggctaact 480

acgtgccagc agccgcggta atacgtaggg cgcgagcgtt gtccggaatt attgggcgta 540

aagggcttgt aggcggctgg tcgcgtctgc cgtgaaatcc tctggctcag ctgggggcgt 600

gcggtgggta cgggctggct tgagtgcggt aggggaggct ggaactcctg gtgtagcggt 660

ggaatgcgca gatatcagga ggaacaccgg tggcgaaggc gggtctctgg gccgttactg 720

acgctgagga gcgaaagcgt ggggagcgaa caggattaga taccctggta gtccatgctg 780

taaacgttgg gcactaggtg tggggggtct ttccgggtcc tccgcgccgt agctaacgct 840

ttaagtgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggcggagca tgcggattaa ttcgatgcaa cgcgaagaac cttaccaggg 960

cttgacatgg gccggctgct cctggagacg ggggcctccc ttttttgggc cggttcacag 1020

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1080

gcaacccctg tcccgtgttg ccagcgtgtt gtggcgggga ctcgcgggag actgccgggg 1140

ttaactcgga ggagggtggg gacgacgtca aatcatcatg ccccttatgt cctgggcttc 1200

acgcatgcta caatggccgg tacagtgggt tgcgatgtcg tgaggcggag cgaatccctt 1260

aaagccggtc tcagttcgga tcggtgtctg caactcgaca ccgtgaagct ggagtcgcta 1320

gtaatcgcag atcagcagtg ctgcggtgaa tacgttctcg ggccttgtac acaccgcccg 1380

tcacgtcatg aaagccggcg acacccgaag cccgtggccc tgtggggagc ggtcgaaggt 1440

ggggct 1446

<210> 61
<211> 1520
<212> DNA
<213> Actinomyces massiliensis

<400> 61
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gggccttgtc ccctttttt tgggggtggg gttagtggcg aacgggtgag taacacgtga 120

gtaacctgcc cctcacttct ggataaccgc ttgaaagggt ggctaatacg gggtgttctg 180

gcctgctcgc atgggtgggt ttggaaagat tcgaccggtt ttggttgttt tggtggggga 240

tgggctcgcg gcctatcagc ttgttggtgg ggtgatggcc tgccaaggct ttgacgggta 300

gccggcctga gagggtgggc ggtcacactg ggactgagac acggcccaga ctcctacggg 360

aggcagcagt ggggaatatt gcacaatggg cgcaagcctg atgcagcgac gccgcgtgag 420

ggatggaggc cttcgggttg tgaacctctt tcgccagtga agaaggtcct gctctttgtg 480

gtggggttga cggtagctgg gttaatgaag cgccggctaa ctacgtgcca gcagccgcgg 540

taatacgtag ggcgcgagcg ttgtccggaa ttattgggcg taaagggctt gtaggcggct 600

ggtcgcgtct gccgtgaaat cctctggctc agctgggggc gtgcggtggg tacgggctgg 660

cttgagtgcg gtaggggaga ctggaactcc tggtgtagcg gtggaatgcg cagatatcag 720

gaggaacacc ggtggcgaag gcgggtctct gggccgttac tgacgctgag gagcgaaagc 780

gtggggagcg aacaggatta gataccctgg tagtccacgc tgtaaacgtt gggcactagg 840

tgtgggggggc cttttccggg ttttccgcgc cgtagctaac gcattaagtg ccccgcctgg 900

ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga 960

gcatgcggat taattcgatg caacgcgaag aaccttacca aggcttgaca tgggctggat 1020

tgcttcggag acggggtttc ccttttttgg gctggttcac aggtggtgca tggttgtcgt 1080

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtctcgtgt 1140

tgccagcacg ttgtggtggg gactcgcggg agactgccgg ggttaactcg gaggaaggtg 1200

gggatgacgt caaatcatca tgccccttat gtcttgggct tcacgcatgc tacaatggcc 1260

ggtacagtgg gttgcgatgc tgtgaggcgg agcgaatccc tgaaagccgg tctcagttcg 1320

gatcggtgtc tgcaactcga caccgtgaag ttggagtcgc tagtaatcgc agatcagcag 1380

cgctgcggtg aatacgttct cgggccttgt acacaccgcc cgtcacgtca tgaaagctgg 1440

caacacccga agcccgtggc cttatgggga gcggtcgaag gtggggctgg tgattgggac 1500

gaagtcgtaa caaggtaacc 1520

<210> 62
<211> 1411
<212> DNA
<213> Actinomyces meyeri

<400> 62
attgccaagt tcgaaacgct gaagcctagc ttgctgggtg gatgagtggc gaacgggtga 60

gtaacacgtg agtaacctgc cctcttcttt gggataacgc ccggaaatgg gtgctaatac 120

tggatattca ctggtcttcg catgggggtt ggtggaaagg gtttttctgg tgggggatgg 180

gctcgcggcc tatcagcttg ttggtggggt gatggcctac caaggctttg acgggtagcc 240

ggcctgagag ggtgaccggt cacattggga ctgagatacg gcccagactc ctacgggagg 300

cagcagtggg gaatattgca caatgggcgc aagcctgatg cagcgacgcc gcgtgaggga 360

tggaggcctt cgggttgtga acctctttcg ctcatggtca agccgcaact gtgggttgtg 420

gtgagggtag tgggtaaaga agcgccggct aactacgtgc cagcagccgc ggtatacgta 480

ggcgcgagcg ttgtccgaat tattgggcgt aaagggcttg taggcggttg gtcgcgtctg 540

tcgtgaaatc ctctggctta actgggggcg tgcggtgggt acgggctggc ttgagtgcgg 600

taggagagac tggaactcct ggtgtagcgg tggaatgcgc agatatcagg aagaacaccg 660

gtggcgaagg cgggtctctg ggccgttact gacgctgagg agcgaaagcg tggggagcga 720

acaggattag ataccctggt agtccacgct gtaaacgttg ggcactaggt gtgggggcca 780

cccgtggttt ctgcgccgta gctaacgctt taagtgcccc gcctggggag tacggccgca 840

aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat 900

tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgcg ccctgggcgt gcggagacgt 960

gcgtgcattt ggttgggggt gtgcaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgca acgagcgcaa cccttgccct atgttgccag cacgttgtgg 1080

tggggactcg tgggggactg ccggggttaa ctcggaggaa ggtggggatg acgtcaaatc 1140

atcatgcccc ttatgtcttg ggcttcacgc atgctacaat ggttggtaca gagggttgcg 1200

atatcgtgag gtggagcgaa tcccttaaag ccagtctcag ttcggattgg ggtctgcaac 1260

tcgaccccat gaaggtggag tcgctagtaa tcgcagatca gcaacgctgc ggtgaatacg 1320

ttctcgggcc ttgtacacac cgcccgtcac gtcacgaaag ttggtaacac ccgaagccca 1380

tggcctaacc ggtttttgct gggggggggaa g 1411

<210> 63
<211> 1450
<212> DNA
<213> Actinomyces naeslundii

<400> 63
tcctgactca ggacgaacgc tgccggcgta cataacacat gcaagtcgaa cggtgaaggg 60

gcctgctttt gtgggtcctg gatgagtggc gaacgggtga gtaacacgtg agtaacctgc 120

ccccttcttc tggataaccg catgaaagtg tggctaatac gggatattct gggtctgtcg 180

catggtgggc ctgggaaaga ttgcgccttt tttggtgttt ttggtggggg atgggctcgc 240

ggcctatcag cttgttggtg gggtgatggc ctgccaaggc ggtgacgggt agccggcctg 300

agagggtgga cggtcacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtga gggatggagg 420

ccttcgggtt gtgaacctct ttcgccagtg aagcaggcct gcctcgtttg tgggtgggtt 480

gacggtagct ggataagaag cgccggctaa ctacgtgcca gcagccgcgg taatacgtag 540

ggcgcgagcg ttgtccggaa ttattgggcg taaagagctc gtaggcggct ggtcgcgtct 600

gtcgtgaaat cctctggctt aactgggggc ttgcggtggg tacgggccgg cttgagtgcg 660

gtaggggaga ctggaactcc tggtgtagcg gtggaatgcg cagatatcag gaagaacacc 720

ggtggcgaag gcgggtctct gggccgttac tgacgctgag gagcgaaagc gtggggagcg 780

aacaggatta gataccctgg tagtccacgc cgtaaacgtt gggcactagg tgtgggggc 840

cttttccggg tcttccgcgc cgtagctaac gcattaagtg ccccgcctgg ggagtacggc 900

cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgcggat 960

taattcgatg caacgcgaag aaccttacca aggcttgaca tgtgccggtc tgctccggag 1020

acggggtttc ctcctttgtg ggggctggtt cacaggtggt gcatggttgt cgtcagctcg 1080

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtctcg tgttgccagc 1140

acgttgtggt ggggactcgc gggagactgc cggggtcaac tcggaggaag gtggggatga 1200

cgtcaaatca tcatgcccct tatgtcttgg gcttcacgca tgctacaatg gccggtacag 1260

agggctgcga taccgtgagg tggagcgaat cccttaaagc cggtctcagt tcggatcggt 1320

gtctgcaact cgacaccgtg aagttggagt cgctagtaat cgcagatcag caacgctgcg 1380

gtgaatacgt tctcgggcct tgtacacacc gcccgtcacg tcatgaaagt cggcaacacc 1440

cgaagcccgt 1450

<210> 64
<211> 1328
<212> DNA
<213> Actinomyces nasicola

<400> 64
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgagt aacctgcccc cttctttggg ataactgccg gaaacggtgg ctaatactgg 120

atattgaaag ctggtggggg atgggctcgc ggcctatcag cttgttggtg gggtgatggc 180

ctaccaaggc tttgacgggt agccggcctg agagggtgac cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gggaaaccct 300

gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt gtaaacctct ttcagtaggg 360

aagaagacgg tacctgcaga agaagcgccg gctaactacg tgccagcagc cgcggtaata 420

cgtagggcgc aagcgttgtc cggaattatt gggcgtaaag agctcgtagg cggcttgtcg 480

cgtctgtcgt gaaaacctgc agcttaactg tgggcttgcg gtgggtacgg gctggcttga 540

gtgcagtagg ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga 600

acaccggtgg cgaaggcggg tctctgggct gactgacgct gaggagcgaa agcatgggga 660

gcgaacagga ttagataccc tggtagtcca tgccgtaaac gttgggcact aggtgtgggg 720

atttctgtgc cgtagctaac gcattaagtg ccccgcctgg ggagtacggc cgcaaggcta 780

aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg 840

caacgcgaag aaccttacca aggcttgaca tatacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtct catgttgcca 960

gcacgtgggg actcatgaga gactgccggg gttaactcgg aggaaggtgg ggatgacgtc 1020

aaatcatcat gccccttatg tcttgggctt cacgcatgct acaatggccg gcagtgggtt 1080

gcgatctcgt gaggggggagc taatccttgc cggtctcagt tcggatgggg tctgcaactc 1140

gaccccagaa gtcggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc 1200

tcgggccttg tacacaccgc ccgtcacgtc acgaaagttg gtaacacccg aagctcatgc 1260

ctagggagtg gtcgaaggtg ggactggcga ttgggacgaa gtcgtaacaa ggtagccgta 1320

ccggaagg 1328

<210> 65
<211> 1489
<212> DNA
<213> Actinomyces neuii

<220>
<221> modified_base
<222> (159)..(159)
<223> a, c, t, g, unknown or other

<400> 65
cgaacgctgg cggcgtgctt aacacatgca agtcgaacgg gatccattag cgcttttgtg 60

tttttggtga gagtggcgaa cgggtgagta acacgtgagt aacctgccct tttctttggg 120

ataagcctgg gaaactgggt ctaatactgg atgttccgnc ttcctcgcat ggggttgttg 180

ggaaaggttt tttctggatt gggatgggct cgcggcttat cagcttgttg gtggggtgat 240

ggcttaccaa ggctttgacg ggtagccggc ctgagagggt ggtcggtcac actgggactg 300

agatacggcc cagactccta cgggaggcag cagtggggga tattgcacaa tggacggaag 360

tctgatgcac cgacgtcgtg tgggggatga aggccttcgg gttgtaaact cctttcgccc 420

gcggaaaagg cagggttttg gccttgttga tggtagtggg taaagaagcg ccggctcact 480

acgtgccagc agccgcggta atacgtaggg cgcgagcgtt gtccggaatt attgggcgta 540

aagggctcgt aggcggtttg tcgcgtctag cgtttaaggc tcgggcttaa cccgggtttg 600

cgttgggtac gggcaggctt gagtgcggta ggggtaactg gaattcctgg tgtagcggtg 660

gaatgcgcag atatcaggag gaacaccggt ggcgaaggcg ggttactggg ccgttactga 720

cgctgaggag cgagagcgtg gggagcgaac aggattagat accctggtag tccatgctgt 780

aaacgttggg cactaggtgt gggggctggt ttcatggttc cgcgccgtag ctaacgcatt 840

aagtgccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc 900

cgcacaagcg gcggagcatg cggattaatt cgatgcaacg cgaagaacct taccaaggct 960

tgacatgcac cgcgagactg cagagatgtg gttgccttcg gggtggtgtg caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttggttaagt cccgcaacga gcgcaaccct 1080

tgtctcatgt tgccagcacg ttatggtggg gactcgtgag agactgccgg ggttaactcg 1140

gaggaaggtg gggatgacgt caaatcatga tgccccatat gtcttgggct tcacgcatgc 1200

tacagtggtg tctacagagg gttgctattc cgtgaggttg agcgaatctc ttaaagggca 1260

tcttggttcg gatcgcagtc tgcaactcga ctgcgtgaag gtggagtcgc tagtaatcgc 1320

agatgagcat tgctgcggtg aatacgttct cgggccttgt acacaccgcc cgtcacgtca 1380

cgaaagttgg taacacccga agcctgtggc ctaacctttt tgggggggagt ggtcgaaggt 1440

ggggctagcg attgggacga agtcgtaaca aggtagccgt accggaagg 1489

<210> 66
<211> 1548
<212> DNA
<213> Actinomyces odontolyticus

<400> 66
tttgttcgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ctgaagccta gcttgctggg tggatgagtg gcgaacgggt gagtaacacg 120

tgagtaacct gccccttct ttgggataac gcccggaaac gggtgctaat actggatatt 180

cactggtctt cgcatggggg ttggtggaaa ggtttgttct ggtgggggat gggctcgcgg 240

cctatcagct tgttggtggg gtgatggcct accaaggctt tgacgggtag ccggcctgag 300

agggtgaccg gtcacattgg gactgagata cggcccagac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggc gaaagcctga tgcagcgacg ccgcgtgagg gatggaggcc 420

ttcgggttgt aaacctcttt cgctcatggt caagccgcaa cattggttgt ggtgagggta 480

gtgggtaaag aagcgccggc taactacgtg ccagcagccg cggtaatacg tagggcgcga 540

gcgttgtccg gaattattgg gcgtaaaggg cttgtaggcg gttggtcgcg tctgccgtga 600

aatcctctgg cttaactggg ggcgtgcggt gggtacgggc tgacttgagt gcggtagggg 660

agactggaac tcctggtgta gcggtggaat gcgcagatat caggaagaac accggtggcg 720

aaggcgggtc tctgggccgt tactgacgct gaggagcgaa agcgtgggga gcgaacagga 780

ttagataccc tggtagtcca cgctgtaaac gttgggcact aggtgtgggg gccacccgtg 840

gtttctgcgc cgtagctaac gctttaagtg ccccgcctgg ggagtacggc cgcaaggcta 900

aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg 960

caacgcgaag aaccttacca aggcttgaca tgcacggcgg cactgcagag atgtggtggc 1020

atttagttgg tcgtgtgcag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaacccttg ccctatgttg ccagcacgtg atggtgggga 1140

ctcgtggggg actgccgggg ttaactcgga ggaaggtggg gatgacgtca aatcatcatg 1200

ccccttatgt cttgggcttc acgcatgcta caatggttgg tacagagggt tgcgaaatcg 1260

tgaggtggag cgaatccctt aaagccagtc tcagttcgga ttggggtctg caactcgacc 1320

ccatgaaggt ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa tacgttctcg 1380

ggccttgtac acaccgcccg tcacgtcacg aaagttggta acacccgaag cccatggcct 1440

aaccgctttg tgtgggggga gtggtcgaag gtgggattgg cgattgggac gaagtcgtaa 1500

caaggtagcc gtaccggaag gtgcggctgg atcacctcct ttctaggg 1548

<210> 67
<211> 1508
<212> DNA
<213> Actinomyces oricola

<220>
<221> modified_base
<222> (32)..(32)
<223> a, c, t, g, unknown or other

<400> 67
gacgaacgct ggcggcgtgc ttaacacatg cnagtcgaac gggccggccc cttgtttttt 60

gggggttgg ttgagtggcg aacgggtgag taacacgtga gtaacctgcc ctcttcttct 120

ggataaccgc atgaaagtgt ggctaatacg ggatattctg gtctgcctgc atgggtgggt 180

tgggaaagat tcactttggt gttttggtgg gggatgggct cgcggcctat cagcttgttg 240

gtggggtgat ggcctaccaa ggcggtgacg ggtagccggc ctgagagggt gggcggtcac 300

actgggactg agatacggcc cagactccta cgggaggcag cagtgggga tattgcacaa 360

tgggcggaag cctgatgcag cgacgtcgcg tgagggatgg aggccttcgg gttgtgaacc 420

tctttcgcca gtgaagtagg tctgctcctg tgtgggtggg ttgacggtag ctgggttttt 480

aagaagcgcc ggctaactac gtgccagcag ccgcggtgat acgtagggcg cgagcgttgt 540

ccggaattat tgggcgtaaa gggcttgtag gcggctggtc gcgtctgccg tgaaatcctc 600

tggcttaact gggggtgtgc ggtgggtacg ggtcggcttg agtgcggtag gggaggctgg 660

aactcctggt gtagcggtgg aatgcgcaga tatcaggaag aacaccggtg gcgaaggcgg 720

gtctctgggc cgttactgac gctgaggagc gaaagcgtgg ggagcgaaca ggattagata 780

ccctggtagt ccatgctgta aacgttgggc actaggtgtg gggggccttt ccgggttttc 840

cgcgccgtag ctaacgcttt aagtgccccg cctggggagt acggccgcaa ggctaaaact 900

caaaggaatt gacgggggcc cgcacaagcg gcggagcatg cggattaatt cgatgcaacg 960

cgaagaacct taccaaggct tgacatgggc tggtttggtc tggagacagg ccgtcccttt 1020

ttttggggct ggttcacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccttgt ctcgtgttgc cagcatgttg tggtggggac 1140

tcgcgggaga ctgccggggt taactcggag gaaggtgggg atgacgtcaa atcatcatgc 1200

cccttatgtc ttgggcttca cgcatgctac aatggccggt acagtgggtt gcgatgtcgt 1260

gaggcggagc gaatccctta aagccggtct cagttcggat cggtgtctgc aactcgacac 1320

cgtgaagttg gagtcgctag taatcgcaga tcagcaacgc tgcggtgaat acgttctcgg 1380

gccttgtaca caccgcccgt cacgtcatga aagtcggcaa cacccgaagc ccgtggcctt 1440

atggggagcg gtcgaaggtg gggctggtga ttgggacgaa gtcgtaacaa ggtagccgta 1500

ccggaagg 1508

<210> 68
<211> 1517
<212> DNA
<213> Actinomyces orihominis

<400> 68
tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc gaacgggccc gcccctgttt 60

ttgggggtgg gttgagtggc gaacgggtga gtatcacgtg agtaacctgc cccctgctcc 120

tggataactg cttgaaaggg cggctaatac ggggtgtgcc ggctggtccg catgggcctg 180

gtcgggatag tttcatcttc gggtgtttcg gtgggggatg ggctcgcggc ctatcagctt 240

gttggtgggg tgatggccca ccaaggcggt gacgggtagc cggcctgaga gggtgggcgg 300

ccacactggg actgagacac ggcccagact cctgcgggag gcagcagtgg ggggtattgc 360

acaatgggcg gaagcctgat gcagcgacgt cgcgtgaggg atggaggcct tcgggttgtg 420

aacctctttc tccggtggtg aaggccctgt ccgttgcggc ggggttgacg gtagccgggt 480

atgaagcgcc ggctaactac gtgccagcag ccgcggtaat acgtagggcg cgagcgttgt 540

ccggaattat tgggcgtgaa gggcttgtag gcggccggtc gcgtccgccg tgaaattctc 600

cggctcaacc gggggcttgc ggtgggtacg ggccggctgg agtgcggtag gggaggctgg 660

aactcctggt gtagcggtgg aatgcgcaga tatcaggagg aacaccggtg gcgaaggcgg 720

gtctctgggc cgttactgac gctgaggagc gaaagcgtgg ggagcgaaca ggattagata 780

ccctggtagt ccacgccgta aacgttgggc actaggtgtg gggccccgct cggcgggggt 840

ccgcgccgca gctaacgcat taagtgcccc gcctggggag tacggccgca aggctaaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat tcgatgcaac 960

gcgaagaacc ttaccagggc ttgacatggg ggcggcggcg ccggagacgg cgcctccctt 1020

tttcgggcgc ccccgcaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccctgtc ccgtgttgcc agcgcgtcgt ggcggggact 1140

ctcgggagac tgccggggtc aactcggagg agggtgggga cgacgtcaaa tcatcatgcc 1200

cctgacgtcc tgggcttcac gcatgctaca atggccggta cagagggttg cgatgccgtg 1260

aggcggggcg aatcccttaa agccggtctc agttcggatc ggtgtctgca actcgacacc 1320

gtgaagtcgg agtcgctagt aatcgcagat cagcattgct gcggtgaata cgttctcggg 1380

ccttgtacac accgcccgtc acgtcatgaa agtcggcgac gcccgaagcc cgtggcccca 1440

tggggagcgg tcgaaggcgg ggccggtgat tgggacgaag tcgtaacaag gtagccgtac 1500

cggaaggtgc ggctgga 1517

<210> 69
<211> 1535
<212> DNA
<213> Actinomyces oris

<400> 69

agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggtgaaggga tcagcttgct ggttctggat gagtggcgaa cgggtgagta acacgtgagt 120

aacctgcccc cttcttctgg ataaccgcat gaaagtgtgg ctaatacggg atattctggg 180

tctgtcgcat gacgggtctg ggaaagatgc gcctttgggt gtttttggtg ggggatgggc 240

tcgcggccta tcagcttgtt ggtggggtga tggcctacca aggcggtgac gggtagccgg 300

cctgagaggg tggacggtca cactgggact gagacacggc ccagactcct acgggaggca 360

gcagtgggga atattgcaca atgggcgcaa gcctgatgca gcgacgccgc gtgagggatg 420

gaggccttcg ggttgtgaac ctctttcgcc agtgaagcag gcccgcctct tttgtgggtg 480

ggttgacggt agctggataa gaagcgccgg ctaactacgt gccagcagcc gcggtaatac 540

gtagggcgcg agcgttgtcc ggaattattg ggcgtaaaga gctcgtaggc ggctggtcgc 600

gtctgtcgtg aaatcctctg gcttaactgg gggcttgcgg tgggtacggg ccggcttgag 660

tgcggtaggg gagactggaa ctcctggtgt agcggtggaa tgcgcagata tcaggaagaa 720

caccggtggc gaaggcgggt ctctgggccg ttactgacgc tgaggagcga aagcgtgggg 780

agcgaacagg attagatacc ctggtagtcc acgccgtaaa cgttgggcac taggtgtggg 840

ggggcctttt ccgggtcttc cgcgccgtag ctaacgcatt aagtgccccg cctggggagt 900

acggccgcaa ggctaaaact caaaggaatt gacgggggcc cgcacaagcg gcggagcatg 960

cggattaatt cgatgcaacg cgaagaacct taccaaggct tgacatgtgc cggtcggctc 1020

cggagacggg gtttcctcct tgtggggccg gttcacaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgtc ccgtgttgcc 1140

agcacgttgt ggtggggact cgcgggagac tgccggggtc aactcggagg aaggtgggga 1200

tgacgtcaaa tcatcatgcc ccttatgtct tgggcttcac gcatgctaca atggccggta 1260

cagagggctg cgataccgtg aggtggagcg aatcccttaa agccggtctc agttcggatc 1320

ggtgtctgca actcgacacc gtgaagttgg agtcgctagt aatcgcagat cagcaacgct 1380

gcggtgaata cgttctcggg ccttgtacac accgcccgtc acgtcatgaa agtcggcaac 1440

acccgaagcc cgtggcccta cggggagcgg tcgaaggtgg ggctggtgat tgggacgaag 1500

tcgtaacaag gtagccgtac cggaaggtgc ggctg 1535

<210> 70
<211> 1464
<212> DNA
<213> Actinomyces sp. 7400942

<400> 70
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtgaagctc ctggcttttg 60

ttgggggtgg atgagtggcg aacgggtgag taacacgtga gtaacctgcc cctttcttct 120

ggataccgcc acgaaagtgg tgttaatacg ggatattctg gcyctgtcgc atggkggggt 180

tgggaaaggt cttttctggt gggggatggg ctcgcggcct atcagcttgt tggtggggtg 240

atggcctacc aaggcgttga cgggtagccg gcctgagagg gtggacggcc acactgggac 300

tgagacacgg cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgga 360

agcctgatgc agcgacgccg cgtgagggat ggaggccttc gggttgtgaa cctctttcgc 420

cagtgaagca ggcccgctcc ttgtgggtgg gttgacggta gctggataag aagcgccggc 480

taactacgtg ccagcagccg cggtaatacg tagggcgcga gcgttgtccg gaattattgg 540

gcgtaaaggg cttgtaggcg gctggtcgcg tctgccgtga aatcccctgg cttaactggg 600

ggcgtgcggt gggtacgggc cggcttgagt gcggtagggg agactggaat tcctggtgta 660

gcggtggaat gcgcagatat caggaggaac accggtggcg aaggcgggtc tctgggccgt 720

tactgacgct gaggagcgaa agcgtgggga gcgaacagga ttagataccc tggtagtcca 780

cgccgtaaac gttgggcact aggtgtgggg ggcctttccg ggtcctccgc gccgcagcta 840

acgcattaag tgccccgcct ggggagtacg gccgcaaggc taaaactcaa aggaattgac 900

gggggcccgc acaagcggcg gagcatgcgg attaattcga tgcaacgcga agaaccttac 960

caaggcttga catgtcggcg attcccgcgg agacgcggtc tccccctcgt ggggcgccgt 1020

cacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccctgtcccg tgttgccagc acgtcgtggt ggggactcgc gggagactgc 1140

cggggtcaac tcggaggagg gtggggatga cgtcaaatca tcatgcccct tatgtcttgg 1200

gcttcacgca tgctacaatg gccggtacag agggttgcga tgccgcgagg cggggcgaat 1260

cccttaaagc cggtctcagt tcggatcggt gtctgcaact cgacaccgtg aagttggagt 1320

cgctagtaat cgcggatcag caacgccgcg gtgaatacgt tctcgggcct tgtacacacc 1380

gcccgtcacg tcatgaaagt cggcaacacc cgaagcccgt ggccccatgg ggagcggtcg 1440

aaggtggggc cggtgattgg gacg 1464

<210> 71
<211> 1367
<212> DNA
<213> Actinomyces sp. CCUG 37290

<220>
<221> modified_base
<222> (671)..(671)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1259)..(1259)
<223> a, c, t, g, unknown or other

<400> 71
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg ctgaagacct ggcttttgtt 60

gggttggatg agtggcgaac gggtgagtaa cacgtgagta acctgccctc ttctttggga 120

taacgcccgg aaacgggtgc taatactgga tattcactgg ccttcgcatg ggggttggtg 180

gaaaggtttg ttctggtggg ggatgggctc gcggcctatc agcttgttgg tggggtgatg 240

gcctaccaag gctttgacgg gtagccggcc tgagagggtg accggtcaca ttgggactga 300

gatacggccc agactcctac gggaggcagc agtggggaat attgcacaat gggcgaaagc 360

ctgatgcagc gacgccgcgt gagggatgga ggccttcggg ttgtaaacct ctttcgctca 420

tggtcaagcc gcaactgtgg gttgtggtga gggtagtggg taaagaagcg ccggctaact 480

acgtgccagc agccgcggta atacgtaggg cgcgagcgtt gtccggaatt attgggcgta 540

aagggcttgt aggcggttgg tcgcgtctgc cgtgaaattc tctggcttaa ctgggggcgt 600

gcggtgggta cgggctgact tgagtgcggt aggggagact ggaactcctg gtgtagcggt 660

ggaatgcgca natatcagga agaacaccgg tggcgaaggc gggtctctgg gccgttactg 720

acgctgagga gcgaaagcgt ggggagcgaa caggattaga taccctggta gtccacgctg 780

taaacgttgg gcactaggtg tgggggccac ccgtggtttc tgcgccgtag ctaacgcttt 840

aagtgccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc 900

cgcacaagcg gcggagcatg cggattaatt cgatgcaacg cgaagaacct taccaaggct 960

tgacatgcac ggcggcactg cagagatgtg gtggcatttg gttggtcgtg tgcaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttgcccta tgttgccagc acgtgatggt ggggactcgt gggggactgc cggggttaac 1140

tcggaggaag gtggggatga cgtcaaatca tcatgcccct tatgtcttgg gcttcacgca 1200

tgctacaatg gttggtacag agggttgcga tactgtgagg tggagcgaat cccttaaanc 1260

cagtctcagt tcggattggg gtctgcaact cgaccccatg aaggtggagt cgctagtaat 1320

cgcagatcag caacgctgcg gtgaatacgt tctcgggcct tgtacac 1367

<210> 72
<211> 1501
<212> DNA
<213> Actinomyces sp. ChDC B197

<400> 72
agagtttgat cctggctcag acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gtgaagggac cagcttgctg gttctggatg agtggcgaac gggtgagtaa cacgtgagta 120

acctgccccc ttcttctgga taaccgcatg aaagtgtggc taatacggga tattctgggt 180

ctgtcgcatg acgggcccgg gaaagatatt gcttcggtgg gggatgggct cgcggcctat 240

cagcttgttg gtggggtgat ggcctaccaa ggcggtgacg ggtagccggc ctgagagggt 300

ggacggtcac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgagggatgg aggccttcgg 420

gttgtaaacc tctttcgcca gtgaagcagg cctgctcctt gtgggtgggt tgacggtagc 480

tggataagaa gcgccggcta actacgtgcc agcagccgcg gtaatacgta gggcgcgagc 540

gttgtccgga attattgggc gtaaagagct cgtaggcggc tggtcgcgtc tgtcgtgaaa 600

tcctctggct taactggggg cttgcggtgg gtacgggccg gcttgagtgc ggtaggggag 660

actggaactc ctggtgtagc ggtggaatgc gcagatatca ggaagaacac cggtggcgaa 720

ggcgggtctc tgggccgtta ctgacgctga ggagcgaaag cgtggggagc gaacaggatt 780

agataccctg gtagtccacg ccgtaaacgt tgggcactag tgtgggggc cttttccggg 840

tcttccgcgc cgtagctaac gcattaagtg ccccgcctgg ggagtacggc cgcaaggcta 900

aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg 960

caacgcgaag aaccttacca aggcttgaca tgtgccggtc ggctccggag acggggcttc 1020

ctccttgtgg ggccggttca caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgtcccgtg ttgccagcac gttgtggtgg 1140

ggactcgcgg gagactgccg gggtcaactc ggaggaaggt ggggatgacg tcaaatcatc 1200

atgccccttа tgtcttgggc ttcacgcatg ctacaatggc cggtacagag ggctgcgata 1260

ccgtgaggtg gagcgaatcc cttaaagccg gtctcagttc ggatcggtgt ctgcaactcg 1320

acaccgtgaa gctggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc 1380

tcgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gcaacacccg aagcccgtgg 1440

ccctacgggg agcggtcgaa ggtggggctg gtgattggga cgaagtcgta acaaggtaac 1500

c 1501

<210> 73
<211> 1274
<212> DNA
<213> Actinomyces sp. GEJ15

<220>
<221> modified_base
<222> (398)..(400)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (450)..(450)
<223> a, c, t, g, unknown or other

<400> 73
taacctgccc tcttcttctg gataacctca tgaaagtggg gctaatacgg ggtattccgg 60

gtctgtcgca tggcgggttt gggaaagatt gcgcctttgg gtgttttcgg tgggggatgg 120

gctcgcggcc tatcagcttg ttggtggggt gatggcctac caaggcggtg acgggtagcc 180

ggcctgagag ggtggacggc cacactggga ctgagacacg gcccagactc ctgcgggagg 240

cagcagtggg gaatattgca caatgggcgc aagcctgatg cagcgacgcc gcgtgaggga 300

tggaggcctt cgggttgtga acctctttcg ccagtgaagc aggcctgctc gttgtcgtgg 360

tgacgtagct gatagagcgc gctactacgt gcagcagnnn gtatacgtag gcgcgagcgt 420

gtcagtaagt atgggcgtaa agagctcgtn gcgctggtcg cgtctgtcgt gaaatcatct 480

ggcttaactg ggggcttgcg gtgggtacgg gccggcttga gtgcggtagg ggaggctgga 540

actcctggtg tagcggtgga atgcgcagat atcaggaaga acaccggtgg cgaaggcggg 600

tctctgggcc gttactgacg ctgaggagcg aaagcgtggg gagcgaacag gattagatac 660

cctggtagtc cacgccgtaa acgttgggca ctaggtgtgg ggggcctttt ccgggttctt 720

ccgcgccgta gctaacgcat taagtgcccc gcctggggag tacggccgca aggctaaaac 780

tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat tcgatgcaac 840

gcgaagaacc ttaccaaggc ttgacatgtg ccggtcggct ccggagacgg ggtttccctc 900

ctttgtgggg gccggttcac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 960

tgggttaagt cccgcaacga gcgcaacccc tgtcccgtgt tgccagcacg ttgtggtggg 1020

gactcgcggg agactgccgg ggtcaactcg gaggagggtg gggatgacgt caaatcatca 1080

tgccccttat gtcttgggct tcacgcatgc tacaatggcc ggtacagagg gctgcgatgc 1140

cgtgaggtgg agcgaatccc ttaaagccgg tctcagttcg gatcggtgtc tgcaactcga 1200

caccgtgaag ttggagtcgc tagtaatcgc agatcagcca acgctgcggt gaatacgttc 1260

ctcgggcctt gtac 1274

<210> 74
<211> 1320
<212> DNA
<213> Actinomyces sp. HKU31

<400> 74
acggactgct cttcagcttg ctgggggtg gtgagtggcg aacgggtgag taacacgtga 60

gtaacctgcc ctcttctttg ggataactgc cggaaacggt tgctaatacc gggtattcac 120

tggtctccgc atgggggttg gtggaaaggg gcctcttttg gggtttctgg tgggggatgg 180

gctcgcggct tatcagcttg ttggtggggt gatggcctac caaggctttg acgggtagcc 240

ggcctgagag ggtgaccggt cacattggga ctgagatacg gcccagactc ctacgggagg 300

cagcagtggg gaattttgca caatgggcgc aagcctgatg cagcgacgcc gcgtgaggga 360

tggaggcctt cgggttgtaa acctctttcg ctcatggtca agccgcaact gtggttgtgg 420

tgagggtagt gggtaaagaa gcgccggcta actacgtgcc agcagccgcg gtaatacgta 480

gggcgcgagc gttgtccgga attattgggc gtaaagggct tgtaggcggt ttgtcgcgtc 540

tgccgtgaaa ttccctggct taactggggg cgtgcggtgg gtacgggcag gcttgagtgc 600

ggtaggggag actggaattc ctggtgtagc ggtggaatgc gcagatatca ggaggaacac 660

cggtggcgaa ggcgggtctc tgggccgtta ctgacgctga ggagcgaaag catggggagc 720

gaacaggatt agataccctg gtagtccatg ctgtaaacgt tgggcactag gtgtggggac 780

cgtccttggt ttctgcgccg tagctaacgc tttaagtgcc ccgcctgggg agtacggccg 840

caaggctaaa actcaaagga attgacgggg gcccgcacaa gcggcggagc atgcggatta 900

attcgatgca acgcgaagaa ccttaccaag gcttgacatg caccgcgaca ctgcagagat 960

gtggtggcct tcggggtggt gtgcaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgca acgagcgcaa cccttgccct atgttgccag cacgttgtgg 1080

tggggactcg tgggggactg ccggggttaa ctcggaggaa ggtggggatg acgtcaaatc 1140

atcatgcccc ttatgtcttg ggcttcacgc atgctacaat ggtcggtaca gagggttgcg 1200

ataccgyrag gtggagcgaa tcccttaaag ccggtctcag ttcggattgg ggtctgcaac 1260

tcgaccccat gaaggtggag tcgctagtaa tcgcagatca gcaacgctgc ggtgaatacg 1320

<210> 75
<211> 1265
<212> DNA
<213> Actinomyces sp. ICM34

<400> 75
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg agtggcgaac gggtgagtaa 60

cacgtgagta acctgccctc ttctttggga taacgcccgg aaacgggtgc taatactgga 120

tattgaaagc tggtggggga tgggctcgcg gcctatcagc ttgttggtgg ggtgatggcc 180

taccaaggct ttgacgggta gccggcctga gagggtgacc ggtcacattg ggactgagat 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgaaagcctg 300

atgcagcgac gccgcgtgag ggatggaggc cttcgggttg taaacctctt tcgctcatgg 360

tcatgagggt agtgggtaaa gaagcgccgg ctaactacgt gccagcagcc gcggtaatac 420

gtagggcgcg agcgttgtcc ggaattattg ggcgtaaagg gcttgtaggc ggttggtcgc 480

gtctgccgtg aaattctctg gcttaactgg gggcgtgcgg tgggtacggg ctgacttgag 540

tgcggtaggg gagactggaa ctcctggtgt agcggtggaa tgcgcagata tcaggaagaa 600

caccggtggc gaaggcgggt ctctgggccg actgacgctg aggagcgaaa gcgtggggag 660

cgaacaggat tagataccct ggtagtccac gctgtaaacg ttgggcacta ggtgtggggg 720

tttctgcgcc gtagctaacg ctttaagtgc cccgcctggg gagtacggcc gcaaggctaa 780

aactcaaagg aattgacggg ggcccgcaca agcggcggag catgcggatt aattcgatgc 840

aacgcgaaga accttaccaa ggcttgacat gtgcaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgccct atgttgccag 960

cacgtgggga ctcgtggggg actgccgggg ttaactcgga ggaaggtggg gatgacgtca 1020

aatcatcatg ccccttatgt cttgggcttc acgcatgcta caatggttgg cagagggttg 1080

cgatactgtg aggtggagcg aatcccttcc agtctcagtt cggatggggt ctgcaactcg 1140

accccagaag gtggagtcgc tagtaatcgc agatcagcaa cgctgcggtg aatacgttct 1200

cgggccttgt acacaccgcc cgtcacgtca cgaaagttgg taacacccga agcccatgcc 1260

taggg 1265

<210> 76
<211> 1331
<212> DNA
<213> Actinomyces sp. ICM41

<400> 76
tcttctttgg gataacgccc ggaaacgggt gctaatactg gatattcact gatcttcgca 60

tgggggttgg tggaaaggtt ttttctggtg ggggatgggc tcgcggccta tcagcttgtt 120

ggtggggtga tggcctacca aggctttgac gggtagccgg cctgagaggg tgaccggtca 180

cattgggact gagatacggc ccagactcct acgggaggca gcagtgggga atattgcaca 240

atgggcgaaa gcctgatgca gcgacgccgc gtgagggatg gaggccttcg ggttgtaaac 300

ctctttcgct catggtcaag ccgcaactta gggttgtggt gagggtagtg ggtaaagaag 360

cgccggctaa ctacgtgcca gcagccgcgg taatacgtag ggcgcgagcg ttgtccggaa 420

ttattgggcg taaagggctt gtaggcggtt ggtcgcgtct gccgtgaaat cctctggctt 480

aactgggggc gtgcggtggg tacgggctga cttgagtgcg gtaggggaga ctggaactcc 540

tggtgtagcg gtggaatgcg cagatatcag gaagaacacc ggtggcgaag gcgggtctct 600

gggccgttac tgacgctgag gagcgaaagc gtggggagcg aacaggatta gataccctgg 660

tagtccacgc tgtaaacgtt gggcactagg tgtgggggcc acccgtggtt tctgcgccgt 720

agctaacgct ttaagtgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 780

ttgacggggg cccgcacaag cggcggagca tgcggattaa ttcgatgcaa cgcgaagaac 840

cttaccaagg cttgacatgc acggcggcac tgcagagatg tggtggcatt tagttggtcg 900

tgtgcaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 960

aacgagcgca acccttgccc tatgttgcca gcacgtgatg gtggggactc gtgggggact 1020

gccggggtta actcggagga aggtggggat gacgtcaaat catcatgccc cttatgtctt 1080

gggcttcacg catgctacaa tggttggtac agagggttgc gatatcgtga ggtggagcga 1140

atcccttaaa gccagtctca gttcggattg gggtctgcaa ctcgacccca tgaaggtgga 1200

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttctcgggc cttgtacaca 1260

ccgcccgtca cgtcacgaaa gttggtaaca cccgaagccc atggcctaac cgcgtttgcg 1320

gggggagtgg t 1331

<210> 77
<211> 1281
<212> DNA
<213> Actinomyces sp. ICM47

<400> 77
gctcaggacg aacgctggcg gcgtgcttaa cacatgcaag tcgaacgagt ggcgaacggg 60

tgagtaacac gtgagtaacc tgccctcttc tttgggataa cgcccggaaa cgggtgctaa 120

tactggatat tgaaagctgg tgggggatgg gctcgcggcc tatcagcttg ttggtggggt 180

gatggcctac caaggctttg acgggtagcc ggcctgagag ggtgaccggt cacattggga 240

ctgagatacg gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcga 300

aagcctgatg cagcgacgcc gcgtgaggga tggaggcctt cgggttgtaa acctctttcg 360

ctcatggtca tgagggtagt gggtaaagaa gcgccggcta actacgtgcc agcagccgcg 420

gtaatacgta gggcgcgagc gttgtccgga attattgggc gtaaagggct tgtaggcggt 480

tggtcgcgtc tgccgtgaaa ttctctggct taactggggg cgtgcggtgg gtacgggctg 540

acttgagtgc ggtaggggag actggaactc ctggtgtagc ggtggaatgc gcagatatca 600

ggaagaacac cggtggcgaa ggcgggtctc tgggccgact gacgctgagg agcgaaagcg 660

tggggagcga acaggattag ataccctggt agtccacgct gtaaacgttg ggcactaggt 720

gtgggggttt ctgcgccgta gctaacgctt taagtgcccc gcctggggag tacggccgca 780

aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat 840

tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgtg caggtggtgc atggttgtcg 900

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgccctatg 960

ttgccagcac gtggggactc gtgggggact gccggggtta actcggagga aggtggggat 1020

gacgtcaaat catcatgccc cttatgtctt gggcttcacg catgctacaa tggttggcag 1080

agggttgcga tactgtgagg tggagcgaat cccttccagt ctcagttcgg atggggtctg 1140

caactcgacc ccagaaggtg gagtcgctag taatcgcaga tcagcaacgc tgcggtgaat 1200

acgttctcgg gccttgtaca caccgcccgt cacgtcacga aagttggtaa cacccgaagc 1260

ccatgcctag ggagtggtcg a 1281

<210> 78
<211> 1260
<212> DNA
<213> Actinomyces sp. ICM54

<400> 78
gaacgctggc ggcgtgctta acacatgcaa gtcgaacgag tggcgaacgg gtgagtaaca 60

cgtgagtaac ctgccccctt ctttgggata acgcccggaa acgggtgcta atactggata 120

ttgaaagctg gtgggggatg ggctcgcggc ctatcagctt gttggtgggg tgatggccta 180

ccaaggcttt gacgggtagc cggcctgaga gggtgaccgg tcacattggg actgagatac 240

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg aaagcctgat 300

gcagcgacgc cgcgtgaggg atgacggcct tcgggttgta aacctctttc gctcatggtc 360

atgagggtag tgggtaaaga agcgccggct aactacgtgc cagcagccgc ggtaatacgt 420

agggcgcgag cgttgtccgg aattattggg cgtaaagggc ttgtaggcgg ttggtcgcgt 480

ctgccgtgaa atcctctggc ttaactgggg gcgtgcggtg ggtacgggct gacttgagtg 540

cggtagggga gactggaact cctggtgtag cggtggaatg cgcagatatc aggaagaaca 600

ccggtggcga aggcgggtct ctgggccgac tgacgctgag gagcgaaagc gtggggagcg 660

aacaggatta gataccctgg tagtccacgc tgtaaacgtt gggcactagg tgtgggggtt 720

tctgcgccgt agctaacgct ttaagtgccc cgcctgggga gtacggccgc aaggctaaaa 780

ctcaaaggaa ttgacggggg cccgcacaag cggcggagca tgcggattaa ttcgatgcaa 840

cgcgaagaac cttaccaagg cttgacatgt gcaggtggtg catggttgtc gtcagctcgt 900

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgccctat gttgccagca 960

cgtggggact cgtgggggac tgccggggtt aactcggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgtct tgggcttcac gcatgctaca atggttggca gagggttgcg 1080

atactgtgag gtggagcgaa tcccttccag tctcagttcg gatggggtct gcaactcgac 1140

cccagaaggt ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa tacgttctcg 1200

ggccttgtac acaccgcccg tcacgtcacg aaagttggta acacccgaag cccatgccta 1260

<210> 79
<211> 1484
<212> DNA
<213> Actinomyces sp. M2231/94/1

<220>
<221> modified_base
<222> (770)..(770)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (772)..(772)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (878)..(878)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (939)..(939)
<223> a, c, t, g, unknown or other

<400> 79
ttgatcctgg ctcaggacga acgctgacgg cgtgcttaac acatgcaagt cgaacggtga 60

agcccctttt tttggggtgg atgagtggcg aacgggtgag taacacgtga gtaacctgcc 120

cctgactcct ggataactgc ttgaaagggt ggctaatacg ggdgtgtcct ggcctgggcg 180

catgtctggg tttggaaaga ttccatgttt ttggttttgg ttggggatgg gctcgcggcc 240

tatcagcttg ttggtggggt gatggcctac caaggcgttg acgggtagcc ggcctgagag 300

ggtggacggt cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 360

gaatattgca caatgggcgc aagcctgatg cagcgacgcc gcgtgaggga tgacggcctt 420

cgggttgtaa acctctttcg ccagtgagga aggcctgctc ctttttgtgg gtgggttgac 480

ggtagctgga taagaagcgc cggctaacta cgtgccagca gccgcggtaa tacgtagggc 540

gcgagcgttg tccggaatta ttgggcgtaa agagctcgta ggcggctggt cgcgtctgcc 600

gtgaaatccc ctggcttaac tgggggcgtg cggtgggtac gggccggctt gagtgcggta 660

ggggaggctg gaactcctgg tgtagcggtg gaatgcgcag atatcaggag gaacaccggt 720

ggcgaaggcg ggtctctggg ccgttactga cgctgaggag cgaaagcgtn gngagcgaac 780

aggattagat accctggtag tccacgccgt aaacgttggg cactaggtgt ggggggtctt 840

tccgggtcct ccgcgccgta gctaacgcat taagtgcncc gcctggggag tacggccgca 900

aggctaaaac tcaaaggaat tgacgggggc ccgcacaanc ggcggagcat gcggattaat 960

tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgtc agcgctggct gcagagatgt 1020

ggtctcctca cttgtggggc gctgtcacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tcccgtgttg ccagcacgtc 1140

gtggtgggga ctcgcgggag actgccgggg tcaactcgga ggaaggtggg gatgacgtca 1200

aatcatcatg ccccttatgt cttgggcttc acgcatgcta caatggccgg tacagagggc 1260

tgcgatgccg tgaggcggag cgaatccctt aaagccggtc tcagttcgga tcggtgtctg 1320

caactcgaca ccgtgaagtt ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa 1380

tacgtcctcg ggccttgtac acaccgcccg tcacgtcatg aaagctggca acacccgaag 1440

cccgtggccc tacggggagc ggtcgaaggt ggggctggtg attg 1484

<210> 80
<211> 1419
<212> DNA
<213> Actinomyces sp. TeJ5

<220>
<221> modified_base
<222> (500)..(500)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (503)..(503)
<223> a, c, t, g, unknown or other

<400> 80
gcttacacat gcagtcgaac gatgatgcgg cgcttgcgcc gttgattagt ggcgaacggg 60

tgagtaacac gtgagtaacc tgccccttc ttcgggataa cggtctgaaa gggctgctaa 120

taccgggtat tcactggtct ccgcatgggg gctggtggaa agggtttttt ctggtggggg 180

atgggctcgc ggcctatcag cttgttggtg gggtgatggc ccaccaaggc tttgacgggt 240

agccggcctg agagggtgac cggtcacatt gggactgaga tacggcccag actcctacgg 300

gaggcagcag tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtga 360

gggatggagg ccttcgggtt gtgaacctct ttcgcccgtg gtcaagccgc gacgtgggtc 420

gtggtgaggg tagtgggtaa agaagcgccg gctaactacg tgccagcagc cgcggtaata 480

cgtagggcgc gagcgtgtcn ganatgggcg taaagggctg taggcgctgg tcgcgtctgc 540

cgtgaaatcc tctggctcaa ctgggagcgt gcggtgggta cgggctggct tgagtgcggt 600

aggggaggct ggaactctgg tgtagcggtg gaatgcgcag atatcaggaa gaacaccggt 660

ggcgaaggcg ggtctctggg ccgttactga cgctgaggag cgaaagcgtg gggagcgaac 720

aggattagat accctggtag tccacgctgt aaacgttggg cactaggtgt gggggccacc 780

cgtggttccc gcgccgtagc taacgcttta agtgccccgc ctggggagta cggccgcaag 840

gctaaaactc aaaggaattg acgggggccc gcacaagcgg cggagcatgc ggattaattc 900

gatgcaacgc gaagaacctt accaaggctt gacatgcgcc ccgggcgcgc ggagacgcgc 960

gcgcatttgg ttgggggtgt gcaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttgccctat gttgccagcg cgttgtggcg 1080

gggactcgtg ggggactgcc ggggttaact cggaggaagg tggggatgac gtcaaatcat 1140

catgcccctt atgtcttggg cttcacgcat gctacaatgg ccggtacaga gggttgcgat 1200

gccgtgaggc ggggcgaatc ccttaaagcc ggtctcagtt cggattgggg tctgcaactc 1260

gaccccatga aggtggagtc gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt 1320

ctcgggcctt gtacacaccg cccgtcacgt cacgaaagtt ggtaacgccc gaagcccatg 1380

gcccaaccgg ctcttgctgg ggggagtggt cgaaggtgg 1419

<210> 81
<211> 1443
<212> DNA
<213> Actinomyces sp. c109

<400> 81
gccccacaca tgcaagtgga gcgacgaacc ggggcttgcc ccggggcaga gccgcgaacg 60

ggtgagtaac acgtgggtta cctgccccga tgactgggac aacccgtcga aagacgggct 120

aataccggat gtgccccttg ggggaaagga agcttcggcc tccgcatcgg gatgggcccg 180

cggcgcatta gcttgttggt ggggtaatgg cttaccaagg cgacgatgcg tagctggtct 240

gagaggacga tcagccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtggggaatc ttgcacaatg cgcgaaagcg tgatgcagca acgccgcgtg cgggaagaag 360

gccctagggt tgtaaaccgc tttcagttgg gacgaagctt cagtcgttaa tagcggtttg 420

gagtgacggt accttcagaa gaagcgccgg ctaactacgt gccagcagcc gcggtaatac 480

gtagggcgcg agcgttgtcc ggaatcattg ggcgtaaagc gcgtgtaggc ggctgagtaa 540

gtctgctgtg aaagtccagg gctcaaccct ggaatgtcgg cggatactgc tcagctggag 600

tacgggaggg gcgagtggaa ttcctggtgt agcggtggaa tgcgcagata tcaggaggaa 660

cacctatggc gaaggcagct cgctggaacg ttactgacgc tgagacgcga aagcgtgggg 720

agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgatggatac taggtgtggg 780

gggtgtcaac tccctccgtg ccgaagctaa cgcattaagt atcccgcctg gggagtacgg 840

ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcagcgg agcatgtggt 900

ttaattcgac gcaacgcgaa gaaccttacc tgggcttgac atgttcttga tcggcgtgga 960

aacacgtctt ccctcacggg caagatcaca ggtggtgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccccc gtcgtatgtt gccagcattt 1080

agttggggac tcatgcgaga ctgccggtgg caaaccggag gaaggtgggg atgacgtcaa 1140

gtcatcatgc cccttatgtc cagggctaca cacgtgctac attggcgtat acaaagggta 1200

gcgataccgc gaggtggagc gaatctcaca aagtacgtct cggttcggat tgcaggctga 1260

aactcgcctg catgaaggtg gagttgctag taatcgtgga tcagcaatgc cgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacaccacgg gagtgagcaa cacccgaagc 1380

cggtggccta acccgcaagg gagggagccg tcgaaggtgg ggctcgtgac tggggtgaag 1440

tcg 1443

<210> 82
<211> 1547
<212> DNA
<213> Actinomyces sp. oral clone GU009

<400> 82
gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

ggcccgcacc ttttttgggg gcgggttgag tggcgaacgg gtgagtatca cgtgagtaac 120

ctgccctcct ctcctggata accgcttgaa agggcggcta atacggggtg gtccggttgg 180

tccgcatggg ccggtcggga tagtttcatc ttcgggtgtt tcggtggggg atgggctcgc 240

ggcctatcag cttgttggtg gggtgatggc ccaccaaggc ggtgacgggt agccggcctg 300

agagggtggg cggccacact gggactgaga cacggcccag actcctgcgg gaggcagcag 360

tgggggggtat tgcacaatgg gcggaagcct gatgcagcga cgtcgcgtga gggatggagg 420

ccttcgggtt gtgaacctct gtttccggtg gtgaaggccc cgcccctggt ggtggggttg 480

acggtagccg ggtatgaagc gccggctaac tacgtgccag cagccgcggt aatacgtagg 540

gcgcgagcgt tgtccggaat tattgggcgt aaagggcttg taggcggccg gccgcgtccg 600

tcgtgaaatc ctccggctca accgggggct tgcggtgggt acgggtcggc tggagtgcgg 660

caggggaggc tggaactcct ggtgtagcgg tggaatgcgc agatatcagg aagaacaccg 720

gtggcgaagg cgggtctctg ggccgttact gacgctgagg agcgaaagcg tggggagcga 780

acaggattag ataccctggt agtccacgct gtaaacgttg ggcactaggt gtgggggcca 840

cccgtggttt ctgcgccgta gctaacgctt taagtgcccc gcctggggag tacggccgca 900

aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat 960

tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgca cggcggcact gcagagatgt 1020

ggtggcattt agttggtcgt gtgcaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgccct atgttgccag cacgtgatgg 1140

tggggactcg tgggggactg ccggggttaa ctcggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgtcttg ggcttcacgc atgctacaat ggttggtaca gagggttgcg 1260

atatcgtgag gtggagcgaa tcccttaaag ccagtctcag ttcggattgg ggtctgcaac 1320

tcgaccccat gaaggtggag tcgctagtaa tcgcagatca gcaacgctgc ggtgaatacg 1380

ttctcgggcc ttgtacacac cgcccgtcac gtcacgaaag ttggtaacac ccgaagccca 1440

tggcctaacc ggtttgccgg ggggagtggt cgaaggtggg attggcgatt gggacgaagt 1500

cgtaacaagg tagccgtacc ggaaggtgcg gctggaacac ctccttc 1547

<210> 83
<211> 1366
<212> DNA
<213> Actinomyces sp. oral clone GU067

<400> 83

gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgagta acctgccccc ttcttctgga taaccgcatg 120

aaagtgtggc taatacggga tattgaaagt cggtggggga tgggctcgcg gcctatcagc 180

ttgttggtgg ggtgatggcc taccaaggcg gtgacgggta gccggcctga gagggtggac 240

ggtcacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cgcaagcctg atgcagcgac gccgcgtgag ggatggaggc cttcgggttg 360

taaacctctt tcgccagtga agctgacggt agctggataa gaagcgccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggcgcg agcgttgtcc ggaattattg ggcgtaaaga 480

gctcgtaggc ggctggtcgc gtctgtcgtg aaatcctctg gcttaactgg gggcttgcgg 540

tgggtacggg ccggcttgag tgcggtaggg gagactggaa ctcctggtgt agcggtggaa 600

tgcgcagata tcaggaagaa caccggtggc gaaggcgggt ctctgggccg actgacgctg 660

aggagcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac gccgtaaacg 720

ttgggcacta ggtgtggggg cttccgcgcc gtagctaacg cattaagtgc cccgcccggg 780

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 840

catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat gcacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtctc gtgttgccag cacgtgggga ctcgcgggag actgccgggg ttaactcgga 1020

ggaaggtggg gatgacgtca aatcatcatg ccccttatgt cttgggcttc acgcatgcta 1080

caatggccgg cagtgggttg cgatgctgtg aggcggagcg aatccctgcc ggtctcagtt 1140

cggacggtgt ctgcaactcg acaccggaag ttggagtcgc tagtaatcgc agatcagcaa 1200

cgctgcggtg aatacgttct cgggccttgt acacaccgcc cgtcacgtca tgaaagctgg 1260

caacacccga agcccgtgcc tgggagcggt cgaaggtggg gctggtgatt gggacgaagt 1320

cgtaacaagg tagccgtacc ggaaggtgcg gctggaacac ctcctt 1366

<210> 84
<211> 1532
<212> DNA
<213> Actinomyces sp. oral clone IO076

<400> 84
gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

atgaagcgct gtctttttgg cggtgtggat tagtggcgaa cgggtgagta atacgcgggc 120

aacctgcccc tctgcttcgg gataagcttt ggaaacgggg tctaataccg gatgtgcctg 180

tctggtcgca tggctgggcg gggaaagatg tttttcggcg ggggatgggc tcgcggccta 240

tcagcttgtt ggtggggtga cggcctacca aggcgtcgac gggtagccgg cctgagaggg 300

tggtcggcca cactgggact gagatacggc ccagactcct acgggaggca gcagtggggg 360

atattgcaca atgggcgcaa gcctgatgca gcgacgccgc gtgggggatg gaggctttcg 420

ggttgtaaac ccctttcggc gcgggacaag gctccgtttg gcggggttga gggtacgcgt 480

caaagaagcg ccggctaact acgtgccagc agccgcggta atacgtaggg cgcgagcgtt 540

gtccggaatt attgggcgta aagggctcgt aggcggcttg tcgcgtctgc tgtgaaaacg 600

cggggctcaa ctccgcgcgt gcagtgggta cgggcaggct ggagtgcggc aggggtggct 660

ggaattcctg gtgtagcggt ggaatgcgca gatatcagga agaacaccga tggcgaaggc 720

aggccactgg gccgtcactg acgctgggga gcgaaagcgt ggggagcgaa caggattaga 780

taccctggta gtccacgccg taaacgttgg gcactaggtg tgggggggcct tttccgggtc 840

ttccgcgccg tagctaacgc attaagtgcc ccgcctgggg agtacggtcg caaggctaaa 900

actcaaagga attgacgggg gcccgcacaa gcggcggagc atgcggatta attcgatgca 960

acgcgaagaa ccttaccaag gcttgacatg tgccggtcgg ctccggagac gggagcgtcc 1020

ccttttgtg ggctggttca caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgtctcgtg ttgccagcac gttgtggtgg 1140

ggactcgcgg gagactgccg gggtcaactc ggaggagggt ggggatgacg tcaaatcatc 1200

atgcccctta tgtcttgggc ttcacgcatg ctacaatggc cggtacagtg ggttgcgatg 1260

tcgtgaggcg gagcgaatcc ctgaaagccg gtctcagttc ggatcggtgt ctgcaactcg 1320

acaccgtgaa gttggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc 1380

tcgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gcaacacccg aagcccgtgg 1440

ccttatgggg agcggtcgaa ggtggggctg gtgattggga cgaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gaacacctcc tt 1532

<210> 85
<211> 1544
<212> DNA
<213> Actinomyces sp. oral clone IO077

<400> 85
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gtgaagggat cagcttgctg gttctggatg agtggcgaac gggtgagtaa cacgtgagta 120

acctgccccc ttcttctgga taaccgcatg aaagtgtggc taatacggga tattctgggt 180

ctgtcgcatg gcgggtctgg gaaagatgcg cctttgggtg tttttggtgg gggatgggct 240

cgcggcctat cagcttgttg gtggggtgat ggcctaccaa ggcggtgacg ggtagccggc 300

ctgagagggt ggacggtcac actgggactg agacacggcc cagactccta cgggaggcag 360

cagtggggaa tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgagggatgg 420

aggccttcgg gttgtaaacc tctttcgcca gtgaagcagg cctgctcctt gtgggtgggt 480

tgacggtagc tggataagaa gcgccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggcgcgagc gttgtccgga attattgggc gtaaagagct cgtaggcggc tggtcgcgtc 600

tgtcgtgaaa tcctctggct taactggggg cgtgcggtgg gtacgggccg gcttgagtgc 660

ggtaggggag gctggaattc ctggtgtagc ggtggaatgc gcagatatca ggaggaacac 720

cggtggcgaa ggcgggtctc tgggccgtgt actgacgctg agagcgaaag cgtggggagc 780

gaacaggatt agataccctg gtagtccatg ctgtaaacgt tgggcactag gtgtgggggg 840

tctttccggg tcttccgcgc cgtagctaac gcattaagtg ccccgcctgg ggagtacggc 900

cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgcggat 960

taattcgatg caacgcgaag aaccttacca aggcttgaca tgggccggtg gttcccggag 1020

acgggagcgt ccccttttg tgggctggtt cacaggtggt gcatggttgt cgtcagctcg 1080

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtctcg tgttgccagc 1140

acgttgtggt ggggactcgc gggagactgc cggggtcaac tcggaggagg gtggggatga 1200

cgtcaaatca tcatgcccct tatgtcttgg gcttcacgca tgctacaatg gccggtacag 1260

tgggttgcga tgtcgtgagg cggagcgaat ccctgaaagc cggtctcagt tcggatcggt 1320

gtctgcaact cgacaccgtg aagttggagt cgctagtaat cgcagatcag caacgctgcg 1380

gtgaatacgt tctcgggccc tgtacacacc gcccgtcacg tcatgaaagt cggcaacacc 1440

cgaagcccgt ggccttatgg ggagcggtcg aaggtggggc tggtgattgg gacgaagtcg 1500

taacaaggta gccgtaccgg aaggtgcggt tggatcacct cctt 1544

<210> 86
<211> 1362
<212> DNA
<213> Actinomyces sp. oral clone IP073

<400> 86
gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgagta acctgccctc ttctcttgga taactgcttg 120

aaagggcggc taatacggga tgttgaaagt tggtggggga tgggctcgcg gcttatcagc 180

ttgttggtgg ggtgatggcc taccaaggcg gtgacgggta gccggcctga gagggtggac 240

ggtcacactg ggactgagac acggcccaga ctcctgcggg aggcagcagt gggggatttt 300

gcacaatggg cgcaagcctg atgcagcgac gccgcgtgag ggatggaggc cttcgggttg 360

tgaacctctg tcgccggtga tgttgacggt agccgggtat gaagtgccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggcgcg agcgttgtcc ggaattattg ggcgtaaaga 480

gctcgtaggc ggctggtcgc gtctgtcgtg aaatcctctg gcttaactgg gggcgtgcgg 540

tgggtacggg ccggcttgag tgcggtaggg gaggctggaa ttcctggtgt agcggtggaa 600

tgcgcagata tcaggaggaa caccggtggc gaaggcgggt ctctgggccg actgacgctg 660

aggagcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccat gctgtaaacg 720

ttgggcacta ggtgtggggg cttccgcgcc gtagctaacg cattaagtgc cccgcctggg 780

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 840

catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat gcacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtctc gtgttgccag cacgtgggga ctcgcgggag actgccgggg tcaactcgga 1020

ggagggtggg gatgacgtca aatcatcatg ccccttatgt cttgggcttc acgcatgcta 1080

caatggccgg cagagggctg cgataccgtg aggtggagcg aatcccttcc ggtctcagtt 1140

cggacggtgt ctgcaactcg acaccggaag ttggagtcgc tagtaatcgc agatcagcaa 1200

cgctgcggtg aatacgttct cgggccttgt acacaccgcc cgtcacgtca tgaaagtcgg 1260

caacacccga agcccgtgcg agcggtcgaa ggtggggctg gtgattggga cgaagtcgta 1320

acaaggtagc cgtaccggaa ggtgcggctg gatcacctcc tt 1362

<210> 87
<211> 1543
<212> DNA
<213> Actinomyces sp. oral clone IP081

<400> 87
gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

ggcccgctct ctttttgggg ggtgggttga gtggcgaacg ggtgagtatc acgtgagtaa 120

cctgcccccc gctcctggat aactgcttga aagggcggct aatacggggt gtgccggctg 180

gtccgcatgg gcctggtcgg gatagtttca tcttcgggtg tttcggtggg ggatgggctc 240

gcggcctatc agcttgttgg tggggtgatg gcccaccaag gcggtgacgg gtagccggcc 300

tgagagggtg ggcggccaca ctgggactga gacacggccc agactcctgc gggaggcagc 360

agtggggggt attgcacaat gggcggaagc ctgatgcagc gacgtcgcgt gagggatgga 420

ggccttcggg ttgtgaacct ctttctccgg tggtgaaggc cctgtccgtt gcggcggggt 480

tgacggtagc cgggtatgaa gcgccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggcgcgagc gttgtccgga attattgggc gtgaagggct tgtaggcggc cggtcgcgtc 600

cgccgtgaaa ttctccggct caaccggggg cttgcggtgg gtacgggccg gctggagtgc 660

ggtaggggag gctggaactc ctggtgtagc ggtggaatgc gcagatatca ggaggaacac 720

cggtggcgaa ggcgggtctc tgggccgtta ctgacgctga ggagcgaaag cgtggggagc 780

gaacaggatt agataccctg gtagtccacg ccgtaaacgt tgggcactag gtgtgggggg 840

ccttttccgg gtcttccgcg ccgtagctaa cgcattaagt gccccgcctg gggagtacgg 900

tcgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcggcgg agcatgcgga 960

ttaattcgat gcaacgcgaa gaaccttacc aaggcttgac atgtgccggt cggctccgga 1020

gacggggttt cctccttgtg gggccggttc acaggtggtg catggttgtc gtcagctcgt 1080

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgtctcgt gttgccagca 1140

cgttgtggtg gggactcgcg ggagactgcc ggggtcaact cggaggaggg tggggatgac 1200

gtcaaatcat catgcccctt atgtcttggg cttcacgcat gctacaatgg ccggtacagt 1260

gggttgcgat gtcgtgaggc ggagcgaatc cctgaaagcc ggtctcagtt cggatcggtg 1320

tctgcaactc gacaccgtga agttggagtc gctagtaatc gcagatcagc aacgctgcgg 1380

tgaatacgtt ctcgggcctt gtacacaccg cccgtcacgt catgaaagtc ggcaacaccc 1440

gaagcccgtg gccttatggg gagcggtcga aggtggggct ggtgattggg acgaagtcgt 1500

aacaaggtag ccgtaccgga aggtgcggct ggatcacctc ctt 1543

<210> 88
<211> 1366
<212> DNA
<213> Actinomyces sp. oral clone JA063

<400> 88
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgagta acctgccccc ttcttctgga taaccgcatg 120

aaagtgtggc taatacggga tattgaaagt tggtggggga tgggctcgcg gcctatcagc 180

ttgttggtgg ggtgatggcc taccaaggcg gtgacgggta gccggcctga gagggtggac 240

ggtcacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cgcaagcctg atgcagcgac gccgcgtgag ggatggaggc cttcgggttg 360

tgaacctctt tcgccagtga agctgacggt agctggataa gaagcgccgg ctaactacgt 420

gccagcagcc gtggtaatac gtagggcgcg agcgttgtcc ggaattattg ggcgtaaaga 480

gctcgtaggc ggctggtcgc gtctgtcgtg aaatcctctg gcttaactgg gggcttgcgg 540

tgggtacggg ccggcttgag tgcggtaggg gaggctggaa ctcctggtgt agcggtggaa 600

tgcgcagata tcaggaagaa caccggtggc gaaggcgggt ctctgggccg actgacgctg 660

aggagcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac gccgtaaacg 720

ttgggcacta ggtgtggggg tttccgcgcc gtagctaacg cattaagtgc cccgcctggg 780

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 840

catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat gcacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtctc gtgttgccag cacgtgggga ctcgcgggag actgccgggg tcaactcgga 1020

ggaaggtggg gatgacgtca aatcatcatg ccccttatgt cttgggcttc acgcatgcta 1080

caatggccgg cagagggctg cgataccgtg aggtggagcg aatcccttcc ggtctcagtt 1140

cggacggtgt ctgcaactcg acaccggaag ttggagtcgc tagtaatcgc agatcagcaa 1200

cgctgcggtg aatacgttct cgggccttgt acacaccgcc cgtcacgtca tgaaagtcgg 1260

caacacccga agcccgtgcc tgggagcggt cgaaggtggg gctggtgatt gggacgaagt 1320

cgtaacaagg tagccgtacc ggaaggtgcg gctggaacac ctcctt 1366

<210> 89
<211> 1563
<212> DNA
<213> Actinomyces sp. oral taxon 170

<400> 89
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gtgaagcgcc ttcctttgtg gtgggtgtgg atgagtggcg aacgggtgag 120

taacacgtga gtaacctgcc cccttcttct ggataaccgc atgaaagtgt ggctaatacg 180

ggatattctg tgcctgctgc atggtgggtg tgggaaagat tgcgcctttg ggtgtttttg 240

gtgggggatg ggctcgcggc ctatcagctt gttggtgggg tgatggccta ccaaggcggt 300

gacgggtagc cggcctgaga gggtggacgg tcacactggg actgagacac ggcccagact 360

cctacgggag gcagcagtgg ggaatattgc acaatgggcg caagcctgat gcagcgacgc 420

cgcgtgaggg atggaggcct tcgggttgtg aacctctttc gccagtgaag caggcctgtc 480

cctgtgtggg tgggttgacg gtagctggat aagaagcgcc ggctaactac gtgccagcag 540

ccgcggtaat acgtagggcg cgagcgttgt ccggaattat tgggcgtaaa gagctcgtag 600

gcggctggtc gcgtctgtcg tgaaatcctc tggcttaact gggggcttgc ggtgggtacg 660

ggccggcttg agtgcggtag gggaggctgg aactcctggt gtagcggtgg aatgcgcaga 720

tatcaggaag aacaccggtg gcgaaggcgg gtctctgggc cgttactgac gctgaggagc 780

gaaagcgtgg ggagcgaaca ggattagata ccctggtagt ccacgccgta aacgttgggc 840

actaggtgtg gggggccttt tccgggtttt ccgcgccgta gctaacgcat taagtgcccc 900

gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc 960

ggcggagcat gcggattaat tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgtg 1020

ccggtttgct tcggagacgg ggtttcctcc tttgtggggg ctggttcaca ggtggtgcat 1080

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt 1140

gtctcgtgtt gccagcacgt tgtggtgggg actcgcggga gactgccggg gtcaactcgg 1200

aggaaggtgg ggatgacgtc aaatcatcat gccccttatg tcttgggctt cacgcatgct 1260

acaatggccg gtacagaggg ctgcgatacc gtgaggtgga gcgaatccct taaagccggt 1320

ctcagttcgg atcggtgtct gcaactcgac accgtgaagt tggagtcgct agtaatcgca 1380

gatcagcaac gctgcggtga atacgttctc gggccttgta cacaccgccc gtcacgtcat 1440

gaaagtcggc aacacccgaa gcccgtggcc ctatggggag cggtcgaagg tggggctggt 1500

gattgggacg aagtcgtaac aaggtagccg taccggaagg tgcggctgga tcacctcctt 1560

tct 1563

<210> 90
<211> 1561
<212> DNA
<213> Actinomyces sp. oral taxon 171

<400> 90
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gtgaaggggc ctgcttttgt gggtcctgga tgagtggcga acgggtgagt 120

aacacgtgag taacctgccc ccttcttctg gataaccgca tgaaagtgtg gctaatacgg 180

gatattctgt gcctgctgca tggtgggtgt gggaaagatt gtgcctttgg gtgttttcgg 240

tgggggatgg gctcgcggcc tatcagcttg ttggtggggt gatggcctac caaggcggtg 300

acgggtagcc ggcctgagag ggtggacggt cacactggga ctgagacacg gcccagactc 360

ctacgggagg cagcagtggg gaatattgca caatgggcgc aagcctgatg cagcgacgcc 420

gcgtgaggga tggaggcctt cgggttgtga acctctttcg ccagtgaagc aggcctgtcc 480

cttttgtggg tgggttgacg gtagctggat aagaagcgcc ggctaactac gtgccagcag 540

ccgcggtaat acgtagggcg cgagcgttgt ccggaattat tgggcgtaaa gagctcgtag 600

gcggctggtc gcgtctgtcg tgaaatcctc tggcttaact gggggcttgc ggtgggtacg 660

ggccggcttg agtgcggtag gggagactgg aactcctggt gtagcggtgg aatgcgcaga 720

tatcaggaag aacaccggtg gcgaaggcgg gtctctgggc cgttactgac gctgaggagc 780

gaaagcgtgg ggagcgaaca ggattagata ccctggtagt ccacgccgta aacgttgggc 840

actaggtgtg gggggccttt tccgggtctt ccgcgccgta gctaacgcat taagtgcccc 900

gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc 960

ggcggagcat gcggattaat tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgtg 1020

ccggtcggct ccggagacgg ggtttcctcc ttgtggggcc ggttcacagg tggtgcatgg 1080

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttgt 1140

cccgtgttgc cagcacgttg tggtggggac tcgcgggaga ctgccggggt caactcggag 1200

gaaggtgggg atgacgtcaa atcatcatgc cccttatgtc ttgggcttca cgcatgctac 1260

aatggccggt acagagggct gcgataccgt gaggtggagc gaatccctta aagccggtct 1320

cagttcggat cggtgtctgc aactcgacac cgtgaagttg gagtcgctag taatcgcaga 1380

tcagcaacgc tgcggtgaat acgttctcgg gccttgtaca caccgcccgt cacgtcatga 1440

aagtcggcaa cacccgaagc ccgtggccct acggggagcg gtcgaaggtg gggctggtga 1500

ttgggacgaa gtcgtaacaa ggtagccgta ccggaaggtg cggctggatc acctcctttc 1560

t 1561

<210> 91
<211> 1551
<212> DNA
<213> Actinomyces sp. oral taxon 178

<400> 91
tttgttcgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg cgcctgtcct ctggttttcc ggggggtggg tgagtggcga acgggtgagt 120

aacacgtgag taacctgccc ccttcttcgg gataacggtc tgaaagggct gctaataccg 180

ggtattcact ggtctccgca tggggtctgg tggaaaggtt ttttctggtg ggggatgggc 240

tcgcggccta tcagcttgtt ggtggggtga tggcccacca aggctttgac gggtagccgg 300

cctgagaggg tgaccggtca cattgggact gagatacggc ccagactcct acgggaggca 360

gcagtgggga atattgcaca atgggcgcaa gcctgatgca gcgacgccgc gtgagggatg 420

gaggccttcg ggttgtgaac ctctttcgcc cgtggtcaag ccgcgacgtg ggtcgtggtg 480

agggtagtgg gtaaagaagc gccggctaac tacgtgccag cagccgcggt aatacgtagg 540

gcgcgagcgt tgtccggaat tattgggcgt aaagggcttg taggcggctg gtcgcgtctg 600

ccgtgaaatc ctctggctca actgggggcg tgcggtgggt acgggctggc ttgagtgcgg 660

taggggaggc tggaactcct ggtgtagcgg tggaatgcgc agatatcagg aagaacaccg 720

gtggcgaagg cgggtctctg ggccgttact gacgctgagg agcgaaagcg tggggagcga 780

acaggattag ataccctggt agtccacgct gtaaacgttg ggcactaggt gtgggggcca 840

cccgtggttc ccgcgccgta gctaacgctt taagtgcccc gcctggggag tacggccgca 900

aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat 960

tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgcg ccccgggcgc gcggagacgc 1020

gcgcgcattt ggttgggggt gtgcaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgccct atgttgccag cgcgttgtgg 1140

cggggactcg tgggggactg ccggggttaa ctcggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgtcttg ggcttcacgc atgctacaat ggccggtaca gagggttgcg 1260

atgccgtgag gcggggcgaa tcccttaaag ccggtctcag ttcggattgg ggtctgcaac 1320

tcgaccccat gaaggtggag tcgctagtaa tcgcagatca gcaacgctgc ggtgaatacg 1380

ttctcgggcc ttgtacacac cgcccgtcac gtcacgaaag ttggtaacgc ccgaagccca 1440

tggcccaacc ggctcttgct ggggggagtg gtcgaaggtg ggatcggcga ttgggacgaa 1500

gtcgtaacaa ggtagccgta ccggaaggtg cggctggatc acctcctttc t 1551

<210> 92
<211> 1545
<212> DNA
<213> Actinomyces sp. oral taxon 180

<400> 92
tttgttcgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ctgaagctca gcttttgttg ggtggatgag tggcgaacgg gtgagtaaca 120

cgtgagtaac ctgccccctt ctttgggata acgcccggaa acgggtgcta atactggata 180

ttcactggtc ttcgcatggg ggttggtgga aagggttttt ctggtggggg atgggctcgc 240

ggcctatcag cttgttggtg gggtgatggc ctaccaaggc tttgacgggt agccggcctg 300

agagggtgac cggtcacatt gggactgaga tacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtga gggatggagg 420

ccttcgggtt gtgaacctct ttcgctcatg gtcaagccgc aacaatggtt gtggtgaggg 480

tagtgggtaa agaagcgccg gctaactacg tgccagcagc cgcggtaata cgtagggcgc 540

gagcgttgtc cggaattatt gggcgtaaag ggcttgtagg cggttggtcg cgtctgccgt 600

gaaatcctct ggcttaactg ggggcgtgcg gtgggtacgg gctgacttga gtgcggtagg 660

ggagactgga actcctggtg tagcggtgga atgcgcagat atcaggaaga acaccggtgg 720

cgaaggcggg tctctgggcc gttactgacg ctgaggagcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgctgtaa acgttgggca ctaggtgtgg gggccacccg 840

tggtttctgc gccgtagcta acgctttaag tgccccgcct ggggagtacg gccgcaaggc 900

taaaactcaa aggaattgac gggggcccgc acaagcggcg gagcatgcgg attaattcga 960

tgcaacgcga agaaccttac caaggcttga catgcacggc ggcactgcag agatgtggtg 1020

gcatttagtt ggtcgtgtgc aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaacga gcgcaaccct tgccctatgt tgccagcacg tgatggtggg 1140

gactcgtggg ggactgccgg ggttaactcg gaggaaggtg gggatgacgt caaatcatca 1200

tgccccttat gtcttgggct tcacgcatgc tacaatggtt ggtacagagg gttgcgatac 1260

tgtgaggtgg agcgaatccc ttaaagccag tctcagttcg gattggggtc tgcaactcga 1320

ccccatgaag gtggagtcgc tagtaatcgc agatcagcaa cgctgcggtg aatacgttct 1380

cgggccttgt acacaccgcc cgtcacgtca cgaaagttgg taacacccga agcccatggc 1440

ctaaccgctt ttgcgggggg agtggtcgaa ggtgggattg gcgattggga cgaagtcgta 1500

acaaggtagc cgtaccggaa ggtgcggctg gatcacctcc tttct 1545

<210> 93
<211> 1548
<212> DNA
<213> Actinomyces sp. oral taxon 848

<400> 93
tttttgtgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg atgaagcgct gtctttttga tggtgtggat tagtggcgaa cgggtgagta 120

atacgcgggc aacctgcccc tctgcttcgg gataagcttt ggaaacgggg tctaataccg 180

gatgtgcctg tctggtcgca tggctgggcg gggaaagatg tttttcggcg ggggatgggc 240

tcgcggccta tcagcttgtt ggtggggtga cggcctacca aggcgtcgac gggtagccgg 300

cctgagaggg tggtcggcca cactgggact gagatacggc ccagactcct acgggaggca 360

gcagtggggg atattgcaca atgggcgcaa gcctgatgca gcgacgccgc gtgggggatg 420

gaggctttcg ggttgtaaac ccctttcggc gcgggacaag gctccgtttg gcggggttga 480

gggtacgcgt caaagaagcg ccggctaact acgtgccagc agccgcggta atacgtaggg 540

cgcgagcgtt gtccggaatt attgggcgta aagggctcgt aggcggcttg tcgcgtctgc 600

tgtgaaaacg cggggctcaa ctccgcgcgt gcagtgggta cgggcaggct ggagtgcggc 660

aggggtggct ggaattcctg gtgtagcggt ggaatgcgca gatatcagga agaacaccga 720

tggcgaaggc aggccactgg gccgtcactg acgctgagga gcgaaagcgt ggggagcgaa 780

caggattaga taccctggta gtccacgctg taaacgttgg gaactaggtg tggggtctgt 840

tccacggatt ctgcgccgga gctaacgcgt taagttcccc gcctggggag tacggccgca 900

aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat 960

tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgtg ccgggagggc gcggagacgc 1020

gtctgccttc gggccggttc acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttgtcccgt gttgccagcg cgttgtggcg 1140

gggactcacg ggggactgcc ggggtcaact cggaggaagg tggggacgac gtcaaatcat 1200

catgcccctt atgccttggg cttcacgcat gctacaatgg ccggtacaga gggtggcgat 1260

gccgtgaggc ggagcgaatc ttgtaaagcc ggtctcagtt cggatcgggg tctgcaactc 1320

gggcccgtga agtcggagtc gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt 1380

ctcgggcctt gtacacaccg cccgtcacgt cacgaaagtc ggcgacgccc gaagcccgtg 1440

gctctgcttg tgcggggagc ggtcgaaggc ggggttggcg attgggacga agtcgtaaca 1500

aggtagccgt accggaaggt gcggctggat cacctccttt ctagggag 1548

<210> 94
<211> 1505
<212> DNA
<213> Actinomyces sp. oral taxon C55

<400> 94
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcggac 60

ggactgcttg ggggcttgct cctgggtggt gagtggcgaa cgggtgagta acacgtgagt 120

aacctgccct cttcttcggg ataacggttg gaaacggctg ctaataccgg gtattcactg 180

gtcctcgcat gggggttggt ggaaaggggt ttttctggtg ggggatgggc tcgcggctta 240

tcagcttgtt ggtggggtga tggcttacca aggctttgac gggtagccgg cctgagaggg 300

tgaccggtca cattgggact gagatacggc ccagactcct acgggaggca gcagtgggga 360

attttgcaca atgggcgcaa gcctgatgca gcgacgccgc gtgagggatg gaggccttcg 420

ggttgtgaac ctctttcgct catggtcaag ccgcagtttt gtctgtggtg agggtagtgg 480

gtaaagaagc gccggctaac tacgtgccag cagccgcggt aatacgtagg gcgcgagcgt 540

tgtccggaat tattgggcgt aaagggcttg taggcggctt gtcgcgtctg ccgtgaaatc 600

ctctggctta actgggggcg tgcggtgggt acgggctggc ttgagtgcgg taggggagac 660

tggaattcct ggtgtagcgg tggaatgcgc agatatcagg aggaacaccg gtggcgaagg 720

cgggtctctg ggccgttact gacgctgagg aacgaaagca tggggagcga acaggattag 780

ataccctggt agtccatgct gtaaacgttg ggcactaggt gtgggggccg tccttggttt 840

ctgcgccgta gctaacgctt taagtgcccc gcctggggag tacggccgca aggctaaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gcggattaat tcgatgcaac 960

gcgaagaacc ttaccaaggc ttgacatgca ccgcgacact gcagagatgt ggtggccttc 1020

ggggtggtgt gcaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttgccctat gttgccagca cgttgtggtg gggactcgtg 1140

ggggactgcc ggggttaact cggaggaagg tggggatgac gtcaaatcat catgcccctt 1200

atgtcttggg cttcacgcat gctacaatgg caggtacaga gggttgcgat gccgtgaggt 1260

ggagcgaatc ccttaaagct tgtctcagtt cggattgggg tctgcaactc gaccccatga 1320

aggtggagtc gctagtaatc gcagatcagc aacgctgggg tgaatacgtt ctcgggcctt 1380

gtacacaccg cccgtcacgt cacgaaagtt ggtaacaccc gaagcccatg gcccaaccat 1440

ttcggtgggg ggagtggtcg aaggtgggat tggcgattgg gacgaagtcg taacaaggta 1500

gccgt 1505

<210> 95
<211> 1543
<212> DNA
<213> Actinomyces urogenitalis

<400> 95
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gtgaagctcc agcttgctgg ggtggatgag tggcgaacgg gtgagtaaca 120

cgtgagtaac ctgccccctt cttctggata actgcttgaa agggtagcta atacgggata 180

ttctggcctg ctcgcatggg tgggtttgga aaggtttttt ctggtggggg atgggctcgc 240

ggcctatcag cttgttggtg gggtgatggc ctaccaaggc ggtgacgggt agccggcctg 300

agagggtgga cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtga gggatggagg 420

ccttcgggtt gtaaacctct ttcgccagtg aagcaggcca tcttctttgt ggggtggttg 480

acggtagctg gataagaagc gccggctaac tacgtgccag cagccgcggt aatacgtagg 540

gcgcgagcgt tgtccggaat tattgggcgt aaagagctcg taggcggctg gtcgcgtctg 600

tcgtgaaatc ccctggctta actgggggct tgcggtgggt acgggccggc ttgagtgcgg 660

taggggagac tggaattcct ggtgtagcgg tggaatgcgc agatatcagg aggaacaccg 720

gtggcgaagg cgggtctctg ggccgttact gacgctgagg agcgaaagcg tggggagcga 780

acaggattag ataccctggt agtccacgcc gtaaacgttg ggcactaggt gtgggggctc 840

tttccggggt ttccgcgccg tagctaacgc attaagtgcc ccgcctgggg agtacggccg 900

caaggctaaa actcaaagga attgacgggg gcccgcacaa gcggcggagc atgcggatta 960

attcgatgca acgcgaagaa ccttaccaag gcttgacatg tgagcgtctg cctcagagat 1020

ggggtttcct ccttgtgggg cgctttcaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtcccgtgtt gccagcacgt 1140

tgtggtgggg actcgcggga gactgccggg gtcaactcgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gccccttatg tcttgggctt cacgcatgct acaatggccg gtacagaggg 1260

ttgcgatgtc gtgaggcgga gcgaatccct taaagccggt ctcagttcgg atcggtgtct 1320

gcaactcgac accgtgaagt tggagtcgct agtaatcgca gatcagcaac gctgcggtga 1380

atacgttctc gggccttgta cacaccgccc gtcacgtcat gaaagtcggc aacacccgaa 1440

gcccgtggcc ttacggggag cggtcgaagg tggggctggt gattgggacg aagtcgtaac 1500

aaggtagccg taccggaagg tgcggctgga tcacctcctt tct 1543

<210> 96

<211> 1556
<212> DNA
<213> Actinomyces viscosus

<400> 96
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gtgaagggat cagcttgctg gttctggatg agtggcgaac gggtgagtaa 120

cacgtgagta acctgccccc ttcttctgga taaccgcatg aaagtgtggc taatacggga 180

tattctgggt ctgtcgcatg gcgggcctgg gaaagatgcg cctttgggtg tttttggtgg 240

gggatgggct cgcggcctat cagcttgttg gtggggtgat ggcctaccaa ggcggtgacg 300

ggtagccggc ctgagagggt ggacggtcac actgggactg agacacggcc cagactccta 360

cgggaggcag cagtggggaa tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg 420

tgagggatgg aggccttcgg gttgtaaacc tctttcgcca gtgaagcagg cctgtccctt 480

gtgggtgggt tgacggtagc tggataagaa gcgccggcta actacgtgcc agcagccgcg 540

gtaatacgta gggcgcgagc gttgtccgga attattgggc gtaaagagct cgtaggcggc 600

tggtcgcgtc tgtcgtgaaa tcctctggct taactggggg cttgcggtgg gtacgggccg 660

gcttgagtgc ggtaggggag actggaactc ctggtgtagc ggtggaatgc gcagatatca 720

ggaagaacac cggtggcgaa ggcgggtctc tgggccgtta ctgacgctga ggagcgaaag 780

cgtggggagc gaacaggatt agataccctg gtagtccacg ccgtaaacgt tgggcactag 840

gtgtgggggg ccttttccgg gtcttccgcg ccgtagctaa cgcattaagt gccccgcctg 900

gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcggcgg 960

agcatgcgga ttaattcgat gcaacgcgaa gaaccttacc aaggcttgac atgtgccggt 1020

cggctccgga gacggggttt cctccttgtg gggccggttc acaggtggtg catggttgtc 1080

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgtcccgt 1140

gttgccagca cgttgtggtg gggactcgcg ggagactgcc ggggtcaact cggaggaagg 1200

tggggatgac gtcaaatcat catgcccctt atgtcttggg cttcacgcat gctacaatgg 1260

ccggtacaga gggctgcgat accgtgaggt ggagcgaatc ccttaaagcc ggtctcagtt 1320

cggatcggtg tctgcaactc gacaccgtga agttggagtc gctagtaatc gcagatcagc 1380

aacgctgcgg tgaatacgtt ctcgggcctt gtacacaccg cccgtcacgt catgaaagtc 1440

ggcaacaccc gaagcccgtg gccctacggg gagcggtcga aggtggggct ggtgattggg 1500

acgaagtcgt aacaaggtag ccgtaccgga aggtgcggct ggatcacctc ctttct 1556

<210> 97
<211> 1331
<212> DNA
<213> Adlercreutzia equolifaciens

<400> 97
gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgacca acctgccccg cgctccggga caaccgctgg 120

aaacggcggc taataccgga tgctgaaagc ggcgcgggat ggggtcgcgg cccattaggt 180

agacggcggg gtaacggccc accgtgcccg cgatgggtag ccggactgag aggtcgaccg 240

gccacattgg gactgagata cggcccagac tcctacggga ggcagcagtg gggaattttg 300

cgcaatgggg gcaaccctga cgcagcaacg ccgcgtgcgg gacgaaggcc ttcgggttgt 360

aaaccgcttt cagcagggaa gaagacggta cctgcagaag aagctccggc taactacgtg 420

ccagcagccg cggtaatacg taggggggcga gcgttatccg gattcattgg gcgtaaagcg 480

cgcgtaggcg gccgcctaag cggaacctct aatcccgggg ctcaacctcg ggccgggttc 540

cggactgggc ggctcgagtg cggtagaggc aggcggaatt cccggtgtag cggtggaatg 600

cgcagatatc gggaagaaca ccgatggcga aggcagcctg ctgggccgac tgacgctgag 660

gcgcgaaagc tgggggagcg aacaggatta gataccctgg tagtcccagc cgtaaacgat 720

ggacgctagg tgtgggggcc cccgtgccgc agccaacgca ttaagcgtcc cgcctgggga 780

gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg cccgcacaag cagcggagca 840

tgtggcttaa ttcgaagcaa cgcgaagaac cttaccaggg cttgacatgc gcaggtggtg 900

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cccgtcccgt gttgccagca tggggactcg cgggagactg ccggcgtcaa gccggaggaa 1020

ggtggggacg acgtcaagtc atcatgcccc ttatgccctg ggctgcacac gtgctacaat 1080

ggccggcaga gggttgccac cccgcgaggg ggagcggatc ccggccggtc ccagttcgga 1140

cgcaggctgc aacccgcctg cggaagtcgg agttgctagt aatcgcggat cagcatgccg 1200

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacccga gtcgtctgca 1260

cccgaagccg ccgccgacgg aggcgtcgaa ggtgtggagg gtaaggggggg tgaagtcgta 1320

acaaggtaac c 1331

<210> 98
<211> 1488
<212> DNA
<213> Aerococcus sanguinicola

<400> 98
ctcaggacga acgctggcgg catgcctaat acatgcaagt cgagcgaacc gacgaagtgc 60

ttgcacttct gacgttagcg gcggacgggt gagtaacacg taaggaacct acctatgagc 120

gggggacaac atccggaaac gggtgctaat accgcatagt aatttgtcag gcatctgaca 180

aattggaaag acggcttttg ctgtcactca tagatggtct tgcggtgcat tagctagttg 240

gtgggataaa agcttaccaa ggccatgatg catagccgac ctgagagggt aatcggccac 300

actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa tcttccgcaa 360

tgggcgcaag cctgacggag caatgccgcg tgagtgaaga aggttttcgg atcgtaaaac 420

tctgttgtaa gagaagaaca aattgtagag taactgctac agtcttgacg gtatcttacc 480

agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt 540

ccggatttat tgggcgtaaa gggagcgcag gtggtttctt aagtctgatg tgaaagccca 600

cggcttaacc gtggagggtc attggaaact gggaaacttg agtgcagaag aggaaagtgg 660

aactccatgt gtagcggtgg aatgcgtaga tatatggaag aacaccagtg gcgaaggcga 720

ctttctggtc tgtaactgac actgaggctc gaaagcgtgg gtagcaaaca ggattagata 780

ccctggtagt ccacgccgta aacgatgagt gctaggtgtt ggagggtttc cgcccttcag 840

tgccgcagtt aacgcattaa gcactccgcc tggggagtac ggccgcaagg ctgaaactca 900

aaggaattga cggggacccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 960

aagaacctta ccaagtcttg acatcctttg accactctag agatagagct ttcccttcgg 1020

ggacaaagtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttattgtta gttgccagca tttagttggg cactctagcg 1140

agactgccgg tgacaaaccg gaggaaggcg gggatgacgt caaatcatca tgccccttat 1200

gacttgggct acacacgtgc tacaatggat ggtacaacgg gctgcgaact cgcgagagtc 1260

agcgaatccc ttaaagccat tctcagttcg gattgcaggc tgcaactcgc ctgcatgaag 1320

ccggaatcgc tagtaatcgc ggatcagcac gccgcggtga atacgttccc gggtcttgta 1380

cacaccgccc gtcacaccac gagagtttgt aacacccgaa gtcggtgagg taacctttg 1440

gagccagccg ccgaaggtgg gacagatgat tggggtgaag tcgtaaca 1488

<210> 99
<211> 1546
<212> DNA
<213> Aerococcus urinae

<400> 99
atgagagttt gatcctggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg 60

agcgaaccga agaagtgctt gcacttctga cgttagcggc ggacgggtga gtaacacgta 120

aggaacctac cgataagcgg gggacaacat ccggaaacgg gtgctaatac cgcataggaa 180

acaccacctc atggtggtgt ttggaaagac ggctttgctg tcacttatcg atggccttgc 240

ggtgcattag ctcgttggtg gggtaacggc ctaccaaggc aatgatgcat agccgacctg 300

agagggtaat cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgcaagcct gacggagcaa cgccgcgtga gtgaagaagg 420

ttttcggatc gtaaagctct gttgtaagag aagaacaaat tggagagtaa ctgctccagt 480

cttgacggta tcttaccaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttgtccg gatttattgg gcgtaaaggg ggcgcaggcg gtttcttaag 600

tctgatgtga aagcccacgg cttaaccgtg gaagtgcatt ggaaactggg gaacttgagt 660

acagaagagg aaagtggaac tccatgtgta gcggtggaat gcgtagatat atggaagaac 720

accagtggcg aaggcgactt tctggtctgt cactgacgct gaggcccgaa agcgtgggta 780

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgttgga 840

gggtttccac ccttcagtgc cggagttaac gcattaagca ctccgcctgg ggagtacggc 900

cgcaaggctg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca agtcttgaca tcctttgacc actctagaga 1020

tagagctttc ccttcgggga caaagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt attgttagtt gccagcattg 1140

agttgggcac tctagcgaga ctgccggtga caaaccggag gaaggcgggg atgacgtcaa 1200

atcatcatgc cccttatgac ttgggctaca cacgtgctac aatggatggt acaacgagca 1260

gcgaccttgt gaaagcaagc gaatctctta aagccattct cagttcggat tgtagtctgc 1320

aactcgacta catgaagccg gaatcgctag taatcgcgga tcagcacgcc gcggtgaata 1380

cgttcccggg tcttgtacac accgcccgtc acaccacgag agtttgtaac acctgaagtc 1440

ggtgaggtaa cctttggagc cagccgccga aggtgggaca gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtaggtga acctgcggct ggatcacctc ctttct 1546

<210> 100
<211> 1419
<212> DNA
<213> Aerococcus urinaeequi

<220>
<221> modified_base
<222> (1092)..(1092)
<223> a, c, t, g, unknown or other

<400> 100
acatgcaagt cgagcgaaca gatgaagtgc ttgcacttct gacgttagcg gcgaacgggt 60

gagtaacacg taaggaatct acctataagc gggggataac attcggaaac gggtgctaat 120

accgcataat atcttcttcc gcatggaagg agattgaaag acggctctgc tgtcacttat 180

agatgacctt gcggtgcatt agttagttgg tggggtaacg gcctaccaag acgatgatgc 240

atagccgacc tgagagggtg atcggccaca ttgggactga gacacggccc aaactcctac 300

gggaggcagc agtagggaat cttccgcaat gggcgaaagc ctgacggagc aatgccgcgt 360

gagtgaagaa ggccttcggg tcgtaaaact ctgttataag agaagaacaa attgtagagt 420

aactgctaca gtcttgacgg tatcttatca gaaagccacg gctaactacg tgccagcagc 480

cgcggtaata cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag ggagcgcagg 540

tggtttctta agtctgatgt gaaagcccac ggcttaaccg tggagggtca ttggaaactg 600

ggaaacttga gtacagaaga ggaatgtgga actccatgtg tagcggtgga atgcgtagat 660

atatggaaga acaccagtgg cgaaggcgac attctggtct gttactgaca ctgaggctcg 720

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg 780

ctaggtgttg gagggtttcc gcccttcagt gccgcagtta acgcattaag cactccgcct 840

ggggagtacg accgcaaggt tgaaactcaa aggaattgac ggggacccgc acaagcggtg 900

gagcatgtgg tttaattcga agcaacgcga agaaccttac caagtcttga catcctttga 960

ccaccctaga gatagggctt tcccttcggg gacaaagtga caggtggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctattattag 1080

ttgccagcat tnagttgggc actctaatga gactgccggt gacaaaccgg aggaaggtgg 1140

ggatgacgtc aaatcagcat gcccccttatg acttgggcta cacacgtgct acaatggatg 1200

gtacaacgag tcgcaaaccc gcgagggcaa gcaaatctct taaagccatt ctcagttcgg 1260

attgcaggct gcaactcgcc tgcatgaagc cggaatcgct agtaatcgtg gatcagcacg 1320

ccacggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta 1380

acacccgaag tcggtgaggt aacctttatg gagccagcc 1419

<210> 101
<211> 1548
<212> DNA
<213> Aerococcus viridans

<400> 101
atgagagttt gatcctggct caggacgaac gctggcggca tgcctaatac atgcaagtcg 60

agcgaacaga tgaagtgctt gcacttctga cgttagcggc gaacgggtga gtaacacgta 120

aggaatctac ctataagcgg gggataacat tcggaaacgg gtgctaatac cgcataatat 180

tttcttccgc atggaagaag attgaaagac ggctctgctg tcacttatag atgaccttgc 240

ggtgcattag ttagttggtg gggtaatggc ctaccaagac gatgatgcat agccgacctg 300

agagggtgat cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgaaagcct gacggagcaa tgccgcgtga gtgaagaagg 420

ccttcgggtc gtaaaactct gttataagag aagaacaaat tgtagagtaa ctgctacagt 480

cttgacggta tcttatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttgtccg gatttattgg gcgtaaaggg agcgcaggtg gtttcttaag 600

tctgatgtga aagcccacgg cttaaccgtg gagggtcatt ggaaactggg aaacttgagt 660

acagaagagg aatgtggaac tccatgtgta gcggtggaat gcgtagatat atggaagaac 720

accagtggcg aaggcgacat tctggtctgt tactgacact gaggctcgaa agcgtgggga 780

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgttgga 840

gggtttccgc ccttcagtgc cgcagttaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca agtcttgaca tcctttgacc accctagaga 1020

tagggctttc ccttcgggga caaagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct attattagtt gccagcattt 1140

agttgggcac tctaatgaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1200

atcagcatgc cccttatgac ttgggctaca cacgtgctac aatggatggt acaacgagtc 1260

gcaaacccgc gagggcaagc aaatctctta aagccattct cagttcggat tgcaggctgc 1320

aactcgcctg catgaagccg gaatcgctag taatcgtgga tcagcacgcc acggtgaata 1380

cgttcccggg tcttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc 1440

ggtgaggtaa cctttatgga gccagccgcc gaaggtggga cagatgattg gggtgaagtc 1500

gtaacaaggt agccgtatcg gaaggtgcgg ctggatcacc tcctttct 1548

<210> 102
<211> 1357
<212> DNA
<213> Aeromicrobium marinum

<400> 102
aagtygagcg gtaaggctcc ttcgggagta cacgagcggc gaacgggtga gtaacacgtg 60

agcaatctgc ccttctcttc ggaataacca ttggaaacga tggctaatgc cgaatacgac 120

ctcggatcac atgttctgag gtggaaagct ccggcggaga aggatgagct cgcggcctat 180

cagctagttg gtgaggtaac ggctcaccaa ggcattgacg ggtagccggc ctgagagggt 240

gaccggccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 300

tattggacaa tgggcgaaac cttgatccag caacgccgcg tgagggatga cggccttcgg 360

gttgtaaacc tctttcagcg gggacgaagc gaaagtgacg gtacccgcag aagaaggacc 420

kgccaactac gtgccagcag ccgcggtaat acgtagggtc cgagcgttgt ccggaattat 480

tgggcgtaaa gggctcgtag gcggtttgtc gcgtcgggag tgaaaactca gggctcaacc 540

ctgagcgtgc ttccgatacg ggcagactag aggtatgcag gggagaacgg aattcctggt 600

gtagcggtgg aatgcgcaga tatcaggagg aacaccggtg gcgaaggcgg ttctctgggc 660

attacctgac gctgaggagc gaaagcatgg ggagcgaaca ggattagata ccctggtagt 720

ccatgccgta aacgttgggc gctaggtgtg gggaccttcc acggtctccg tgccgcagct 780

aacgcattaa gcgccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga 840

cgggggcccg cacaagcggc ggagcatgct gattaattcg atgcaacgcg aagaacctta 900

cctgggtttg acatataccg gaaagctgca gagatgtagc ccccttgtg gtcggtatac 960

aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1020

gcgcaaccct cgttctatgt tgccagcacg taatggtggg gactcatagg agactgccgg 1080

ggtcaactcg gaggaaggtg gggatgacgt caagtcttca tgcccttat gtccagggct 1140

tcaagcatgc tacaatggcc ggtacaaagg gctgcgaaac cgcaaggtgg agcgaatccc 1200

aaaaagccgg tctcagttcg gattggggtc tgcaactcga ccccatgaag tcggagtcgc 1260

tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc 1320

cgtcacgtca tgaaagtcgc aacacccgaa gccagtg 1357

<210> 103
<211> 1468
<212> DNA
<213> Aeromicrobium sp. JC14

<400> 103
ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgagcg gtaaggccct 60

ttcgggggta cacgagcggc gaacgggtga gtaacacgtg agcaatctgc ccctgtctct 120

gggataacca ctggaaacgg tggctaatac cggatatgac ctccttctgc atggttggtg 180

gtggaaaagt ccgctggaca gggatgagct cgcggcctat cagcttgttg gtggggtaat 240

ggcctaccaa ggcgacgacg ggtagccggc ctgagagggt gaccggccac actgggactg 300

agacacggcc cagactccta cgggaggcag cagtggggaa tattggacaa tgggcgaaag 360

cctgatccag caacgccgcg tgagggatga cggccttcgg gttgtaaacc tctttcagca 420

gggacgaagc gaaagtgacg gtacctgcag aagaaggacc ggccaactac gtgccagcag 480

ccgcggtaat acgtagggtc cgagcgttgt ccggaattat tgggcgtaaa gggctcgtag 540

gcggtttgtc acgtcgggag tgaaaactca gggcttaacc ctgagcgtgc ttccgatacg 600

ggctgactag agggatgcag gggagaacgg aattcctggt gtagcggtgg aatgcgcaga 660

tatcaggagg aacaccggtg gcgaaggcgg ttctctgggc atttcctgac gctgaggagc 720

gaaagcatgg ggagcgaaca ggattagata ccctggtagt ccatgccgta aacgttgggc 780

gctaggtgtg gggaccttcc acggtttccg tgccgcagct aacgcattaa gcgccccgcc 840

tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc 900

ggagcatgct gattaattcg atgcaacgcg aagaacctta cctgggtttg acatatgccg 960

gaaagcgcca gagatggtgc ccctttttgt cggtatacag gtggtgcatg gctgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg tcctatgttg 1080

ccagcacgtt atggtgggga ctcataggag actgccgggg tcaactcgga ggaaggtggg 1140

gatgacgtca agtcatcatg ccccttatgt ccagggcttc aagcatgcta caatggccgg 1200

tacaatgggc tgcgataccg cgaggtggag cgaatcccaa aaagccggtc tcagttcgga 1260

ttggggtctg caactcgacc ccatgaagtc ggagtcgcta gtaatcgcag atcagcaacg 1320

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacgtcatg aaagtcggca 1380

acacccgaag ccggtggcct aacccttgtg gagggagccg tcgaaggtgg ggctggcgat 1440

tgggacgaag tcgtaacaag tagccgta 1468

<210> 104
<211> 1503
<212> DNA
<213> Aeromonas allosaccharophila

<400> 104
gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc aagtcgagcg 60

gcagcgggaa agtagcttgc tacttttgcc ggcgagcggc ggacgggtga gtaatgcctg 120

gggatctgcc cagtcgaggg ggataacagt tggaaacgac tgctaatacc gcatacgccc 180

tacgggggaa agcaggggac cttcgggcct tgcgcgattg gatgaaccca ggtgggatta 240

gctagttggt gaggtaatgg ctcaccaagg cgacgatccc tagctggtct gagaggatga 300

tcagccacac tggaactgag acacggtcca gactcctacg ggaggcagca gtggggaata 360

ttgcacaatg ggggaaaccc tgatgcagcc atgccgcgtg tgtgaagaag gccttcgggt 420

tgtaaagcac tttcagcgag gaggaaaggt tggtagcgaa taactgccag ctgtgacgtt 480

actcgcagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgca 540

agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc ggttggataa gttagatgtg 600

aaagccccgg gctcaacctg ggaattgcat ttaaaactgt ccagctagag tcttgtagag 660

gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa taccggtggc 720

gaaggcggcc ccctggacaa agactgacgc tcaggtgcga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgtcgat ttggaggctg tgtccttgag 840

acgtggcttc cggagctaac gcgttaaatc gaccgcctgg ggagtacggc cgcaaggtta 900

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacct ggccttgaca tgtctggaat ccctaagaga ttggggagtg 1020

ccttcgggaa tcagaacaca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaacccct gtcctttgtt gccagcacgt aatggtggga 1140

actcaaggga gactgccggt gataaaccgg aggaaggtgg ggatgacgtc aagtcatcat 1200

ggcccttacg gccagggcta cacacgtgct acaatggcgc gtacagaggg ctgcaagcta 1260

gcgatagtga gcgaatccca aaaagcgcgt cgtagtccgg atcggagtct gcaactcgac 1320

tccgtgaagt cggaatcgct agtaatcgca aatcagaatg ttgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gcaccagaag tagatagctt 1440

aaccttcggg agggcgttta ccacggtgtg attcatgact ggggtgaagt cgtaacaagg 1500

taa 1503

<210> 105
<211> 1490
<212> DNA
<213> Aeromonas enteropelogenes

<220>
<221> modified_base
<222> (187)..(187)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (197)..(197)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (212)..(212)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (662)..(664)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (677)..(677)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1009)..(1009)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1107)..(1107)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1115)..(1115)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1329)..(1329)
<223> a, c, t, g, unknown or other

<400> 105
agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca agtcgagcgg 60

cagcgggaaa gtagcttgct acttttgccg gcgagcggcg gacgggtgag taatgcctgg 120

gaaattgccc agtcgagggg gataacagtt ggaaacgact gctaataccg catacgccta 180

cgggggnaag caggggncct tcgggccttg cncgattgga tatgcccagg tgggattagc 240

tagttggtga ggtaatggct caccaaggcg acgatcccta gctggtctga gaggatgatc 300

agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg ggaaaccctg atgcagccat gccgcgtgtg tgaagaaggc cttcgggttg 420

taaagcactt tcagcgagga ggaaaggtca gtagctaata tctgctggct gtgacgttac 480

tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg agggtgcaag 540

cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg ttggataagt tagatgtgaa 600

agccccgggc tcaacctggg aattgcattt aaaactgtcc ggctagagtc ttgtagaggg 660

gnnnagaatt ccaggtntag cggtgaaatg cgtagagatc tggaggaata ccggtggcga 720

aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gccgtaaacg atgtcgattt ggaggctgtg tccttgagac 840

gtggcttccg gagctaacgc gttaaatcga ccgcctgggg agtacggccg caaggttaaa 900

actcaaatga attgacgggg gccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctggc cttgacatgt ctggaatcct gcagagatnc gggagtgcct 1020

tcgggaatca gaacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aaccccngtc ctttnttgcc agcacgtaat ggtgggaact 1140

caagggagac tgccggtgat aaaccggagg aaggtgggga tgacgtcaag tcatcatggc 1200

ccttacggcc agggctacac acgtgctaca atggcgcgta cagagggctg caagctagcg 1260

atagtgagcg aatcccaaaa agcgcgtcgt agtccggatt ggagtctgca actcgactcc 1320

atgaagtcng aatcgctagt aatcgcaaat cagaatgttg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca caccatggga gtgggttgca ccagaagtag atagcttaac 1440

cttcgggagg gcgtttacca cggtgtgatt catgactggg gtgaagtcgt 1490

<210> 106
<211> 1547
<212> DNA
<213> Aeromonas hydrophila

<400> 106
taaattgaag agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca 60

agtcgagcgg cagcgggaaa gtagcttgct acttttgccg gcgagcggcg gacgggtgag 120

taatgcctgg gaaattgccc agtcgagggg gataacagtt ggaaacgact gctaataccg 180

catacgccct acgggggaaa gcaggggacc ttcgggcctt gcgcgattgg atatgcccag 240

gtgggattag ctagttggtg aggtaatggc tcaccaaggc gacgatccct agctggtctg 300

agaggatgat cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gggaaaccct gatgcagcca tgccgcgtgt gtgaagaagg 420

ccttcgggtt gtaaagcact ttcagcgagg aggaaaggtt gatgcctaat acgtatcaac 480

tgtgacgtta ctcgcagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg 540

gagggtgcaa gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gttggataag 600

ttagatgtga aagccccggg ctcaacctgg gaattgcatt taaaactgtc agctagagt 660

cttgtagagg ggggtagaat tccaggtgta gcggtgaaat gcgtagagat ctggaggaat 720

accggtggcg aaggcggccc cctggacaaa gactgacgct caggtgcgaa agcgtgggga 780

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgtcgatt tggaggctgt 840

gtccttgaga cgtggcttcc ggagctaacg cgttaaatcg accgcctggg gagtacggcc 900

gcaaggttaa aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgatgc aacgcgaaga accttacctg gccttgacat gtctggaatc ctgcagagat 1020

gcgggagtgc cttcgggaat cagaacacag gtgctgcatg gctgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccctg tcctttgttg ccagcacgta 1140

atggtgggaa ctcaagggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca 1200

agtcatcatg gcccttacgg ccagggctac acacgtgcta caatggcgcg tacagagggc 1260

tgcaagctag cgatagtgag cgaatcccaa aaagcgcgtc gtagtccgga tcggagtctg 1320

caactcgact ccgtgaagtc ggaatcgcta gtaatcgcaa atcagaatgt tgcggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg caccagaagt 1440

agatagctta accttcggga gggcgtttac cacggtgtga ttcatgactg gggtgaagtc 1500

gtaacaaggt aaccctaggg gaacctgggg ttggatcacc tccttac 1547

<210> 107
<211> 1503

<212> DNA
<213> Aeromonas jandaei

<400> 107
gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc aagtcgagcg 60

gcagcgggaa agtagcttgc tacttttgcc ggcgagcggc ggacgggtga gtaatgcctg 120

gggatctgcc cagtcgaggg ggataactac tggaaacggt agctaatacc gcatacgccc 180

tacgggggaa agcaggggac cttcgggcct tgcgcgattg gatgaaccca ggtgggatta 240

gctagttggt gaggtaacgg ctcaccaagg cgacgatccc tagctggtct gagaggatga 300

tcagccacac tggaactgag acacggtcca gactcctacg ggaggcagca gtggggaata 360

ttgcacaatg ggggaaaccc tgatgcagcc atgccgcgtg tgtgaagaag gccttcgggt 420

tgtaaagcac tttcagcgag gaggaaaggt cagtagctaa tatctgctgg ctgtgacgtt 480

actcgcagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgca 540

agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc ggttggataa gttagatgtg 600

aaagccccgg gctcaacctg ggaattgcat ttaaaactgt ccagctagag tcttgtagag 660

gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa taccggtggc 720

gaaggcggcc ccctggacaa agactgacgc tcaggtgcga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgtcgat ttggaggctg tgtccttgag 840

acgtggcttc cggagctaac gcgttaaatc gaccgcctgg ggagtacggc cgcaaggtta 900

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacct ggccttgaca tgtctggaat cctgcagaga tgcgggagtg 1020

ccttcgggaa tcagaacaca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaacccct gtcctttgtt gccagcacgt aatggtggga 1140

actcaaggga gactgccggt gataaaccgg aggaaggtgg ggatgacgtc aagtcatcat 1200

ggcccttacg gccagggcta cacacgtgct acaatggcgc gtacagaggg ctgcaagcta 1260

gcgatagtga gcgaatccca aaaagcgcgt cgtagtccgg atcggagtct gcaactcgac 1320

tccgtgaagt cggaatcgct agtaatcgca aatcagaatg ttgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gcaccagaag tagatagctt 1440

aaccttcggg agggcgttta ccacggtgtg attcatgact ggggtgaagt cgtaacaagg 1500

taa 1503

<210> 108
<211> 1546
<212> DNA
<213> Aeromonas salmonicida

<400> 108
aaattgaaga gtttgatcat ggctcagatt gaacgctggc ggcaggccta acacatgcaa 60

gtcgagcggc agcgggaaag tagcttgcta cttttgccgg cgagcggcgg acgggtgagt 120

aatgcctggg gatctgccca gtcgaggggg ataacagttg gaaacgactg ctaataccgc 180

atacgcccta cgggggaaag gaggggacct tcgggccttt cgcgattgga tgaacccagg 240

tgggattagc tagttggtgg ggtaatggct caccaaggcg acgatcccta gctggtctga 300

gaggatgatc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ggaaaccctg atgcagccat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt tcagcgagga ggaaaggttg gcgcctaata cgtgtcaact 480

gtgacgttac tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg ttggataagt 600

tagatgtgaa agccccgggc tcaacctggg aattgcattt aaaactgtcc agctagagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtcgattt ggaggctgtg 840

tccttgagac gtggcttccg gagctaacgc gttaaatcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg ccttgacatg tctggaatcc tgtagagata 1020

cgggagtgcc ttcgggaatc agaacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctgt cctttgttgc cagcacgtaa 1140

tggtgggaac tcaagggaga ctgccggtga taaaccggag gaaggtgggg atgacgtcaa 1200

gtcatcatgg cccttacggc cagggctaca cacgtgctac aatggcgcgt acagagggct 1260

gcaagctagc gatagtgagc gaatcccaaa aagcgcgtcg tagtccggat cggagtctgc 1320

aactcgactc cgtgaagtcg gaatcgctag taatcgcgaa tcagaatgtc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc accagaagta 1440

gatagcttaa ccttcgggag ggcgtttacc acggtgtgat tcatgactgg ggtgaagtcg 1500

taacaaggta accctagggg aacctggggt tggatcacct ccttac 1546

<210> 109
<211> 1503
<212> DNA
<213> Aeromonas trota

<400> 109
gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc aagtcgagcg 60

gcagcgggaa agtagcttgc tacttttgcc ggcgagcggc ggacgggtga gtaatgcctg 120

ggaaattgcc cagtcgaggg ggataacagt tggaaacgac tgctaatacc gcatacgccc 180

tacgggggaa agcaggggac cttcgggcct tgcgcgattg gatatgccca ggtgggatta 240

gctagttggt gaggtaatgg ctcaccaagg cgacgatccc tagctggtct gagaggatga 300

tcagccacac tggaactgag acacggtcca gactcctacg ggaggcagca gtggggaata 360

ttgcacaatg ggggaaaccc tgatgcagcc atgccgcgtg tgtgaagaag gccttcgggt 420

tgtaaagcac tttcagcgag gaggaaaggt cagtagctaa tatctgctgg ctgtgacgtt 480

actcgcagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgca 540

agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc ggttggataa gttagatgtg 600

aaagccccgg gctcaacctg ggaattgcat ttaaaactgt ccggctagag tcttgtagag 660

gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa taccggtggc 720

gaaggcggcc ccctggacaa agactgacgc tcaggtgcga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgtcgat ttggaggctg tgtccttgag 840

acgtggcttc cggagctaac gcgttaaatc gaccgcctgg ggagtacggc cgcaaggtta 900

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacct ggccttgaca tgtctggaat cctgcagaga tgcgggagtg 1020

ccttcgggaa tcagaacaca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaacccct gtcctttgtt gccagcacgt aatggtggga 1140

actcaaggga gactgccggt gataaaccgg aggaaggtgg ggatgacgtc aagtcatcat 1200

ggcccttacg gccagggcta cacacgtgct acaatggcgc gtacagaggg ctgcaagcta 1260

gcgatagtga gcgaatccca aaaagcgcgt cgtagtccgg attggagtct gcaactcgac 1320

tccatgaagt cggaatcgct agtaatcgca aatcagaatg ttgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gcaccagaag tagatagctt 1440

aaccttcggg agggcgttta ccacggtgtg attcatgact ggggtgaagt cgtaacaagg 1500

taa 1503

<210> 110
<211> 1532
<212> DNA
<213> Aeromonas veronii

<220>
<221> modified_base
<222> (1495)..(1496)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1510)..(1510)
<223> a, c, t, g, unknown or other

<400> 110
gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc aagtcgagcg 60

gcagcgggaa agtagcttgc tacttttgcc ggcgagcggc ggacgggtga gtaatgcctg 120

gggatctgcc cagtcgaggg ggataactac tggaaacggt agctaatacc gcatacgcct 180

acgggggaaa gcaggggacc ttcgggcctt gcgcgattgg atgaacccag gtgggattag 240

ctagttggtg aggtaatggc tcaccaaggc gacgatccct agctggtctg agaggatgat 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gggaaaccct gatgcagcca tgccgcgtgt gtgaagaagg ccttcgggtt 420

gtaaagcact ttcagcgagg aggaaaggtt ggtagctaat aactgccagc tgtgacgtta 480

ctcgcagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gttggataag ttagatgtga 600

aagccccggg ctcaacctgg gaattgcatt taaaactgtc agctagagt cttgtagagg 660

ggggtagaat tccaggtgta gcggtgaaat gcgtagagat ctggaggaat accggtggcg 720

aaggcggccc cctggacaaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgtcgatt tggaggctgt gtccttgaga 840

cgtggcttcc ggagctaacg cgttaaatcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggccgcacaa gcggtggagc atgtggttta attcgatgca 960

acgcgaagaa ccttacctgg ccttgacatg tctggaatcc tgtagagata cgggagtgcc 1020

ttcgggaatc agaacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccctgt cctttgttgc cagcacgtaa tggtgggaac 1140

tcaagggaga ctgccggtga taaaccggag gaaggtgggg atgacgtcaa gtcatcatgg 1200

cccttacggc cagggctaca cacgtgctac aatggcgcgt acagagggct gcaagctagc 1260

gatagtgagc gaatcccaaa aagcgcgtcg tagtccggat cggagtctgc aactcgactc 1320

cgtgaagtcg gaatcgctag taatcgcaaa tcagaatgtt gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc acaccatggg agtgggttgc accagaagta gatagcttaa 1440

ccttcgggag ggcgtttacc acggtgtgat tcatgactgg ggtgaagtcg taacnnggta 1500

accctagggn aacctgcggc tggatcacct cc 1532

<210> 111
<211> 1420
<212> DNA
<213> Afipia genomosp. 4

<400> 111
tggctcagag cgaacgctgg cggcaggctt aacacatgca agtcgaacgg gcgtagcaat 60

acgtcagtgg cagacgggtg agtaacgcgt gggaacgtac cttttggttc ggaacaactg 120

agggaaactt cagctaatac cggataagcc cttacgggga aagatttatc gccgaaagat 180

cggcccgcgt ctgattagct agttggtgag gtaatggctc accaaggcga cgatcagtag 240

ctggtctgag aggatgatca gccacattgg gactgagaca cggcccaaac tcctacggga 300

ggcagcagtg gggaatattg gacaatgggc gaaagcctga tccagccatg ccgcgtgagt 360

gatgaaggcc ctagggttgt aaagctcttt tgtgcgggaa gataatgacg gtaccgcaag 420

aataagcccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg ctagcgttgc 480

tcggaatcac tgggcgtaaa gggtgcgtag gcgggtcttt aagtcagagg tgaaagcctg 540

gagctcaact ccagaactgc ctttgatact gaggatcttg agtatgggag aggtgagtgg 600

aactgcgagt gtagaggtga attcgtaga tattcgcaag aacaccagtg gcgaaggcgg 660

ctcactggcc cataactgac gctgaggcac gaaagcgtgg ggagcaaaca ggattagata 720

ccctggtagt ccacgccgta aacgatgaat gccagccgtt agtgggttta ctcactagtg 780

gcgcagctaa cgctttaagc attccgcctg gggagtacgg tcgcaagatt aaaactcaaa 840

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgac gcaacgcgca 900

gaaccttacc agcccttgac atgtccagga ccggtcgcag agatgtgacc ttctcttcgg 960

agcctggagc acaggtgctg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa 1020

gtcccgcaac gagcgcaacc cccgtcctta gttgctacca tttagttgag cactctaagg 1080

agactgccgg tgataagccg cgaggaaggt ggggatgacg tcaagtcctc atggcccttа 1140

cgggctgggc tacacacgtg ctacaatggc ggtgacaatg ggatgctaag gggcgacccc 1200

tcgcaaatct caaaaagccg tctcagttcg gattgggctc tgcaactcga gcccatgaag 1260

ttggaatcgc tagtaatcgt ggatcagcat gccacggtga atacgttccc gggccttgta 1320

cacaccgccc gtcacaccat gggagttggt tttacctgaa gacggtgcgc taaccgcaag 1380

gaggcagccg gccacggtag ggtcagcgac tgggggaagt 1420

<210> 112
<211> 1540
<212> DNA
<213> Aggregatibacter actinomycetemcomitans

<400> 112
aattgaagag tttgatcatg gctcagattg aacgctggcg gcaggcttaa cacatgcaag 60

tcggacggta gcaggtaagt acttgtactt atgctgacga gtggcggacg ggtgagtaat 120

gcttgggaat ctgtcttatg gaggggata acgacgggaa actgtcgcta ataccgcgta 180

gaatcgggag atgaaagtgt gggaccttcg ggccacatgc cataggatga gcccaagtgt 240

gattaggtag ttggtggggt aaaggcctac caagccgacg atcgctagct ggtctgagag 300

gatggccagc cacaccggga ctgagacacg gcccggactc ctacgggagg cagcagtggg 360

gaatattgcg caatgggggc aaccctgacg cagccatgcc gcgtgaatga agaaggcctt 420

cgggttgtaa agttctttcg gtgatgagga aggttggtgt gttaatagca tgccaaattg 480

acgttaaata cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggggg 540

gtgcgagcgt taatcggaat aactgggcgt aaagggcacg taggcggacc tttaagtgag 600

gtgtgaaatc cccgggctta acctgggaat tgcatttcat actgggggtc tggagtactt 660

tagggagggg tagaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaataccg 720

aaggcgaagg cagccccttg gggatgtact gacgctgatg tgcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgct gtaaacggtg tcgatttggg gattggggtt 840

tagccctggt gcccgaagct aacgtgataa atcgaccgcc tggggagtac ggccgcaagg 900

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctactcttg acatccgaag aagaactcag agatgggttt 1020

gtgccttagg gagctttgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg acttggtcgg 1140

gaactcaaag gagactgccg gtgataaacc ggaggaaggt ggggatgacg tcaagtcatc 1200

atggccctta cgagtagggc tacacacgtg ctacaatggc gtatacagag ggtaaccaac 1260

cagcgatggg gagtgaatct cagaaagtac gtctaagtcc ggattggagt ctgcaactcg 1320

actccatgaa gtcggaatcg ctagtaatcg cgaatcagaa tgttgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgtaccaga agtagatagc 1440

ttaaccgaga ggggggcgtt taccacggta tgattcatga ctggggtgaa gtcgtaacaa 1500

ggtaaccgta ggggaacctg cggttggatc acctccttac 1540

<210> 113
<211> 1539
<212> DNA
<213> Aggregatibacter aphrophilus

<400> 113
aattgaagag tttgatcatg gctcagattg aacgctggcg gcaggcttaa cacatgcaag 60

tcgaacggta gcaggtaagt acttgtactt atgctgacga gtggcggacg ggtgagtaat 120

gcttggggat ctggcttatg gaggggggata acgacgggaa actgtcgcta ataccgcgta 180

gaatcgggag atgaaagtgt gggaccttcg ggccacatgc cataggatga gcccaagtgg 240

gattaggtag ttggtggggt aatggcctac caagccgacg atctctagct ggtctgagag 300

gatgaccagc cacaccggga ctgagacacg gcccggactc ctacgggagg cagcagtggg 360

gaatattgcg caatgggggc aaccctgacg cagccatgcc gcgtgaatga agaaggcctt 420

cgggttgtaa agttctttcg gtgacgagga aggttgttgt gttaatagcg caacaaattg 480

acgttaatca cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 540

gtgcgagcgt taatcggaat aactgggcgt aaagggcacg caggcggact tttaagtgag 600

gtgtgaaatc cccgggctta acctgggaat tgcatttcag actgggggtc tagagtactt 660

tagggagggg tagaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaataccg 720

aaggcgaagg cagccccttg ggaatgtact gacgctcatg tgcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgct gtaaacggtg tcgatttggg gattgtgctt 840

tgagcttggt gcccgtagct aacgtgataa atcgaccgcc tggggagtac ggccgcaagg 900

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctactcttg acatccatgg aatcttgtag agatatgaga 1020

gtgccttcgg gaaccatgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg atttggtcgg 1140

gaactcaaag gagactgccg gtgataaacc ggaggaaggt ggggatgacg tcaagtcatc 1200

atggccctta cgagtagggc tacacacgtg ctacaatggc gtatacagag ggcgacgaag 1260

ccgcgaggtg gagtgaatct cagaaagtac gtctaagtcc ggattggagt ctgcaactcg 1320

actccatgaa gtcggaatcg ctagtaatcg cgaatcagaa tgtcgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgtaccaga agtagatagc 1440

ttaaccttcg gggggcgttt accacggtat gattcatgac tggggtgaag tcgtaacaag 1500

gtaaccgtag gggaacctgc ggttggatca cctccttac 1539

<210> 114
<211> 1543
<212> DNA
<213> Aggregatibacter segnis

<400> 114
ttgaactgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtaacaggag agagcttgct ttcttgctga cgagtggcgg acgggtgagt 120

aatgcttggg aatctggctt atggaggggg ataacgacgg gaaactgtcg ctaataccgc 180

gtagagtcga gagacgaaag tgcgggaccg caaggccgca tgccatagga tgagcccaag 240

tgggattagg tagttggtgg ggtaatggcc taccaagccg acgatctcta gctggtctga 300

gaggatgacc agccacaccg ggactgagac acggcccgga ctcctacggg aggcagcagt 360

ggggaatatt gcgcaatggg ggcaaccctg acgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtgacga ggaaggcgtg atgtttaata ggcatcacga 480

ttgacgttaa tcacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aataactggg cgtaaagggc acgcaggcgg ctatttaagt 600

gaggtgtgaa atccccgggc ttaacctggg aattgcattt cagactgggt agctagagta 660

ctttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatgt actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 840

ccttgagctt ggtgcccgaa gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca tggaatcttg tagagatatg 1020

agagtgcctt cgggaaccat gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcgattcggt 1140

cgggaactca aaggagactg ccggtgataa accggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca gagggcgacg 1260

aagccgcgag gtggagtgaa tctcacaaag tacgtctaag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc agaagtagat 1440

agcttaacct tcgggagggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct tac 1543

<210> 115
<211> 1492
<212> DNA
<213> Agrobacterium radiobacter

<400> 115
ctcaacatga gagtttgatc ctggctcaga acgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg ccccgcaagg ggagcggcag acgggtgagt aacgcgtggg aatctaccct 120

tttctacgga ataacgcagg gaaacttgtg ctaataccgt atgtgtcctt cgggagaaag 180

atttatcggg aaaggatgag cccgcgttgg attagctagt tggtggggta aaggcctacc 240

aaggcgacga tccatagctg gtctgagagg atgatcagcc acattgggac tgagacacgg 300

cccaaactcc tacgggaggc agcagtgggg aatattggac aatgggcgca agcctgatcc 360

agccatgccg cgtgagtgat gaaggcccta gggttgtaaa gctctttcac cggagaagat 420

aatgacggta tccggagaag aagccccggc taacttcgtg ccagcagccg cggtaatacg 480

aaggggcta gcgttgttcg gaattactgg gcgtaaagcg cacgtaggcg gatcgatcag 540

tcaggggtga aatcccaggg ctcaaccctg gaactgcctt tgatactgtc gatctggagt 600

atggaagagg tgagtggaat tccgagtgta gaggtgaaat tcgtagatat tcggaggaac 660

accagtggcg aaggcggctc actggtccat tactgacgct gaggtgcgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatgtt agccgtcggg 780

cagtatactg ttcggtggcg cagctaacgc attaaacatt ccgcctgggg agtacggtcg 840

caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgcagaa ccttaccagc ccttgacatc ctgtgttacc cgtagagata 960

tggggtccac ttcggtggcg cagagacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caaccctcgc ccttagttgc cagcattcag 1080

ttgggcactc taaggggact gccggtgata agccgagagg aaggtgggga tgacgtcaag 1140

tcctcatggc ccttacgggc tgggctacac acgtgctaca atggtggtga cagtgggcag 1200

cgagcacgcg agtgtgagct aatctccaaa agccatctca gttcggattg cactctgcaa 1260

ctcgagtgca tgaagttgga atcgctagta atcgcggatc agcatgccgc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcac accatgggag ttggttttac ccgaaggtag 1380

tgcgctaacc gcaaggaggc agctaaccac ggtagggtca gcgactgggg tgaagtcgta 1440

acaaggtagc cgtaggggaa cctgcggctg gatcacctcc tttctaagga ag 1492

<210> 116
<211> 1437
<212> DNA
<213> Agrobacterium tumefaciens

<400> 116
aacgaacgct ggcggcaggc ttaacacatg caagtcgaac gccccgcaag gggagtggca 60

gacgggtgag taacgcgtgg gaacataccc tttcctgcgg aatagctccg ggaaactgga 120

attaataccg catacgccct acgggggaaa gatttatcgg ggaaggattg gcccgcgttg 180

gattagctag ttggtggggt aaaggcctac caaggcgacg atccatagct ggtctgagag 240

gatgatcagc cacattggga ctgagacacg gcccaaactc ctacgggagg cagcagtggg 300

gaatattgga caatgggcgc aagcctgatc cagccatgcc gcgtgagtga tgaaggcctt 360

agggttgtaa agctctttca ccggagaaga taatgacggt atccggagaa gaagccccgg 420

ctaacttcgt gccagcagcc gcggtaatac gaaggggggct agcgttgttc ggaattactg 480

ggcgtaaagc gcacgtaggc ggatatttaa gtcaggggtg aaatcccaga gctcaactct 540

ggaactgcct ttgatactgg gtatcttgag tatggaagag gtaagtggaa ttccgagtgt 600

agaggtgaaa ttcgtagata ttcggaggaa caccagtggc gaaggcggct tactggtcca 660

ttactgacgc tgaggtgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 720

acgccgtaaa cgatgaatgt tagccgtcgg gcagtatact gttcggtggc gcagctaacg 780

cattaaacat tccgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg 840

ggcccgcaca agcggtggag catgtggttt aattcgaagc aacgcgcaga accttaccag 900

ctcttgacat tcggggtttg ggcagtggag acattgtcct tcagttaggc tggccccaga 960

acaggtgctg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1020

gagcgcaacc ctcgccctta gttgccagca tttagttggg cactctaagg ggactgccgg 1080

tgataagccg agaggaaggt ggggatgacg tcaagtcctc atggcccttа cgggctgggc 1140

tacacacgtg ctacaatggt ggtgacagtg ggcagcgaga cagcgatgtc gagctaatct 1200

ccaaaagcca tctcagttcg gattgcactc tgcaactcga gtgcatgaag ttggaatcgc 1260

tagtaatcgc agatcagcat gctgcggtga atacgttccc gggccttgta cacaccgccc 1320

gtcacaccat gggagttggt tttacccgaa ggtagtgcgc taaccgcaag gaggcagcta 1380

accacggtag ggtcagcgac tggggtgaag tcgtaacaag gtagccgtag gggaacc 1437

<210> 117
<211> 1473
<212> DNA
<213> Agrococcus jenensis

<400> 117
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gatgaaggag gagcttgctc 60

ctccggatta gtggcgaacg ggtgagtaat acgtgagcaa tgtgcccttg actctgggat 120

aagcgctgga aacggcgtct aataccggat acgacgaccg gaggcatctc ctggtcgtgg 180

aaagaacttc ggtcaaggat cagctcacgg cctatcagct agttggtgag gtaacggctc 240

accaaggcga cgacgggtag ccggcctgag agggtgaccg gccacactgg gactgagaca 300

cggcccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc gcaagcctga 360

tgcagcaacg ccgcgtgagg gacgaaggcc ttcgggttgt aaacctcttt tagcagggaa 420

gaagcgaaag tgacggtacc tgcagaaaaa gcaccggcta actacgtgcc agcagccgcg 480

gtaatacgta gggtgcaagc gttgtccgga attattgggc gtaaagagct cgtaggcggt 540

ttgtcacgtc tgctgtgaaa acccgaggct caacctcggg cttgcagtgg gtacgggcag 600

actagagtgc ggtaggggag attggaattc ctggtgtagc ggtggaatgc gcagatatca 660

ggaggaacac cgatggcgaa ggcagatctc tgggccgtaa ctgacgctga ggagcgaaag 720

catggggagc aaacaggctt agataccctg gtagtccatg ccgtaaacgt tgggaactag 780

atgtggggac cattccacgg tctccgtgtc gtagctaacg cattaagttc cccgcctggg 840

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 900

catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat atacgagaac 960

gcactggaga cagtgaactc tttggacact cgtatacagg tggtgcatgg ttgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctcgt cctatgttgc 1080

cagcacgtaa tggtgggaac tcatgggata ctgccggggt caactcggag gaaggtgggg 1140

atgaggtcaa atcatcatgc cccttatgtc ttgggcttca cgcatgctac aatggccggt 1200

acaatgggct gcgataccgc aaggtggagc gaatcccaaa aagccggtct cagttcggat 1260

tgaggtctgc aactcgacct catgaagtcg gagtcgctag taatcgtaga tcagcaacgc 1320

tacggtgaat acgttcccgg gccttgtaca caccgcccgt caagtcatga aagtcggtaa 1380

cacccgaagc cagtggccta acctttttgga gggagctgtc gaaggtggga tcggtgatta 1440

ggactaagtc gtaacaaggt agccgtaccg gaa 1473

<210> 118
<211> 1368
<212> DNA
<213> Akkermansia muciniphila

<400> 118
tcgaacgaga gaattgctag cttgctaata attctctagt ggcgcacggg tgagtaacac 60

gtgagtaacc tgcccccgag agcgggatag ccctgggaaa ctgggattaa taccgcatag 120

tatcgaaaga ttaaagcagc aatgcgcttg gggatgggct cgcggcctat tagttagttg 180

gtgaggtaac ggctcaccaa ggcgatgacg ggtagccggt ctgagaggat gtccggccac 240

actggaactg agacacggtc cagacaccta cgggtggcag cagtcgagaa tcattcacaa 300

tgggggaaac cctgatggtg cgacgccgcg tgggggaatg aaggtcttcg gattgtaaac 360

ccctgtcatg tgggagcaaa ttaaaaagat agtacccaag aggaagagac ggctaactct 420

gtgccagcag ccgcggtaat acagaggtct caagcgttgt tcggaatcac tgggcgtaaa 480

gcgtgcgtag gctgtttcgt aagtcgtgtg tgaaaggcgc gggctcaacc cgcggacggc 540

acatgatact gcgagactag agtaatggag ggggaaccgg aattctcggt gtagcagtga 600

aatgcgtaga tatcgagagg aacactcgtg gcgaaggcgg gttcctggac attaactgac 660

gctgaggcac gaaggccagg ggagcgaaag ggattagata cccctgtagt cctggcagta 720

aacggtgcac gcttggtgtg cggggaatcg acccccctgcg tgccggagct aacgcgttaa 780

gcgtgccgcc tggggagtac ggtcgcaaga ttaaaactca aagaaattga cggggacccg 840

cacaagcggt ggagtatgtg gcttaattcg atgcaacgcg aagaacctta cctgggcttg 900

acatgtaatg aacaacatgt gaaagcatgc gactcttcgg aggcgttaca caggtgctgc 960

atggcggtcg tcagctcatg tcctgagatg tttggttaag tccagcaacg agcgcaaccc 1020

ctgttgccag ttaccagcac gtgaaggtgg ggactctggc gagactgccc agatcaactg 1080

ggaggaaggt ggggacgacg tcaggtcagt atggccctta tgcccagggc tgcacacgta 1140

ctacaatgcc cagtacagag ggggccgaag ccgcgaggcg gaggaaatcc tgaaaactgg 1200

gcccagttcg gactgtaggc tgcaacccgc ctacacgaag ccggaatcgc tagtaatggc 1260

gcatcagcta cggcgccgtg aatacgttcc cgggtcttgt acacaccgcc cgtcacatca 1320

tggaagccgg tcgcacccga agtatctgaa gccaaccgca aggaggca 1368

<210> 119
<211> 1462
<212> DNA
<213> Alcaligenes faecalis

<220>
<221> modified_base
<222> (432)..(432)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (446)..(446)
<223> a, c, t, g, unknown or other

<400> 119
attgaacgct agcgggatgc tttacacatg caagtcgaac ggcagcgcga gagagcttgc 60

tctcttggcg gcgagtggcg gacgggtgag taatatatcg gaacgtgccc agtagcgggg 120

gataactact cgaaagagtg gctaataccg catacgccct acgggggaaa gggggggatc 180

gcaagacctc tcactattgg agcggccgat atcggattag ctagttggtg gggtaaaggc 240

tcaccaaggc aacgatccgt agctggtttg agaggacgac cagccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tggggaattt tggacaatgg gggaaaccct 360

gatccagcca tcccgcgtgt atgatgaagg ccttcgggtt gtaaagtact tttggcagag 420

aagaaaaggt anctcctaat acgagntact gctgacggta tctgcagaat aagcaccggc 480

taactacgtg ccagcagccg cggtaatacg tagggtgcaa gcgttaatcg gaattactgg 540

gcgtaaagcg tgtgtaggcg gttcggaaag aaagatgtga aatcccaggg ctcaaccttg 600

gaactgcatt tttaactgcc gagctagagt atgtcagagg ggggtagaat tccacgtgta 660

gcagtgaaat gcgtagatat gtggaggaat accgatggcg aaggcagccc cctgggataa 720

tactgacgct cagacacgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgccctaaac gatgtcaact agctgttggg gccgttaggc cttagtagcg cagctaacgc 840

gtgaagttga ccgcctgggg agtacggtcg caagattaaa actcaaagga attgacgggg 900

acccgcacaa gcggtggatg atgtggatta attcgatgca acgcgaaaaa ccttacctac 960

ccttgacatg tctggaaagc cgaagagatt tggccgtgct cgcaagagaa ccggaacaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt gtcattagtt gctacgcaag agcactctaa tgagactgcc ggtgacaaac 1140

cggaggaagg tggggatgac gtcaagtcct catggccctt atgggtaggg cttcacacgt 1200

catacaatgg tcgggacaga gggtcgccaa cccgcgaggg ggagccaatc tcagaaaccc 1260

gatcgtagtc cggatcgcag tctgcaactc gactgcgtga agtcggaatc gctagtaatc 1320

gcggatcaga atgtcgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc 1380

atgggagtgg gtttcaccag aagtaggtag cctaaccgta aggagggcgc ttaccacggt 1440

gggattcatg actggggtga ag 1462

<210> 120
<211> 1499
<212> DNA
<213> Alcaligenes sp. CO14

<400> 120
gagtttgatc ctggctcaga ttgaacgcta gcgggatgct ttacacatgc aagtcgaacg 60

gcagcgcgag agagcttgct ctcttggcgg cgagtggcgg acgggtgagt aatatatcgg 120

aacgtgccca gtagcggggg ataactactc gaaagagtgg ctaataccgc atacgcccta 180

cgggggaaag gggggggatcg caagacctct cactattgga gcggccgata tcggattagc 240

tagttggtgg ggtaaaggct caccaaggca acgatccgta gctggtttga gaggacgacc 300

agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatttt 360

ggacaatggg ggaaaccctg atccagccat cccgcgtgta tgatgaaggc cttcgggttg 420

taaagtactt ttggcagaga agaaaaggta tctcctaata cgagatactg ctgacggtat 480

ctgcagaata agcaccggct aactacgtgc cagcagccgc ggtaatacgt agggtgcaag 540

cgttaatcgg aattactggg cgtaaagcgt gtgtaggcgg ttcggaaaga aagatgtgaa 600

atcccagggc tcaaccttgg aactgcattt ttaactgccg agctagagta tgtcagaagg 660

ggggtagaat tccacgtgta gcagtgaaat gcgtagatat gtggaggaat accgatggcg 720

aaggcagccc cctgggataa tactgacgct cagacacgaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gccctaaacg atgtcaacta gctgttgggg ccgttaggcc 840

ttagtagcgc agctaacgcg tgaagttgac cgcctgggga gtacggtcgc aagattaaaa 900

ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa ttcgatgcaa 960

cgcgaaaaac cttacctacc cttgacatgt ctggaaagcc gaagagattt ggccgtgctc 1020

gcaagagaac cggaacacag gtgctgcatg gctgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctg tcattagttg ctacgcaaga gcactctaat 1140

gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaagtcctc atggcccttа 1200

tgggtagggc ttcacacgtc atacaatggt cgggacagag ggtcgccaac ccgcgagggg 1260

gagccaatct cagaaacccg atcgtagtcc ggatcgcagt ctgcaactcg actgcgtgaa 1320

gtcggaatcg ctagtaatcg cggatcagaa tgtcgcggtg aatacgttcc cgggtcttgt 1380

acacaccgcc cgtcacacca tgggagtggg tttcaccaga agtaggtagc ctaaccgtaa 1440

ggagggcgct taccacggtg ggattcatga ctggggtgaa gtcgtaacaa ggtagccgt 1499

<210> 121
<211> 1404
<212> DNA
<213> Alcaligenes sp. S3

<400> 121
atgcaagtcg aacggcagcg cgagagagct tgctctcttg gcggcgagtg gcggacgggt 60

gagtaatata tcggaacgtg cccagtagcg ggggataact actcgaaaga gtggctaata 120

ccgcatacgc cctacggggg aaaggggggg atcgcaagac ctctcactat tggagcggcc 180

gatatcggat tagctagttg gtggggtaaa ggctcaccaa ggcaacgatc cgtagctggt 240

ttgagaggac gaccagccac actgggactg agacacggcc cagactccta cgggaggcag 300

cagtggggaa ttttggacaa tgggggaaac cctgatccag ccatcccgcg tgtatgatga 360

aggccttcgg gttgtaaagt acttttggca gagaagaaaa ggtacctcct aatacgaggt 420

actgctgacg gtatctgcag aataagcacc ggctaactac gtgccagcag ccgcggtaat 480

acgtagggtg caagcgttaa tcggaattac tgggcgtaaa gcgtgtgtag gcggttcgga 540

aagaaagatg tgaaatccca gggctcaacc ttggaactgc atttttaact gccgagctag 600

agtatgtcag agggggggtag aattccacgt gtagcagtga aatgcgtaga tatgtggagg 660

aataccgatg gcgaaggcag ccccctggga taatactgac gctcagacac gaaagcgtgg 720

ggagcaaaca ggattagata ccctggtagt ccacgcccta aacgatgtca actagctgtt 780

ggggccgtta ggccttagta gcgcagctaa cgcgtgaagt tgaccgcctg gggagtacgg 840

tcgcaagatt aaaactcaaa ggaattgacg gggacccgca caagcggtgg atgatgtgga 900

ttaattcgat gcaacgcgaa aaaccttacc taccccttgac atgtctggaa agccgaagag 960

atttggccgt gctcgcaaga gaaccggaac acaggtgctg catggctgtc gtcagctcgt 1020

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgtcatta gttgctacgc 1080

aagagcactc taatgagact gccggtgaca aaccggagga aggtggggat gacgtcaagt 1140

cctcatggcc cttatgggta gggcttcaca cgtcatacaa tggtcgggac agagggtcgc 1200

caacccgcga gggggagcca atctcagaaa cccgatcgta gtccggatcg cagtctgcaa 1260

ctcgactgcg tgaagtcgga atcgctagta atcgcggatc agaatgtcgc ggtgaatacg 1320

ttcccgggtc ttgtacacac cgcccgtcac accatgggag tgggtttcac cagaagtagg 1380

tagcctaacc gtaaggaggg cgct 1404

<210> 122
<211> 1528
<212> DNA
<213> Alicyclobacillus acidocaldarius

<400> 122
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggacctcttt tgaggtcagc ggcggacggg tgaggaacac gtgggtaatc tgcctttcag 120

accggaataa cgcccggaaa cgggcgctaa tatgccggat acgcccgcga ggaggcatct 180

tcttgcgggg aaaggcccga ttgggccgct gagagaggag cccgcggcgc attagctagt 240

tggcggggta acggcccacc aaggcgacga tgcgtagccg acctgagagg gtgaccggcc 300

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg aatcttccgc 360

aatgggcgca agcctgacgg agcaacgccg cgtgagcgaa gaaggccttc gggttgtaaa 420

gctctgttgc tcggggagag cggcatgggg agtggaaagc cccatgcgag acggtaccga 480

gtgaggaagc cccggctaac tacgtgccag cagccgcggt aaaacgtagg gggcgagcgt 540

tgtccggaat cactgggcgt aaagggtgcg taggcggtcg agcaagtctg gagtgaaagt 600

ccatggctca accatgggat ggctctggaa actgcttgac ttgagtgctg gagaggcaag 660

gggaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaatacca gtggcgaagg 720

cgccttgctg gacagtgact gacgctgagg cacgaaagcg tggggagcaa acaggattag 780

ataccctggt agtccacgcc gtaaacgatg agtgctaggt gttgggggga cacaccccag 840

tgccgaagga aacccaataa gcactccgcc tggggagtac ggtcgcaaga ctgaaactca 900

aaggaattga cgggggcccg cacaagcagt ggagcatgtg gtttaattcg aagcaacgcg 960

aagaacctta ccagggcttg acatccctct gacgggtgca gagatgcacc ttcccttcgg 1020

ggcagaggag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttca 1080

gtcccgcaac gagcgcaacc cttgacctgt gttaccagcg cgttgaggcg gggactcaca 1140

ggtgactgcc ggcgcaagtc ggaggaaggc ggggatgacg tcaaatcatc atgcccctga 1200

tgtcctgggc tacacacgtg ctacaatggg cggtacaaag ggaggcgaag ccgcgaggcg 1260

gagcgaaacc caaaaagccg ctcgtagttc ggattgcagg ctgcaactcg cctgcatgaa 1320

gccggaattg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacca cgagagtcgg caacacccga agtcggtgag gtaaccccga 1440

aaggggagcc agccgccgaa ggtggggtcg atgattgggg tgaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gatcacct 1528

<210> 123
<211> 1514
<212> DNA
<213> Alicyclobacillus acidoterrestris

<400> 123
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gagcccttcg gggctagcgg cggacgggtg agtaacacgt gggcaatctg cctttcagac 120

tggaataaca ctcggaaacg ggtgctaatg ccggataata cacgggtagg catctacttg 180

tgttgaaaga tgcaactgca tcgctgagag aggagcccgc ggcgcattag ctagttggtg 240

aggtaacggc tcaccaaggc gacgatgcgt agccgacctg agagggtgac cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct tccgcaatgg 360

gcgcaagcct gacggagcaa cgccgcgtga gcgaagaagg ccttcgggtt gtaaagctct 420

gttgctcggg gagagcgaca aggagagtgg aaagctcctt gtgagacggt accgagtgag 480

gaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggggca agcgttgtcc 540

ggaatcactg ggcgtaaagc gtgcgtaggc ggttgtgtaa gtctgaagtg aaagtccaag 600

gctcaacctt gggattgctt tggaaactgc atgacttgag tgctggagag gcaaggggaa 660

ttccacgtgt agcggtgaaa tgcgtagata tgtggaggaa taccagtggc gaaggcgcct 720

tgctggacag tgactgacgc tgaggcacga aagcgtgggg agcaaacagg attagatacc 780

ctggtagtcc acgccgtaaa cgatgagtgc taggtgttgg ggggacacac cccagtgccg 840

aaggaaaccc aataagcact ccgcctgggg agtacggtcg caagactgaa actcaaagga 900

attgacgggg gcccgcacaa gcagtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccagg gcttgacatc cctctgaccg gtgcagagat gtaccttccc ttcggggcag 1020

aggagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttga tctgtgttac cagcacgtag aggtggggac tcacaggtga 1140

ctgccggcgt aagtcggagg aaggcgggga tgacgtcaaa tcatcatgcc ctttatgtcc 1200

tgggctacac acgtgctaca atgggcggta caacgggaag cgaagccgcg aggtggagca 1260

aaacctaaaa agccgttcgt agttcggatt gcaggctgca actcgcctgc atgaagccgg 1320

aattgctagt aatcgcggat cagcatgccg cggtgaatcc gttcccgggc cttgtacaca 1380

ccgcccgtca caccacgaga gtcggcaaca cccgaagtcg gtgaggtaac cgttatggag 1440

ccagccgccg aaggtggggt tgatgattgg ggtgaagtcg taacaaggta gccgtatcgg 1500

aaggtgcggt tgga 1514

<210> 124
<211> 1520
<212> DNA
<213> Alicyclobacillus contaminans

<220>
<221> modified_base
<222> (182)..(182)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (192)..(192)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (476)..(476)
<223> a, c, t, g, unknown or other

<400> 124
tagagtttga tcatggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgag 60

cggacggaag ggagcttgct cctggaagtc agcggcggac gggtgagtaa cacgtgggta 120

atctgcctgt cagaccggaa taacgcctgg aaacgggtgc taatgccgga tagtcagtct 180

tngggcatct tnggactggg aaaggcgcta aggcgtcact gacagaggag cccgcggcgc 240

attagctagt tggtggggta aaggcctacc aaggcgacga tgcgtagccg acctgagagg 300

gtgaccggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg 360

aatcttcggc aatgggcgaa agcctgaccg agcaacgccg cgtgagcgaa gaaggccttc 420

gggttgtaaa gctcagtcac tcgggaagag cgaaccggag agggaatgct ctggtngaga 480

cggtaccgag agaggaagcc ccggctaact acgtgccagc agccgcggta atacgtaggg 540

ggcgagcgtt gtccggaatc actgggcgta aagcgtgcgt aggcggtttg gtaagtccgg 600

agtgaaagac cagggctcaa ccctgggggt gctttggaaa ctgccagact tgagtgctgg 660

agaggcaagg ggaattccac gtgtagcggt gaaatgcgta gagatgtgga ggaataccag 720

tggcgaaggc gccttgctgg acagtgactg acgctgaggc acgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgccg taaacgatga gtgctaggtg ttgggggta 840

ccaccctcag tgccgaagga aacccaataa gcactccgcc tggggagtac ggtcgcaaga 900

ctgaaactca aaggaattga cgggggcccg cacaagcagt ggagcatgtg gtttaattcg 960

aagcaacgcg aagaacctta ccagggcttg acatccctct gacgggttca gagatgagcc 1020

gtcccttcgg ggcagaggag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttgacctgt gttaccagca cgtgaaggtg 1140

gggactcaca ggtgactgcc ggcgtaagtc ggaggaaggt ggggatgacg tcaaatcatc 1200

atgcccttta tgtcctgggc tacacacgtg ctacaatggg cggtacaacg ggaagcgaga 1260

ccgcgaggtg gagcgaaacc ctgaaagccg ttcgtagttc ggattgcagg ctgcaactcg 1320

cctgcatgaa gccggaattg ctagtaatcg cggatcagca tgccgcggtg aatccgttcc 1380

cgggccttgt acacaccgcc cgtcacacca cgagagttgg caacacccga agtcggtgag 1440

gtaacccttt agggagccag ccgccgaagg tggggtcgat gattggggtg aagtcgtaac 1500

aaggtagccg tatcggaagg 1520

<210> 125
<211> 1517
<212> DNA
<213> Alicyclobacillus cycloheptanicus

<400> 125
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggaccttcg gggtcagcgg cggacgggtg agtaacacgt gggtaatctg cccaactgac 120

cggaataacg cctggaaacg ggtgctaatg ccggataggc agcgagcagg catctgctcg 180

ctgggaaagg tgcaaatgca ccgcagatgg aggagcccgc ggcgcattag ctggttggtg 240

gggtaacggc tcaccaaggc gacgatgcgt agccgacctg agagggtgga cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct tccgcaatgg 360

gcgcaagcct gacggagcaa cgccgcgtga gcgaagaagg ccttcgggtt gtaaagctca 420

gtcactcggg aagagcggca aggggagtgg aaagcccctt gagagacggt accgagagag 480

gaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggca agcgttgtcc 540

ggaatcactg ggcgtaaagc gtgcgtaggc ggttgcgtgt gtccggggtg aaagtccagg 600

gctcaaccct gggaatgcct tggaaactgc gtaacttgag tgctggagag gcaaggggaa 660

ttccgcgtgt agcggtggaa tgcgtagata tgcggaggaa taccagtggc gaaggcgcct 720

tgctggacag tgactgacgc tgaggcacga aagcgtgggg agcaaacagg attagatacc 780

ctggtagtcc acgccgtaaa cgatgagtgc taggtgttgg ggggtaccac cctcagtgcc 840

gaaggaaacc caataagcac tccgcctggg gagtacggtc gcaagactga aactcaaagg 900

aattgacggg ggcccgcaca agcagtggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccag ggcttgacat ccccctgaca gccgcagaga tgcggtttcc cttcggggca 1020

ggggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg aactgtgtta ccagcacgtg aaggtgggga ctcacagttg 1140

actgccggcg taagtcggag gaaggcgggg atgacgtcaa atcatcatgc cctttatgtc 1200

ctgggctaca cacgtgctac aatgggcggt acaacgggaa gcgagaccgc gaggtggagc 1260

aaacccctga aagccgttcg tagttcggat tgcaggctgc aactcgcctg catgaagccg 1320

gaattgctag taatcgcgga tcagcatgcc gcggtgaatc cgttcccggg ccttgtacac 1380

accgcccgtc acaccacgag agtcggcaac acccgaagtc ggtggggtaa cccgtcaggg 1440

ggccagccgc cgaaggtggg gttgatgatt ggggtgaagt cgtaacaagg tagccgtatc 1500

ggaaggtgcg gttggat 1517

<210> 126
<211> 1529
<212> DNA
<213> Alicyclobacillus herbarius

<220>
<221> modified_base
<222> (1025)..(1025)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1027)..(1027)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1135)..(1135)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1138)..(1138)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1331)..(1331)
<223> a, c, t, g, unknown or other

<400> 126
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggacggaagg gagcttgctc ccggacgtca gcggcggacg ggtgaggaac acgtgggcaa 120

tctgcccatc agtcgggaat aacactcgga aacgggtgct aatgccggat aggcatcttg 180

ggggcatccc tgggatggga aaggcgctta ggcgctgctg atggaggagc ccgcggcgca 240

ttagctggtt ggcggggtaa cggcccacca aggcgacgat gcgtagccga cctgagaggg 300

tgaccggcca cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga 360

atcttccgca atgggcgcaa gcctgacgga gcaacgccgc gtgagcgaag aaggccttcg 420

ggttgtaaag ctcagtcaat cgggaagagc gacctaggga gggaatgccc taggggagac 480

ggtaccgatg gaggaagccc cggcaaacta cgtgccagca gccgcggtaa tacgtagggg 540

gcgagcgttg tccggaatga ctgggcgtaa agcgtgcgta ggcggcctta cgcgtctgag 600

gtttaagacc acggctcaac cgtgggggtg ccttggaaac ggtgaggctt gagtgctgga 660

gaggcaaggg gaattccacg tgtagcggtg aaatgcgtag agatgtggag gaatacccgt 720

ggcgaaggcg ccttgctgga cagtgactga cgctgaggca cgaaagcgtg gggagcaaac 780

aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt tgggggtgcg 840

agccctcagt gccgaaggaa acccaataag cactccgcct ggggagtacg gtcgcaagac 900

tgaaactcaa aggaattgac gggggcccgc acaagcagtg gagcatgtgg tttaattcga 960

agcaacgcga agaaccttac cagggcttga catccctctg acgcactcag agatgggtgt 1020

tcccntntgg gcagaggaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgacctgtg ttaccagcgc gtganggngg 1140

ggactcacag gtgactgccg gcgcaagccg gaggaaggcg gggatgacgt caaatcatca 1200

tgcccttgat gtcctgggcg acacacgtgc tacaatgggc ggtacaacgg gcagcgagac 1260

cgcgaggtgg agcgaatccc tgaaagccgc tcgtagttcg gattgcaggc tgcaacccgc 1320

ctgcatgaag ncggaattgc tagtaatcgc ggatcagcat gccgcggtga atccgttccc 1380

gggccttgta cacaccgccc gtcacaccac gagagtgagc aacacccgaa gtcggtgagg 1440

caaccggata ggagccagcc gccgaaggtg gggctcgcga ttggggtgaa gtcgtaacaa 1500

ggtagccgta tcggaaggtg cggttggat 1529

<210> 127
<211> 1528
<212> DNA
<213> Alicyclobacillus pomorum

<220>
<221> modified_base

<222> (1017)..(1017)
<223> a, c, t, g, unknown or other

<400> 127
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggacggaagg gagcttgctc ccggaagtca gcggcggacg ggtgagtaac acgtgggcaa 120

tctgcctgtc agaccggaat aacgcctgga aacgggtgct aatgccggat aggcaatctg 180

gaggcatctc tggattggga aaggcgcgga tgcgccactg acagaggagc ccgcggcgca 240

ttagctagtt ggtggggtaa cggctcacca aggcgacgat gcgtagccga cctgagaggg 300

tgaccggcca cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga 360

atcttcggca atgggcgaaa gcctgaccga gcaacgccgc gtgagcgaag aaggccttcg 420

ggttgtaaag ctcagtcact cgggaagagc ggtaaggaga ggaaatgctc ctttcgagac 480

ggtaccgaga gaggaagccc cggctaacta cgtgccagca gccgcggtaa tacgtagggg 540

gcgagcgttg tccggaatca ctgggcgtaa agcgtgcgta ggcggtttgt taagtccgaa 600

gtgaaagtcc agggctcaac cttgggattg ctttggaaac tggcagactt gagtgctgga 660

gaggcaaggg gaattccacg tgtagcggtg aaatgcgtag atatgtggag gaataccagt 720

ggcgaaggcg ccttgctgga cagtgactga cgctgaggca cgaaagcgtg gggagcaaac 780

aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt tgggggtac 840

caccctcagt gccgaaggaa acccaataag cactccgcct ggggagtacg gtcgcaagac 900

tgaaactcaa aggaattgac gggggcccgc acaagcagtg gagcatgtgg tttaattcga 960

agcaacgcga agaaccttac cagggcttga catccctctg accggtgcag agatgtncct 1020

tcccttcggg gcagaggaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgacctgtg ttaccagcac gtgatggtgg 1140

ggactcacag gtgactgccg gcgtaagtcg gaggaaggtg gggatgacgt caaatcatca 1200

tgccctttat gtcctgggct acacacgtgc tacaatgggc ggtacaacgg gaagcgagac 1260

cgcgaggtgg agcgaatccc tgaaagccgt tcgtagttcg gattgcaggc tgcaactcgc 1320

ctgcatgaag ccggaattgc tagtaatcgc ggatcagcat gccgcggtga atccgttccc 1380

gggccttgta cacaccgccc gtcacaccac gagagttggc aacacccgaa gtcggtgagg 1440

taaccgcaag gagccagccg ccgaaggtgg ggtcgacgat tggggtgaag tcgtaacaag 1500

gtagccgtat cggaaggtgc ggttggat 1528

<210> 128
<211> 1464
<212> DNA
<213> Alicyclobacillus sp. CCUG 53762

<400> 128
aacgctggcg gcgtgcctaa tacatgcaag tcgcgcgaac ggaaggagag cttgctcttc 60

tgaagttagc ggcggacggg tgagtaacac gtgggcaacc tgcctgacag accgggataa 120

cgcttggaaa cgagtgctaa taccggatag gcaaacggga ggcatctcct gattgagaaa 180

ggcgctacgg cgtcactgtc agatgggccc gcggcgcatt agctagttgg tgaggtaacg 240

gctcaccaag gcgacgatgc gtagccgacc tgagagggtg accggccaca ctgggactga 300

gacacggccc agactcctac gggaggcagc agtagggaat cttccacaat gggcgcaagc 360

ctgatggagc aacgccgcgt gagtgatgaa ggccttcggg ttgtaaaact ctgtcttctg 420

ggacgaacgg gcaggagagg gaatgctcct gccatgacgg taccagagga ggaagccacg 480

gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggaattact 540

gggcgtaaag cgcgcgcagg cggccattta agtctggggt gaaagcccgg ggctcaaccc 600

cgggattgcc ttggatactg gatggcttga gcatcggaga ggcaagggga attccacgtg 660

tagcggtgaa atgcgtagag atgtggagga acaccagtgg cgaaggcgcc ttgctggccg 720

attgctgacg ctgaggcgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc 780

cacgccgtaa acgatgagtg ctaggtgttg gcggtttcaa taccgtcagt gccgaagcta 840

acgcattaag cactccgcct ggggagtacg gtcgcaagac tgaaactcaa aggaattgac 900

gggggcccgc acaagcagtg gagcatgtgg tttaattcga agcaacgcga agaaccttac 960

caagacttga catcccgctg accggtctag agataggcct tcccttcggg gcagcggaga 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgaactgtg ttgccagcat tgagttgggc actcacagtt gactgccggt 1140

gacaaaccgg aggaaggcgg ggatgacgtc aaatcatcat gccccttatg tcttgggcta 1200

cacacgtgct acaatgggcg gtacagaggg atgcgaaacc gcgaggtgga gcgaaaccct 1260

taaagccgtt cgtagttcgg attgcaggct gcaactcgcc tgcatgaagc cggaattgct 1320

agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcacaccacg agagttggta acacccgaag tcggtgaggt aaccttatgg agccagccgc 1440

cgaaggtggg atcgatgatt gggg 1464

<210> 129
<211> 1384
<212> DNA
<213> Alistipes finegoldii

<220>
<221> modified_base
<222> (24)..(25)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (27)..(27)
<223> a, c, t, g, unknown or other

<400> 129
gtcgaggggc agcggggagt agcnngnctc cgccggcgac cggcgcacgg gtgcgtaacg 60

cgtatgcaac ctacctttaa caggggcata acactgagaa attggtacta attccccata 120

acattcgaga aggcatcttc ttgggttaaa aactccggtg gttaaagatg ggcatgcgtt 180

gtattagcta gttggtgagg taacggctca ccaaggcaac gatacatagg gggactgaga 240

ggttaacccc ccacattggt actgagacac ggaccaaact cctacgggag gcagcagtga 300

ggaatattgg tcaatggacg caagtctgaa ccagccatgc cgcgtgcagg aagacggctc 360

tatgagttgt aaactgcttt tgtactaggg taaacgcttc tacgtgtagg agcctgaaag 420

tatagtacga ataaggatcg gctaactccg tgccagcagc cgcggtaata cggaggatcc 480

aagcgttatc cggatttatt gggtttaaag ggtgcgtagg cggtttgata agttagaggt 540

gaaataccgg ggctcaactc cggaactgcc tctaatactg ttgaactaga gagtagttgc 600

ggtaggcgga atgtatggtg tagcggtgaa atgcttagag atcatacaga acaccgattg 660

cgaaggcagc ttaccaaact atatctgacg ttgaggcacg aaagcgtggg gagcaaacag 720

gattagatac cctggtagtc cacgcagtaa acgatgataa ctcgttgtcg gcgatacaca 780

gtcggtgact aagcgaaagc gataagttat ccacctgggg agtacgttcg caagaatgaa 840

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 900

acgcgaggaa ccttacccgg gcttgaaagt tagtgacgat tctggaaaca ggatttccct 960

tcggggcacg aaactaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcgggt 1020

taagtcccat aacgagcgca acccctaccg ttagttgcca tcaggtcaag ctgggcactc 1080

tggcgggact gccggtgtaa gccgagagga aggtggggat gacgtcaaat cagcacggcc 1140

cttacgtccg gggctacaca cgtgttacaa tggtaggtac agagggccgc taccccgcga 1200

ggggatgcca atctcgaaag cctatctcag ttcggatcgg aggctgaaac ccgcctccgt 1260

gaagttggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc 1320

ttgtacacac cgcccgtcaa gccatggaag ctgggggtgc ctgaagttcg tgaccgcaag 1380

gagc 1384

<210> 130
<211> 1317
<212> DNA
<213> Alistipes indistinctus

<400> 130
gataaacgct agcggcaggc ctaacacatg caagtcgagg gaccggcgca cgggtgcgta 60

acgcgtatgc aacctacctt taacaggggg ataatccgaa gaaatttggt ctaatacccc 120

ataatgaaaa atggttagag atgggcatgc gttgtattag ctagttggtg aggtaacggc 180

tcaccaaggc tacgatacat agggggactg agaggttttc cccccacact ggtactgaga 240

cacggaccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg acgcaagtct 300

gaaccagcca tgccgcgtgc aggatgaagg tgtatgcatt gtaaactgct tttgtacgag 360

ggtatgaaag tatcgtacga ataagggtcg gctaactccg tgccagcagc cgcggtaata 420

cggaggaccc gagcgttatc cggatttatt gggtttaaag ggtgcgtagg cggattagta 480

agttagaggt gaaagctcga tgctcaacat cgaaattgcc tctgatactg ttagtctaga 540

gtatagttgc ggaaggcgga atgtgtggtg tagcggtgaa atgcttagat atcacacaga 600

acaccgattg cgaaggcagc tttccaagct aactgacgct gatgcacgaa agcgtgggga 660

gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatgataact cgttgcaggc 720

gagtctgtga cttagcgaaa gcgttaagtt atccacctgg ggagtacgtt cgcaagaatg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggcttgaaa gtactaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcgggt taagtcccat aacgagcgca acccctactg ttagttacca 960

gcacgtgggc actctagcag gactgccggt gtaagccgga ggaaggtggg gatgacgtca 1020

aatcagcacg gcccttacgt ccggggcgac acacgtgtta caatggtcgg cagagggtcg 1080

ctaccccgtg aggggatgcc aatctcgccg atctcagttc ggatggaggc tgaaactcgc 1140

ctccagaagt tggattcgct agtaatcgcg catcagccat ggcgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccat gggagttggg ggtgcctgaa gtacgtgcgt 1260

cctagggcaa aaccgatgac tggggctaag tcgtaacaag gtagccgtac cggaagg 1317

<210> 131
<211> 932
<212> DNA
<213> Alistipes onderdonkii

<220>
<221> modified_base
<222> (16)..(16)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (18)..(18)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (99)..(99)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (137)..(137)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (151)..(151)
<223> a, c, t, g, unknown or other

<400> 131
atcgtacgaa taaggntngg ctaactccgt gccagcagcc gcggtaatac ggaggattca 60

agcgttatcc ggatttattg ggtttaaagg gtgcgtagnc ggtttgataa gttagaggtg 120

aaatcccggg gcttaantcc ggaactgcct ntaatactgt tagactagag agtagttgcg 180

gtaggcggaa tgtatggtgt agcggtgaaa tgcttagaga tcatacagaa caccgattgc 240

gaaggcagct taccaaacta tatctgacgt tgaggcacga aagcgtgggg agcaaacagg 300

attagatacc ctggtagtcc acgcagtaaa cgatgataac tcgttgtcgg cgatacacag 360

tcggtgacta agcgaaagcg ataagttatc cacctgggga gtacgttcgc aagaatgaaa 420

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttggatgata 480

cgcgaggaac cttacccggg cttgaaagtt actgacgatt ctggaaacag gatttccctt 540

cggggcagga aactaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcgggtt 600

aagtcccata acgagcgcaa cccctaccgt tagttgccat caggtcaagc tgggcactct 660

ggcgggactg ccggtgtaag ccgagaggaa ggtggggatg acgtcaaatc agcacggccc 720

ttacgtccgg ggctacacac gtgttacaat ggtaggtaca gagggtcgct accccgtgag 780

gggatgccaa tctcgaaagc ctatctcagt tcggattgga ggctgaaacc cgcctccatg 840

aagttggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct 900

tgtacacacc gcccgtcaag ccatggaagc tg 932

<210> 132
<211> 1523
<212> DNA
<213> Alistipes putredinis

<400> 132
gagagtttga tcctggctca ggatgaacgc tagcggcagg cttaacacat gcaagtcgag 60

gggcagcata atggatagca atatctatgg tggcgaccgg cgcacgggtg cgtaacgcgt 120

atgcaaccta cctttaacag ggggataaca ctgagaaatt ggtactaata ccccataata 180

tcatagaagg catcttttat ggttgaaaat tccgatggtt agagatgggc atgcgttgta 240

ttagctagtt ggtggggtaa cggctcacca aggcgacgat acatagggggg actgagaggt 300

taaccccca cactggtact gagacacgga ccagactcct acgggaggca gcagtgagga 360

atattggtca atggacgcaa gtctgaacca gccatgccgc gtgcaggatg acggctctat 420

gagttgtaaa ctgcttttgt acgagggtaa acgcagatac gtgtatctgt ctgaaagtat 480

cgtacgaata aggatcggct aactccgtgc cagcagccgc ggtaatacgg aggattcaag 540

cgttatccgg atttattggg tttaaagggt gcgtaggcgg tttgataagt tagaggtgaa 600

atttcggggc tcaaccctga acgtgcctct aatactgttg agctagagag tagttgcggt 660

aggcggaatg tatggtgtag cggtgaaatg cttagagatc atacagaaca ccgattgcga 720

aggcagctta ccaaactata tctgacgttg aggcacgaaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gcagtaaacg atgataactc gttgtcggcg atacacagtc 840

ggtgactaag cgaaagcgat aagttatcca cctggggagt acgttcgcaa gaatgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg 960

cgaggaacct tacccgggct tgaaagttag cgacgattct tgaaagagga tttcccttcg 1020

gggcgcgaaa ctaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcgggttaa 1080

gtcccataac gagcgcaacc cctaccgtta gttgccatca ggtgaagctg ggcactctgg 1140

cgggactgcc ggtgtaagcc gagaggaagg tggggatgac gtcaaatcag cacggccctt 1200

acgtccgggg ctacacacgt gttacaatgg taggtacaga gggcagctac ccagcgatgg 1260

gatgcgaatc tcgaaagcct atctcagttc ggattggagg ctgaaacccg cctccatgaa 1320

gttggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcaagcc atgggagccg ggggtgcctg aagttcgtga ccgcaaggag 1440

cgacctaggg caaaactggt gactggggct aagtcgtaac aaggtagccg taccggaagg 1500

tgcggctgga acacctcctt tct 1523

<210> 133
<211> 1355
<212> DNA
<213> Alistipes shahii

<220>
<221> modified_base
<222> (753)..(753)
<223> a, c, t, g, unknown or other

<400> 133
gcaatacact ggtggcgacc ggcgcacggg tgcgtaacgc gtatgcaacc tacccataac 60

aggggataa cactgagaaa ttggtactaa taccccataa catcaggacc ggcatcggtt 120

ttggttgaaa actccggtgg ttatggatgg gcatgcgttg tattagctgg ttggtgaggt 180

aacggctcac caaggcaacg atacataggg ggactgagag gttaaccccc cacattggta 240

ctgagacacg gaccaaactc ctacgggagg cagcagtgag gaatattggt caatggacgc 300

aagtctgaac cagccatgcc gcgtgcagga agacggctct atgagttgta aactgctttt 360

gtacgagggt aaacgctctt acgtgtaaga gcctgaaagt atcgtacgaa taaggtcggc 420

taactcgtgc cagcagccgc ggtaatacgg aggcaagcgt tatccggatt tattgggttt 480

aaagggtgcg taggcggttt gataagttag aggtgaaata ccggtgctta acaccggaac 540

tgcctctaat actgttgact agagagtagt tgcggtaggc ggaatgtatg gtgtagcggt 600

gaaatgctta gagatcatac agaacaccga ttgcgaaggc agcttaccaa actatatctg 660

acgttgaggc acgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgcag 720

taaacgatga taactcgctg tcggcgatac acngtcggcg gctaagcgaa agcgataagt 780

tatccacctg gggagtacgt tcgcaagaat gaaactcaaa ggaattgacg ggggcccgca 840

caagcggagg aacatgtggt ttaattcgat gatacgcgag gaaccttacc cgggcttgaa 900

agttactgac gattctggaa acaggatttc ccttcggggc aggaaactag gtgctgcatg 960

gttgtcgtca gctcgtgccg tgaggtgtcg ggttaagtcc cataacgagc gcaaccccta 1020

ccgttagttg ccatcaggtc aagctgggca ctctggcggg actgccggtg taagccgaga 1080

ggaaggtggg gatgacgtca aatcagcacg gcccttacgt ccggggctac acacgtgtta 1140

caatggtagg tacagagggc agctacccag tgatgggatg cgaatctcga aagcctatct 1200

cagttcggat cggaggctga aacccgcctc cgtgaagttg gattcgctag taatcgcgca 1260

tcagccatgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt caagccatgg 1320

aagctggggg tgcctgaagt tcgtgaccgc aagga 1355

<210> 134
<211> 1432
<212> DNA
<213> Alistipes sp. HGB5

<400> 134
ggcgaccggc gcacgggtgc gtaacgcgta tgcaacctac ctttaacagg ggcataacac 60

tgagaaattg gtactaattc cccataacat tcgagaaggc atcttcttgg gttaaaaact 120

ccggtggtta aagatgggca tgcgttgtat tagctagttg gtgaggtaac ggctcaccaa 180

ggcaacgata catagggggа ctgagaggtt aacccccccac attggtactg agacacggac 240

caaactccta cgggaggcag cagtgaggaa tattggtcaa tggacgcaag tctgaaccag 300

ccatgccgcg tgcaggaaga cagctctatg agttgtaaac tgcttttgta ctagggtaaa 360

cgctcctacg tgtaggagtc tgaaagtata gtacgaataa ggatcggcta actccgtgcc 420

agcagccgcg gtaatacgga ggatccaagc gttatccgga tttattgggt ttaaagggtg 480

cgtaggcggt ttgataagtt agaggtgaaa taccggggct caactccgga actgcctcta 540

atactgttga actagagagt agttgcggta ggcggaatgt atggtgtagc ggtgaaatgc 600

ttagagatca tacagaacac cgattgcgaa ggcagcttac caaactatat ctgacgttga 660

ggcacgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg cagtaaacga 720

tgataactcg ttgtcggcga tacacagtcg gtgactaagc gaaagcgata agttatccac 780

ctggggagta cgttcgcaag aatgaaactc aaaggaattg acgggggccc gcacaagcgg 840

aggaacatgt ggtttaattc gatgatacgc gaggaacctt acccgggctt gaaagttagt 900

gacgattctg gaaacaggat ttcccttcgg ggcacgaaac taggtgctgc atggttgtcg 960

tcagctcgtg ccgtgaggtg tcgggttaag tcccataacg agcgcaaccc ctaccgttag 1020

ttgccatcag gtcaagctgg gcactctggc gggactgccg gtgtaagccg agaggaaggt 1080

ggggatgacg tcaaatcagc acggccctta cgtccggggc tacacacgtg ttacaatggt 1140

aggtacagag ggccgctacc ccgtgagggg atgccaatct cgaaagccta tctcagttcg 1200

gatcggaggc tgaaacccgc ctccgtgaag ttggattcgc tagtaatcgc gcatcagcca 1260

tggcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagcca tggaagctgg 1320

gggtgcctga agttcgtgac cgcaaggagc gacctagggc aaaaccggtg actggggcta 1380

agtcgtaaca aggtagccgt accggaaggt gcggctggaa cacctccttt ct 1432

<210> 135
<211> 1480
<212> DNA
<213> Alistipes sp. JC50

<400> 135
tgatcctggc tcaggatgaa cgctagcggc aggcctaaca catgcaagtc gaggggcagc 60

gggattgaag cttgcttcaa ttgccggcga ccggcgcacg ggtgcgtaac gcgtatgcaa 120

cctacccata acaggggat aacactgaga aatcggtact aatatcccat aacatcatga 180

ggggcatccc ttatggttga aaactccggt ggttatggat gggcatgcgt tgtattagct 240

ggttggtgag gtaacggctc accaaggcga cgatacatag ggggactgag aggttaaccc 300

cccacattgg tactgagaca cggaccaaac tcctacggga ggcagcagtg aggaatattg 360

gtcaatggac gcaagtctga accagccatg ccgcgtgcag gatgacggct ctatgagttg 420

taaactgctt ttgtacgagg gtaaacccgg atacgtgtat ccggctgaaa gtatcgtacg 480

aataaggatc ggctaactcc gtgccagcag ccgcggtaat acggaggatt caagcgttat 540

ccggatttat tgggtttaaa gggtgcgtag gcggtttgat aagttagagg tgaaataccg 600

gtgcttaaca ccggaactgc ctctaatact gttgagctag agagtagttg cggtaggcgg 660

aatgtatggt gtagcggtga aatgcttaga gatcatacag aacaccgatt gcgaaggcag 720

cttaccaaac tatatctgac gttgaggcac gaaagcgtgg ggagcaaaca ggattagata 780

ccctggtagt ccacgcagta aacgatgata actcgctgtc ggcgatacac agtcggtggc 840

taagcgaaag cgataagtta tccacctggg gagtacgttc gcaagaatga aactcaaagg 900

aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcgatga tacgcgagga 960

accttacccg ggcttgaaag ttactgacga ttctggaaac aggatttccc ttcggggcag 1020

gaaactaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggg ttaagtccca 1080

taacgagcgc aacccctacc gttagttgcc atcaggtcaa gctgggcact ctggcgggac 1140

tgccggtgta agccgagagg aaggtgggga tgacgtcaaa tcagcacggc ccttacgtcc 1200

ggggctacac acgtgttaca atggtaggta cagagggcag ctacccagtg atgggatgcg 1260

aatctcgaaa gcctatctca gttcggattg gaggctgaaa cccgcctcca tgaagttgga 1320

ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca agccatggaa gctgggggtg cctgaagttc gtgaccgcaa ggagcgacct 1440

agggcaaaac cggtgactgg ggctaagtcg taacaaggta 1480

<210> 136
<211> 1304
<212> DNA
<213> Alistipes sp. RMA 9912

<400> 136
gctcaggatg aacgctagcg gcaggcctaa cacatgcaag tcgagggacc ggcgcacggg 60

tgcgtaacgc gtatgtaacc tacctataac aggggcataa cactgagaaa ttggtactaa 120

ttccccataa tgaaaagtgg ttatagatgg acatgcgttg tattagctag ttggtgaggt 180

aacggctcac caaggcaacg atacataggg ggactgagag gttaaccccc cacactggta 240

ctgagacacg gaccagactc ctacgggagg cagcagtgag gaatattggt caatggacgc 300

aagtctgaac cagccatgcc gcgtgcagga agacggctta tgagttgtaa actgcttttg 360

tacgagggta tgaaagtatc gtacgaataa ggatcggcta actccgtgcc agcagccgcg 420

gtaatacgga ggattcaagc gttatccgga tttattgggt ttaaagggtg cgtaggcggt 480

ttgataagtt agaggtgaaa tcccggggct taactccgga actgcctcta atactgttag 540

actagagagt agttgcggta ggcggaatgt atggtgtagc ggtgaaatgc ttagagatca 600

tacagaacac cgattgcgaa ggcagcttac caaactatct gacgttgagg cacgaaagcg 660

tggggagcaa acaggattag ataccctggt agtccacgca gtaaacgatg ataactcgtt 720

gtcggcgagt cggtgactaa gcgaaagcga taagttatcc acctggggag tacgttcgca 780

agaatgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 840

tcgatgatac gcgaggaacc ttacccgggc ttgaaagtac taggtgctgc atggttgtcg 900

tcagctcgtg ccgtgaggtg tcgggttaag tcccataacg agcgcaaccc ctaccgttag 960

ttgccatcag ctgggcactc tggcgggact gccggtgtaa gccggaggaa ggtggggatg 1020

acgtcaaatc agcacggccc ttacgtccgg ggctacacac gtgttacaat ggtaggcaga 1080

gggtcgctac tccgtgagga gatgccaatc tcgcctatct cagttcggat ggaggctgaa 1140

acccgcctcc agaagttgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac 1200

gttcccgggc cttgtacaca ccgcccgtca agccatggaa gctgggggtg cctgaagttc 1260

gtgcgaccta gggcaaaacc ggtaactggg gctaagtcgt aaca 1304

<210> 137
<211> 1404
<212> DNA
<213> Alkaliphilus metalliredigenes

<220>
<221> modified_base
<222> (133)..(133)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (151)..(151)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (674)..(675)
<223> a, c, t, g, unknown or other

<400> 137
cctccttaga gtttgatcct ggctcaggat gaacgctggc ggcgtgccta acacatgcaa 60

gtcgagcggg ttaatctgac ggaagccttc gggtggaaga aagtgaaact agcggcggac 120

gggtgagtaa cgncgtgggc aacctacctt ngtacagggg gacaacaacg ggaaaccgtt 180

gctaataccc cataaaaccc tagaggggca tcccttaagg gtcaaagaat ttcggtacaa 240

gatgggcccg cgtctgatta gctagttggt gaggtaatgg ctcaccaagg cgacgatcag 300

tagccgacct gagagggtga tcggccacac tggaactgag acacggtcca gactcctacg 360

ggaggcagca gtggggaata ttgcacaatg ggcgaaagcc tgatgcagca acgccgcgtg 420

agcgatgaag gccttcgggt cgtaaagctc tgtcctaggg gaagaatatt gacggtaccc 480

taggaggaag ccccggctaa ctacgtgcca gcagccgcgg taatacgtag ggggcaagcg 540

ttatccggaa tcactgggcg taaagggtgc gtaggcggtc ttgcaagtca gaggtgaaag 600

gctacggctc aaccgtagta agcctttgaa actgctaaga cttgagtatg ggagaggaaa 660

gtggaattcc tagnntagcg gtgaaatgcg tagatattag gaggaacacc agtggcgaag 720

gcgactttct ggacccatta ctgaccgctg aggcacgaaa agcgtggggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa caatgagtgc taggatgttg ggggtcgaac 840

ctcagtgccg cagctaacgc attaagcact ccgcctgggg agtacgctca caagcagtga 900

aactcaaagg aattgactgg ggacccgcac aagcagctgg agcatgtggt ttaattcgaa 960

gcaacgcgaa gaaccttacc tggacgttga catccctcgg accactcctt aaccggagtc 1020

ttcccttcgg ggactgaggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1080

tgttgggtta agtcccgcaa cgagcgcaac ccttgtcttt agttgccagc agttcggctg 1140

ggcactctag agagactgcc ggggataact cggaggaagg tggggatgac gtcaaatcat 1200

catgcccctt atgttcaggg ctacacacgt gctacaatgg ccgatacaac gggcagcgaa 1260

ggagtaatcc ggagcaaatc ctataaagtc ggtcccagtt cggattgtgg gctgaaactc 1320

gcccacatga agctggagtt gctagtaatc gcgaatcaga atgtctgcgg tgaatgcgtt 1380

cccgggtctt gtacactacc agcc 1404

<210> 138
<211> 1314
<212> DNA
<213> Alkaliphilus oremlandii

<400> 138
aataccccat gacgcctttt gggggcatcc ctaaaaggtc aaagaacttc ggtacaggat 60

gggcccgcgt ctgattagct agttggtgag gtaatggctc accaaggcga cgatcagtag 120

ccggcctgag agggtgaacg gccacactgg aactgagaca cggtccagac tcctacggga 180

ggcagcagtg gggaatattg cacaatgggg gaaaccctga tgcagcaacg ccgcgtgagc 240

gatgaaggcc ttcgggtcgt aaagctctgt cctaagggaa gataatgacg gtaccttagg 300

aggaagcccc ggctaactac gtgccagcag ccgcggtaat acgtaggggg caagcgttat 360

ccggaatcat tgggcgtaaa gggtgcgtag gctgccctat aggtcagagg tcaaaggcta 420

cggctcaacc gtagtaagcc tttgaaactg tagggcttga gtgcaggaga ggagagtgga 480

attcctagtg tagcggtgaa atgcgtagat attaggagga acaccagtgg cgaaggcgac 540

tctctggact gcaactgacg ctgaggcacg aaagcgtggg tagcgaacag gattagatac 600

cctggtagtc cacgccgtaa acgatgagtg ctaggtgttg ggggtcgaac ctcggtgccg 660

aagttaacgc attaagcact ccgcctgggg agtacgtacg caagtatgaa actcaaagga 720

attgacgggg acccgcacaa gcagcggagc atgtggttta attcgaagca acgcgaagaa 780

ccttacctgg acttgacatc cctctgaccg attcttaacc gaatccttcc cttcggggac 840

agaggagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgggatgtt gggttaagtc 900

ccgcaacgag cgcaaccctt gtctttagtt gccatcatta agttgggcac tctagagaga 960

ctgccgggga taactcggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgtt 1020

cagggctaca cacgtgctac aatggccgat acaacgggca gcgaaagagt aatctggagc 1080

aaatcctaca aaatcggtcc cagttcggat tgtgggctga aactcgccca catgaagttg 1140

gagttgctag taatcgcgga tcagaatgtc gcggtgaatg cgttcccggg tcttgtacac 1200

accgcccgtc acaccatggg agttggaagc acccgaagcc agctatctaa ccgtaaggag 1260

gaagctgtcg aaggtgaagc taatgactgg ggtgaagtcg taacaaggta gccg 1314

<210> 139
<211> 1482
<212> DNA
<213> Alloscardovia omnicolens

<400> 139
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gggatccttt ctagcttgct 60

agggggggtga gagtggcgaa cgggtgagta acgcgtgatt aacctgccgt gtagtttgga 120

atagctcctg gaaacgggtg gtaatgccga atgttccaca tgctcgcatg ggtgtgtggg 180

aaaacgtttt agtgctatgc gatgggatcg cgtcctatca gcttgttggt ggggtagtgg 240

cctaccaagg cttcgacggg tagccggcct gagagggcga ccggccacat tgggactgag 300

atacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg gggggaaccc 360

tgatgcagcg acgccgcgtg cgggatgacg gccttcgggt tgtaaaccgc ttttattggg 420

gagcaagcgt gagtgagtgt acctttttgaa taagcaccgg ctaactacgt gccagcagcc 480

gcggtaatac gtagggtgca agcgttgtcc ggaattattg ggcgtaaaga gctcgtaggc 540

ggtttgtcgc gtctggtgtg aaagtccatc gcttaacggt ggattggcgc tgggtacggg 600

caggctagag tgtagtaggg gagactggaa ttctcggtgt aacggtggaa tgtgtagata 660

tcgggaagaa caccaatggc gaaggcaggt ctctgggcta ttactgacgc tgaggagcga 720

aagcgtgggg agcgaacagg attagatacc ctggtagtcc acgccgtaaa cggtggatgc 780

tggatgtggg gccctttcca cgggttctgt gtcggagcta acgcgttaag catcccgcct 840

ggggagtacg gccgcaaggc taaaactcaa agaaattgac gggggcccgc acaagcggcg 900

gagcatgcgg attaattcga tgcaacgcga agaaccttac caagacttga catgttaacg 960

atggcctcag agatggggtg tctcttcgga gcgttttcac aggtggtgca tggtcgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcttgtgt 1080

tgccagcacg ttatggtggg aactcacaag agaccgccgg ggttaactcg gaggaaggtg 1140

gggatgacgt cagatcatca tgccccttac gtcttgggct tcacgcatgc tacaatggcc 1200

ggtacagcga ggtgcgatag ggtgacctgg agcggatctc tgaaaaccgg tctcagttcg 1260

gatcggagcc tgcaactcgg ctccgtgaag gtggagtcgc tagtaatcgc agatcagcaa 1320

cgctgcggtg aatgcgttcc cgggccttgt acacaccgcc cgtcaagtca tgaaagtggg 1380

cagcacccga agccggtggc ctaacagttt ttgctggggg agccgtctaa ggtgaggttc 1440

gcgattggga ctaagtcgta acaaggtagc cgtaccggaa gg 1482

<210> 140
<211> 1230
<212> DNA
<213> Alloscardovia sp. OB7196

<400> 140
cgaacgagtg gcgaacgggt gagtaacgcg tgatcaacct gccgtgtagt ggggaatagc 60

tcctggaaac gggtggtaat gccctatgtt gaaaggtgct atgcgatggg atcgcgtcct 120

atcagcttgt tggtggggta atggcctacc aaggcttcga cgggtagccg gcctgagagg 180

gcgaccggcc acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 240

aatattgcac aatgggggaa accctgatgc agcgacgccg cgtgcgggat gacggccttc 300

gggttgtaaa ccgcttttaa ttgggagcat gagtgtacct tttgaataag caccggctaa 360

ctacgtgcca gcagccgcgg taatacgtag ggtgcaagcg ttgtccggaa ttattgggcg 420

taaagagctc gtaggcggtt tgtcgcgtct ggtgtgaaag tccatcgctt aacggtggat 480

ttgcgctggg tacgggcagg ctagagtgta gtaggggaga ctggaattcc cggtgtaacg 540

gtggaatgtg tagatatcgg gaagaacacc aatggcgaag gcaggtctct gggctaactg 600

acgctgagga gcgaaagcgt ggggagcgaa caggattaga taccctggta gtccacgccg 660

taaacggtgg atgctggatg tggggcgttc tgtgtcggag ctaacgcgtt aagcatcccg 720

cctggggagt acggccgcaa ggctaaaact caaagaaatt gacgggggcc cgcacaagcg 780

gcggagcatg cggattaatt cgatgcaacg cgaagaacct taccaagact tgacatgcac 840

aggtggtgca tggtcgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 900

gcgcaaccct tgtcttgtgt tgccagcacg tgggaactca caagagaccg ccggggttaa 960

ctcggaggaa ggtggggatg acgtcagatc atcatgcccc ttacgtcttg ggcttcacgc 1020

atgctacaat ggccggcagc gaggtgcgat agggtgacct ggagcggatc tctgccggtc 1080

tcagttcgga tggagcctgc aactcggctc cagaaggtgg agtcgctagt aatcgcagat 1140

cagcaacgct gcggtgaatg cgttcccggg ccttgtacac accgcccgtc aagtcatgaa 1200

agtgggcaac acccgaagcc ggtgcctagg 1230

<210> 141
<211> 1528
<212> DNA
<213> Anaerobaculum hydrogeniformans

<400> 141
agagtttgat cctggctcag gacgaacgct ggcggcgcgc ttaacacatg caagtcgtgc 60

gatacctcga gcgagtctta cgacaagctc aaggtagagc ggcggacggg tgagtaacac 120

gtgagtagct gtcctaagga gggggataac gcctggaaac gggtgctaaa accccatatg 180

cctcgcaaga ggtgaaaatg tagcttgcta cagccttagg gtgtgctcgc ggcctatcag 240

ctagttggtg aggtaacggc tcaccaaggc taagacgggt agccggcctg agagggtgta 300

cggccacact ggaattgaga tacggtccag actcctacgg gaggcagcag tggggaatct 360

tgggcaatgg gcgaaagcct gacccagcga cgccgcgttg gggatgaagc ccttcggggt 420

gtaaacccat gttgtagggg acgaagaaag tgacggtacc ctacgaggaa gccccggcta 480

actacgtgcc agcagccgcg gtaagacgta gggggcaagc gttgtccgga attactgggc 540

gtaaagggca cgcaggcggt gcgccaagtc gagggtgtaa agttacggct caaccgtgac 600

attgcaatcg atactggcgc gctggagtgc gggagaggga agtggaattc ccggtgtagc 660

ggtgaaatgc gtagatatcg ggaggaacgc cagtggcgaa ggcggcttcc tggcccgcga 720

ctgacgctca tgtgcgaaag ccaggggagc gaaccggatt agatacccgg gtagtcctgg 780

ccgtaaacga tgggtgctag gtgtaggcgc gtcaagcgtc tgtgccgcag ttaacgcgat 840

aagcacctcg cctggggagt acggtcgcaa ggctgaaact caaaggaatt gacgggggcc 900

cgcacaagcg gtggagcacg tggtttaatt cgatgcaaac cgaagaacct tacctgggtt 960

tgacatgcag gtggtacgaa cctgaaaggg cgaggaccat atcttcggat gtggagcctg 1020

cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccctgcgcct agttgccatc agttaggctg ggcactctag gcggactgcc 1140

ggcgacaagt cggaggaagg tggggatgac gtcaagtcat catggccttt aagcccaggg 1200

cgacacacgt gctacaatgg ccagcacaga gggcggcaag tccgcgaggg caagcgaatc 1260

ccttaaagct ggtcttagtt cggatcgcag tctgcaaccc gactgcgtga agccggaatc 1320

gctagtaatc gccggtcagc catacggcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacac cacccgagtt gggtgctccc gaagccgccg gcccaacccc tttttgggga 1440

gggaggcgtc gaaggagtgt ctgataaggg gggtgaagtc gtaacaaggt agccgtaccg 1500

gaaggtgcgg ctggatcacc tcctttct 1528

<210> 142
<211> 1468
<212> DNA
<213> Anaerobiospirillum succiniciproducens

<400> 142
gctggcggca ggcctaatac atgcaagtcg aacggtaaca gcagagagct tgctctttgg 60

ctgacgagtg gcggacgggt gagtaaggct tgggaatctg cctggtagtg ggggacaaca 120

gttggaaacg actgctaata ccgcatactc ccttcggggg aaagacttcg gttgctatca 180

gatgagccca agtgggatta gctagtaggt gaggtaaagg ctcacctagg cgacgatctc 240

tagctggtct gagaggatga tcagccacat tgggactgag acacggccca gactcctacg 300

ggaggcagca gtagggaata ttgcacaatg ggggaaaccc tgatgcagcc atgccgcgtg 360

tgtgaagaag gccttcgggt tgtaaagcac tttcagtggg gaggaaacac tgacgttacc 420

cacagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 480

gttaatcgga ataactgggc gtaaagggca tgtaggcgga aaggtaagta ggatgtgaaa 540

tacccgggct caacctgggt tggtcattct aaactgcctt tctagagtat tgcagaggga 600

gatggaattt caggtgtagc ggtggaatgc gtagatatct gaaagaacac cagaggcgaa 660

ggcggtctcc tgggcaaata ctgacgctga ggtgcgaaag cgtggggagc aaacaggatt 720

agataccctg gtagtccacg ccgtaaacga tgtcgattag gagcttgaac ttcggtttgg 780

gttccgcagc taacgcgata aatcgaccgc ctggggagta cggccgcaag gttaaaactc 840

aaatgaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 900

gaagaacctt acctgacctt gacatcgtag gaatctttya gagatragag agtgccttcg 960

ggaacctaca gacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttgtcctt tgttgccaac aggtaaagct gggaactcaa 1080

aggagactgc cggtgacaaa ccggaggaag gtagggatga cgtcaagtca tcatggccct 1140

tacggtcagg gctacacacg tgctacaatg gggcgtacag agggaaacga taccgtgagg 1200

tggagtggaa cccacaaagc gtcccgcagt tcggattgga gtctgcaact cgactccatg 1260

aagtcggaat cgctagtaat cgcaaatcag aatgttgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacac catgggagcg gattgcacca gaagtagtta gcttaaccga 1380

aaggagggcg attaccacgg tgtggtctgt gactggggtg aagtcgtaac aaggtaaccg 1440

taggggaacc tgcggttgga tcacctcc 1468

<210> 143
<211> 1494
<212> DNA
<213> Anaerobiospirillum thomasii

<400> 143
cctggctcag attgaacgct ggcggcaggc ctaatacatg caagtcgaac ggtaacagta 60

agatagcttg ctatcttagc tgacgagtgg cggacgggtg agtaaagtct gggaaactgc 120

ctgatagagg gggacaacag ctggaaacgg ctgctaatac cgcatacacc ctgaggggga 180

aaggagcaat ccgctatcag atgtgcccag atgggattag ctagtaggtg tggtaagggc 240

gcacctaggc gacgatctct agctggtctg agaggatgat cagccacatt gggactgaga 300

cacggcccag actcctacgg gaggcagcag tagggaatat tgcacaatgg ggggaaccct 360

gatgcagcca tgcccgctgt gtgaagaagg ccttcgggtt gtaaagcact ttcagtgggg 420

aggaaatcgc aagagtgacg ttacccacag aagaagcacc ggctaactcc gtgccagcag 480

ccgcggtaat acggagggtg caagcgttaa tcggaataac tgggcgtaaa gggcatgtag 540

gcggatagtc aagtaaggtg tgaaagcccc gggctcaacc tgggaactgc actttaaact 600

aactatctag agtattgcag agggaaatgg aattccaggt gtagcggtga aatgcgtaga 660

tatctggaag aacaccagag gcgaaggcga tctcctgggc agatactgac gctgaggtgc 720

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgtcg 780

attagaagct tgagcgatag tttgggtttc gtagctaacg cgctaaatcg accgcctggg 840

gagtacggcc gcaaggttaa aactcaaatg aattgacggg ggcccgcaca agcggtggag 900

catgtggttt aattcgatgc aacgcgaaga accttacctg accttgacat cgtaggaatg 960

aataagagat tattcagtgc cttcgggagc ctatagacag gtgctgcatg gctgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tcctttgttg 1080

ccagcgggta aagccgggaa ctcaaaggag actgccagtg acaaactgga ggaaggcagg 1140

gatgacgtca agtcatcatg gcccttacgg tcagggctac acacgtgcta caatggggcg 1200

tacagaggga gacgaaaccg cgaggtggag tggagcccac aaagcgtccc gcagttcgga 1260

ttggagtctg caactcgact ccatgaagtc ggaatcgcta gtaatcgcaa atcagaatgt 1320

tgcggtgaat acgtccccgg gccttgtaca caccgcccgt cacaccatgg gagtgaattg 1380

caccagaagt agttagccta accgcaagga gggcgattac cacggtgtgg tttatgactg 1440

gggtgaagtc gtaacaaggt aaccataggg gaacctgtgg ctggatcacc tcct 1494

<210> 144
<211> 1530
<212> DNA
<213> Anaerococcus hydrogenalis

<400> 144
tttaattgag agtttgatcc tggctcagga taaacgctgg cggcgtgcat aacacatgca 60

agtcgaacga tgaaacttag atgatttctt cggaatgaac ttaagtggat tagtggcgaa 120

cgggtgagta acacgtgagt aacctgcctt acacaagggg atagcctctg gaaacggaga 180

ataataccct ataaagtcta atcagcccat gctggaaaga ccaaagattt atcggtgtaa 240

gatggacttg cgtctgatta gctagttggt gagataaaag ctcaccaagg cgacgatcag 300

tagccggctt gagagagtgt acggccacat tgggactgag acacggccca aactcctacg 360

ggaggcagca gtggggaatt ttgcacaatg ggggaaaccc tgatgcagcg acgccgcgtg 420

atttagaagg ccttcgggtt gtaaaaatct tttttacggg atgaaaatga cagtaccgta 480

agaataaggt ccggctaaat acgtgccagc agccgcggta atacgtatgg accgagcgtt 540

gtccggaatc attgggcgta aagggtacgt aggcggccta gtaagttaga agttaaagaa 600

tatagctcaa ctatataaag cttttaaaac tgctaggctt gagagatgga agggaaagtg 660

gaattcctag tgtagcggtg aaatgcgcag atattaggaa gaataccggt ggcgaaggcg 720

actttctggt catcatctga cgctgaggta cgaaagcgtg ggtagcaaac aggattagat 780

accctggtag tccacgctgt aaacgatgag tgttaggttc ttggaataat ctgggagccg 840

cagctaacgc attaaacact ccgcctgggg agtacgcacg caagtgtgaa actcaaagga 900

attgacgggg acccgcacaa gcagcggagc atgtggttta attcgacgca acgcgaagaa 960

ccttaccaag tcttgacata tttcggaggg aattagagat aattccttac gacttcggtc 1020

gactgaaata caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1080

tcccataacg agcgcaaccc ctatcgttag ttaccatcat taagttgggg actctagcga 1140

tactgccggt gataaaccgg aggaaggtgg ggacgacgtc aaatcatcat gccctttatg 1200

acttgggcta cacacgtgct acaatggcag atacagaggg cagcgaaaga gtgatctgaa 1260

gcgaaactca caaaatctgt cccagttcgg attgtactct gcaactcgag tacatgaagt 1320

tggagttgct agtaatcgcg aatcagaatg tcgcggtgaa tgcgttcccg ggtcttgtac 1380

acaccgcccg tcacaccatg gaagttggca atacccgaag cctgtgagcg aacctttag 1440

gacgcagcag tcgaaggtag ggtcagtaac tggggtgaag tcgtaacaag gtagccgtat 1500

cggaaggtgc ggctggatca cctcctttct 1530

<210> 145
<211> 1426
<212> DNA
<213> Anaerococcus lactolyticus

<400> 145
tggattagtg gcggacgggt gagtaacgcg tgagtaacct gccttagaga aggggatagc 60

ctttggaaac gaagaataat accctataac accaacacct cgcatgaaga gttggtcaaa 120

gatttatcgc tctaagatgg acttgcgtct gattagttag ttggtgaggt aacggcccac 180

caagacagcg atcagtagcc ggcttgagag agtgtacggc cacattggga ctgagacacg 240

gcccagactc ctacgggagg cagcagtggg gaattttgca caatggggga aaccctgatg 300

cagcgacgcc gcgtgattta gaaggccttc gggttgtaaa aatcttttct atgggaagaa 360

aatgacagta ccataggaat aaggaccggc taattacgtg ccagcagccg cggtaatacg 420

taaggtccga gcgttgtccg gaatcattgg gcgtaaaggg tacgtaggcg ggtaagcaag 480

ttagaagtga aatcctgtag ctcaactaca gtaagctttt aaaactgctc atcttgagat 540

atggaaggga aagtggaatt cctagtgtag cggtgaaatg cgcagatatt aggaggaata 600

ccggtggcga aggcgacttt ctggccataa tctgacgctg aggtacgaaa gcgtgggtag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgtta ggtgtctgga 720

gtaaatctgg gtgccgcagc taacgcatta aacactccgc ctggggagta cgcgcgcaag 780

cgtgaaactc aaaggaattg acggggaccc gcacaagcag cggagcatgt ggtttaattc 840

gacgcaacgc gaagaacctt accaagtctt gacatattac ggcgggagct agagatagtt 900

ccttacttct tcggaagact gtaatacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 960

gagatgttgg gttaagtccc ataacgagcg caacccctat cgttagttac catcattaag 1020

ttggggactc taacaatact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1080

catcatgccc tttatgactt gggctacaca cgtgctacaa tggcaggtac acagagcagc 1140

taaacagcga tgtcacgcga atctcaaaaa gcctgtccca gttcggattg cactctgcaa 1200

ctcgagtgca tgaagttgga gttgctagta atcgtggatc agaatgccgc ggtgaatgcg 1260

ttcccgggtc ttgtacacac cgcccgtcac accatggaag ttggcaatac ccgaagcctg 1320

tgagcgaacc cttgtggacg cagcagtcga aggtagggtc agtaactggg gtgaagtcgt 1380

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttct 1426

<210> 146
<211> 1407
<212> DNA
<213> Anaerococcus octavius

<400> 146
gattaacgct ggcggcgtgc ataacacatg caagtcgaac gatgaaactt aaatgatttc 60

ttcggaatga acttaagtgg attagtggcg gacgggtgag taacgcgtga gtaacctgcc 120

ttacacaagg ggatagccgt tggaaacgac gaataatacc ctatgaaact atcacttcgc 180

atgaagcgat agtcaaagtg ttagcggtgt aagatggact tgcgtctgat tagctagttg 240

gtgagaaaaa agcccaccaa ggcaacgatc agtagccggc ttgagagagt gtacggccac 300

attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa ttttgcacaa 360

tgggggaaac cctgatgcag cgacgccgcg tgatttagaa ggccttcggg ttgtaaaaat 420

cttttgtata ggaagaaaat gacagtacta tacgaataag gtccggctaa ttacgtgcca 480

gcagccgcgg taatacgtaa ggaccgagcg ttgtccggaa tcattgggcg taaagggtac 540

gtaggcgggt cattaagtta gaagtcaaag gctatagctc aactatagta agcttctaaa 600

actggagacc ttgagtaatg gaagggaaag tggaattcct agtgtagcgg tggaatgcgc 660

agatattagg aggaataccg gtggcgaagg cgactttctg gccattaact gacgctgagg 720

tacgaaagcg tgggtagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 780

agtgttaggt gtctggagta aatctgggtg ccgcagctaa cgcattaaac actccgcctg 840

gggagtacgc acgcaagtgt gaaactcaaa ggaattgacg gggacccgca caagcagcgg 900

agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aagtcttgac atattttgga 960

agcacttaga gataagtgcc tatatcttcg gataactgaa atacaggtgg tgcatggttg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccata acgagcgcaa cccctatggc 1080

tagttaccat cattaagttg gggactctag caatactgcc ggtgacaaac cggaggaagg 1140

tggggatgac gtcaaatcat catgcccttt atgacttggg ctacacacgt gctacaatgg 1200

caggtacaga gggcagcaag acagcgatgt taagcaaaac tcaaaaagcc tgtcccagtt 1260

cggattgcac tctgcaactc gagtgcatga agttggagtt gctagtaatc gtggatcaga 1320

atgccacggt gaatgcgttc ccgggtcttg tacacaccgc ccgtcacacc atggaagttg 1380

gcaatacccg aagcctgtga gcgaacc 1407

<210> 147
<211> 1521
<212> DNA
<213> Anaerococcus prevotii

<400> 147
agagtttgat cctggctcag gataaacgct ggcggcgtgc ataacacatg caagtcgaac 60

gatgaagctt aaatgatctc ttcggagtga ccttaagtgg attagtggcg gacgggtgag 120

taacgcgtga gtaacctgcc ttgcacaagg ggatagccgt tggaaacgac gaataatacc 180

ctatgatatg atagcctcgc atgaagctat catcaaagat ttatcggtgt aagatggact 240

cgcgtctgat tagctagttg gtggggtaac agctcaccaa ggcaacgatc agtagccggc 300

ttgagagagt gtacggccac attgggactg agacacggcc cagactccta cgggaggcag 360

cagtggggaa ttttgcacaa tgggggcaac cctgatgcag cgacgccgcg tgatttagaa 420

ggccttcggg ttgtaaaaat cttttgtatg ggaagaaaat gacagtacca tacgaataag 480

gaccggctaa ttacgtgcca gcagccgcgg taatacgtaa ggtccgagcg ttgtccggaa 540

tcattgggcg taaagggtac gtaggcggat aagcaagtta gaagtgaaat cctatagctc 600

aactatagta agcttttaaa actgctcatc ttgaggtatg gaagggaaag tggaattcct 660

agtgtagcgg tgaaatgcgc agatattagg aggaatacca gtggcgaagg cgactttctg 720

gccataaact gacgctgagg tacgaaagcg tgggtagcaa acaggattag ataccctggt 780

agtccacgcc gtaaacgatg agtgttaggt gtctggaata atctgggtgc cgcagctaac 840

gcaataaaca ctccgcctgg ggagtacgca cgcaagtgtg aaactcaaag gaattgacgg 900

ggacccgcac aagcagcgga gcatgtggtt taattcgacg caacgcgaag aaccttacca 960

agtcttgaca tattacggcg gggtctagag atagactctt acttcttcgg aagactgtaa 1020

tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccataa 1080

cgagcgcaac ccctattgtt agttaccatc attaagttgg ggactctagc aatactgccg 1140

gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccttta tgacttgggc 1200

tacacacgtg ctacaatggc aggtacagag ggaagcgaga ctgcgaagtt aagcaaaact 1260

caaaaagcct gtcccagttc ggattgcact ctgcaactcg agtgcatgaa gttggagttg 1320

ctagtaatcg cagatcagaa tgctgcggtg aatgcgttcc cgggtcttgt acacaccgcc 1380

cgtcacacca tggaagttgg caatacccga agcctgtgag ctaaccttta gggagcagca 1440

gtcgaaggta gggtcagtaa ctggggtgaa gtcgtaacaa ggtagccgta tcggaaggtg 1500

cggctggatc acctcctttc t 1521

<210> 148
<211> 1492
<212> DNA
<213> Anaerococcus sp. 8404299

<400> 148
agagtttgat cctggctcag gataaacgct ggcggcgtgc ataacacatg caagtcgaac 60

gatgaacctt aattgatttc ttcggaatga aattaagctg gattagtggc gaacgggtga 120

gtaacacgtg agtaacctgc cttacacaag gggatagcct ttggaaacga agaataatac 180

cctataaagt caaacaatat cgcatgctar agtgaccaaa gatttatcgg tgtaagatgg 240

acttgcgtct gattagctag ttggtgagat aaaagcccac caaggcgacg atcagtagcc 300

ggcttgagag agtgtacggc cacattggga ctgagacacg gcccaaactc ctacgggagg 360

cagcagtggg gaattttgca caatggggga aaccctgatg cagcgacgcc gcgtgattta 420

gaaggccttc gggttgtaaa aatctttttt atgggatgaa aatgacagta ccataagaat 480

aaggtccggc taaatacgtg ccagcagccg cggtaatacg tatggaccga gcgttgtccg 540

gaatcattgg gcgtaaaggg tacgtaggcg gcctagtaag ttagaagtga aataatatag 600

ctcaactata taaagctttt aaaactgtta ggcttgagag atgaaaggga aagtggaatt 660

cctagtgtag cggtgaaatg cgcagatatt aggaagaata ccggtggcga aggcgacttt 720

ctggtcatca tctgacgctg aggtacgaaa gcgtgggtag caaacaggat tagataccct 780

ggtagtccac gctgtaaacg atgagtgtta ggttcttgga ataatctggg agccgcagct 840

aacgcattaa acactccgcc tggggagtac gcacgcaagt gtgaaactca aaggaattga 900

cggggacccg cacaagcagc ggagcatgtg gtttaattcg acgcaacgcg aagaacctta 960

ccaagtcttg acataatacg gagggaatta gagataattt cttatcactt cggtgaactg 1020

tattacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtccca 1080

taacgagcgc aacccctatc gttagttacc atcattaagt tggggactct agcgatactg 1140

ccggtgataa accggaggaa ggtggggacg acgtcaaatc atcatgccct ttatgacttg 1200

ggctacacac gtgctacaat ggcagataca gagggcagcg aaagagcgat ctgaagcgaa 1260

actcacaaag tctgtcccag ttcggattgt actctgcaac tcgagtacat gaagttggag 1320

ttgctagtaa tcgcgaatca gaatgtcgcg gtgaatgcgt tcccgggtct tgtacacacc 1380

gcccgtcaca ccatgggagt tggcaatacc cgaagcctgt gagcgaacca attggacgca 1440

gcagtcgaag gtagggtcag taactggggt gaagtcgtaa caaggtagcc gt 1492

<210> 149
<211> 1486
<212> DNA
<213> Anaerococcus sp. 8405254

<400> 149
tagagtttga tcctggctca ggattaacgc tggcggcgtg cataacacat gcaagtcgaa 60

cgatgaaact ttaatgaacc cttcggggag aattaaagcg gattagtggc gaacgggtga 120

gtaacgcgtg agtaacctgc cttacacaag gggatagcct ttggaaacga agaataatac 180

cctataaaac cataaaggca catgcaatta tggtcaaagt attagcggtg taagatggac 240

ttgcgtctga ttagctagtt ggtgagataa aagcccacca aggcaacgat cagtagccgg 300

cttgagagag tgtacggcca cattgggact gagacacggc ccagactcct acgggaggca 360

gcagtgggga attttgcaca atgggggaaa ccctgatgca gcgacgccgc gtgatttaga 420

aggccttcgg gttgtaaaaa tcttttgtat aggaagaaaa tgacagtact atacgaataa 480

ggtccggcta attacgtgcc agcagccgcg gtaatacgta aggaccgagc gttgtccgga 540

atcattgggc gtaaagggta cgtaggcggc tagaaaagtt agaagtcaaa ggctatagct 600

caactatagt aagcttctaa aactatttag cttgagagat ggaagggaaa gtggaattcc 660

tagtgtagcg gtggaatgcg cagatattag gaggaatacc ggtggcgaag gcgactttct 720

ggccattttc tgacgctgag gtacgaaagc gtgggtagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gagtgttagg tgtctggagt caaatctggg tgccgcagca 840

aacgcattaa acactccgcc tggggagtac gcacgcaagt gtgaaactca aaggaattga 900

cggggacccg cacaagcagc ggagcatgtg gtttaattcg acgcaacgcg aagaacctta 960

ccaagtcttg acatatttta gaagcaatta gagataattg cctatatctt cggataacta 1020

aaatacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtccca 1080

taacgagcgc aacccctatt gctagttacc atcattaagt tggggactct agtaatactg 1140

ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgccct ttatgacttg 1200

ggctacacac gtgctacaat ggcaggtaca cagggaagca agactgtgaa gttaagcaaa 1260

actcaaaaag cctgtcccag ttcggattgc actctgcaac tcgagtgcat gaagttggag 1320

ttgctagtaa tcgcagatca gaatgctgcg gtgaatgcgt tcccgggtct tgtacacacc 1380

gcccgtcaca ccatggaagt tggcaatacc cgaagcctgt gagcgaaccc tttggggcgc 1440

agcagtcgaa ggtagggtca gtaactgggg tgaagtcgta acaagg 1486

<210> 150
<211> 1435
<212> DNA
<213> Anaerococcus sp. 9401487

<400> 150
tagagtttga tcctggctca ggattaacgc tggcggcgtg cataacacat gcaagtcgaa 60

cgatgaaact taaaagattt cttcggaatg accttaagtg gattagtggc ggacgggtga 120

gtaacgcgtg agtaacctgc cttacacaag gggatagcct ctggaaacgg agaataatac 180

cctataacac catcaaatcg catgaagtga tggtcaaagt gttagcggtg taagatggac 240

ttgcgtctga ttagctagtt ggtgagaaaa aagcccacca aggcaacgat cagtagccgg 300

cttgagagag tgtacggcca cattgggact gagacacggc ccagactcct acgggaggca 360

gcagtgggga attttgcaca atgggggaaa ccctgatgca gcgacgccgc gtgatttaga 420

aggccttcgg gttgtaaaaa tcttttgtat aggaagaaaa tgacagtact atacgaataa 480

ggtccggcta attacgtgcc agcagccgcg gtaatacgta aggaccgagc gttgtccgga 540

atcattgggc gtaaagggta cgtaggcggg tttttaagtt agaagtcaaa ggctatagct 600

caactatagt aagcttctaa aactgggaac cttgagagat ggaagggaaa gtggaattcc 660

tagtgtagcg gtggaatgcg cagatattag gaggaatacc ggtggcgaag gcgactttct 720

ggccattttc tgacgctgag gtacgaaagc gtgggtagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gagtgttagg tgtctggagt aaatctgggt gccgcagcta 840

acgcattaaa cactccgcct ggggagtacg cacgcaagtg tgaaactcaa aggaattgac 900

ggggacccgc acaagcagcg gagcatgtgg tttaattcga agcaacgcga agaaccttac 960

caagtcttga catattacgg cagggattag agataatccc ctacatcttc ggatgactgt 1020

aatacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccat 1080

aacgagcgca acccctttg ctagttacca tcattaagtt ggggactcta gcaatactgc 1140

cggtgacaaa ccggaggaag gtggggatga cgtcaaatca tcatgccctt tatgacttgg 1200

gctacacacg tgctacaatg gcaggtacac agggcagcaa gacagtgatg ttaagcgaaa 1260

ctcaaaaagc ctgtcccagt tcggattgca ctctgcaact cgagtgcatg aagttggagt 1320

tgctagtaat cgtggatcag aatgccgcgg tgaatgcgtt cccgggtctt gtacacaccg 1380

cccgtcacac catggaagtt ggcaataccc gaagcctgtg agctaaccct ttggg 1435

<210> 151
<211> 1289
<212> DNA
<213> Anaerococcus sp. 9403502

<400> 151
aagtaatcaa agtgttttag cggtgtaaga tggacttgcg tctgattagc tagttggtga 60

gataacagct caccaaggca acgatcagta gccggcttga gagagtgtac ggccacattg 120

ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatttt gcacaatggg 180

ggcaaccctg atgcagcgac gccgcgtgat ttatgaaggc cttcgggttg taaaaatctt 240

ttgtatagga agaagatgac agtactatac gaataaggtc cggctaatta cgtgccagca 300

gccgcggtaa tacgtaagga ccgagcgttg tccggaatca ttgggcgtaa agggtacgta 360

ggcggccamt taagttagaa gtcaaaggct atagctcaac tatagtaagc ttctaaaact 420

gggtggcttg agagatggaa gggaaagtgg aattcctagt gtagcggtga aatgcgcaga 480

tattaggagg aataccggtg gcgaaggcga ctttctggcc attatctgac gctgaggtac 540

gaaagcgtgg gtagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt 600

gttaggtgtc tggagtaaat ctgggtgccg cagctaacgc attaaacact ccgcctgggg 660

agtacgcacg caagtgtgaa actcaaagga attgacgggg acccgcacaa gcagcggagc 720

atgtggttta attcgaagca acgcgaaaaa ccttaccaag tcttgacata ttacggcgtt 780

tcttagagat aagaagctat atcttcggat aactgtaata caggtggtgc atggttgtcg 840

tcagctcgtg tcgtgagatg ttgggttaag tcccataacg agcgcaaccc ttatggctag 900

ttaccatcat taagttgggg actctagcaa tactgccggt gacaaaccgg aggaaggtgg 960

ggatgacgtc aaatcatcat gccctttatg acttgggcta cacacgtgct acaatggcag 1020

gtacagaggg cagcgaaact gygaagttaa gcgaaactca aaaagcctgt cccagttcgg 1080

attgcactct gcaactcgag tgcatgaagt tggagttgct agtaatcgca gatcagaatg 1140

ctgcggtgaa tgcgttcccg ggtcttgtac acaccgcccg tcacaccatg gaagttggca 1200

atacccgaag cctgtgagcg aacccttttgg gacgcagcag tcgaaggtag ggtcagtaac 1260

tggggtgaag tcgtaacaag gtagccgta 1289

<210> 152
<211> 1445

<212> DNA
<213> Anaerococcus sp. gpac104

<400> 152
gattaacgct ggcggcgtgc ataacacatg caagtggaac gatgaaactt gaatgatctc 60

ttcggagtga acttaagtgg attagtggcg gacgggtgag taacgcgtga gtaacctgcc 120

ttagagaagg ggatagcctt tggaaacgaa gaataatacc ctatgacatg atagcctcgc 180

atgagattat crtcaaagat ttatcgctct aagatggact tgcgtctgat tagttagttg 240

gtggggtaac ggcccaccaa gacagcgatc agtagccggc ttgagagagt gtacggccac 300

attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa ttttgcacaa 360

tgggggaaac cctgatgcag cgacgccgcg tgatttagaa ggccttcggg ttgtaaaaat 420

cttttctatg ggaagaacat gacagtacca taggaataag gaccggctaa ttacgtgcca 480

gcagccgcgg taatacgtaa ggtccgagcg ttgtccggaa tcattgggcg taaagggtac 540

gtaggcgggt aagcaagtta gaagtgaaat cctatagctc aactatagta agcttttaaa 600

actgctcatc ttgaggtatg gaagggaaag tggaattcct agtgtagcgg tgaaatgcgc 660

agatattagg aggataccgg tggcgaaggc gactttctgg cataacctga cgctgaggta 720

cgaaagcgtg ggtagcaaac aggattagat accctggtag tccacgccgt aaacgatgag 780

tgttaggtgt ctggagtaaa tctgggtgcc gcagtaacgc attaaacact ccgcctgggg 840

agtacgcgcg caagcgtgaa actcaaagga attgacggga cccgcacaag cagcggagca 900

tgtggtttaa ttcgacgcaa cgcgaagaac cttaccaagt cttgacatat tacggcggga 960

gctagagata gttccttact tcttcggaag actgtaatac aggtggtgca tggttgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccataacga gcgcaacccc tattgttagt 1080

taccatcatt aagttgggga ctctaacgat actgccggtg acaaaccgga ggaaggtggg 1140

gacgacgtca aatcatcatg ccctttatga cttgggctac acacgtgcta caatggcagg 1200

tacacagagc agctaaacag tgatgtcttg cgaatctcaa aaagcctgtc ccagttcgga 1260

ttgtactctg caactcgagt acatgaagtt ggagttgcta gtaatcgtga atcagaatgt 1320

cgcggtgaat gcgttcccgg gtcttgtaca caccgcccgt cacaccatgg aagttggcaa 1380

tgcccgaagc ctgtgagcga acccttgtgg gcgcagcagt cgaaggtagg gtcagtaact 1440

gggtg 1445

<210> 153
<211> 1450
<212> DNA
<213> Anaerococcus sp. gpac126

<220>
<221> modified_base
<222> (842)..(842)
<223> a, c, t, g, unknown or other

<400> 153
gattaacgct ggcggcgtgc ataacacatg caagtcgaac gatgaaagct aaatgatttc 60

ttcggaatga atttagccgg attagtggcg gacgggtgag taacgcgtga gtaacctgcc 120

ttagagaagg ggatagcctt tggaaacgaa gaataatacc ctatgacacc aacacctcgc 180

atgaagagtt ggtcaaagat ttatcgctct aagatggact tgcgtctgat tagttagttg 240

gtgaggtaac ggctcaccaa gacagcgatc agtagccggc ttgagagagt gtacggccac 300

attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa ttttgcacaa 360

tgggggaaac cctgatgcag cgacgccgcg tgatttagaa ggccttcggg ttgtaaaaat 420

cttttctatg ggaagaaaat gacagtacca taggaataag gaccggctaa ttacgtgcca 480

gcagccgcgg taatacgtaa ggtccgagcg ttgtccggaa tcattgggcg taaagggtac 540

gtaggcgggt aagcaagtta gaagtgaaat cctatagctc aactatagta agcttttaaa 600

actgctcatc ttgaggtatg gaagggaaag tggattccta gtgtagcggt gaaatgcgca 660

gatattaggg gggataccgg tggcgaaggc gactttctgg cataacctga cgctgaggta 720

cgaaagcgtg ggtagcaaac agggttagat accyggkagt ccacgccgta aacgawgagt 780

gataggtgtc tggagaaaat ctgggtgccg cagtaacgca twaaacactc cscctgggg 840

antacgcgcg caagcgtgaa actcaaagga attgacgggg acccgcacaa gcagcggagc 900

atgtggttta attcgacgca acgcgaagaa cctttaccaa gtctagacat attaccggcg 960

ggatctagag atagatccct acttcttcgg aagactgtaa tacaggtggt gcatgtttgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccataa gcgagcgcaa cccctattgt 1080

tagttaccat cattaagttg gggactctaa cgatactgcc gttgacaaac cggagaaagt 1140

tggggacgac gtcaaatcat catgcccttt atgacttggg ctacacacgt gctacaatgg 1200

caggtacaca gagcagctag acagcgatgt catgcaaatc tcaaaaagcc tgtccccagt 1260

tcggattgta ctctgcaact cgagtacatg aagttggagt tgctagtaat cgtggatcag 1320

aatgccgcgg tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac catggaagtt 1380

ggcaataccc gaagcctgtg agcgaaccct tgtggaagca gcagtcgaag gtagggtcag 1440

taactgggtg 1450

<210> 154
<211> 1440
<212> DNA
<213> Anaerococcus sp. gpac155

<220>
<221> modified_base
<222> (1373)..(1373)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1395)..(1397)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (1401)..(1401)
<223> a, c, t, g, unknown or other

<400> 154
gattaacgct ggcggcgttc ataacacatg caagtcgaac gatgaaactt aaatgatctc 60

ttcggagtga atttaagtgg attagtggcg gacgggtgag taacgcgtga gtaacctgcc 120

ttagagaagg ggatagcctt tggaaacgaa gaataatacc ctatgaaacc ataacctcgc 180

atgaggcctt ggtcaaagat ttatcgctct aagatggact tgcgtctgat tagttagttg 240

gtggggtaac ggcccaccaa gacagcgatc agtagccggc ttgagagagt gtacggccac 300

attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa ttttgcacaa 360

tgggggaaac cctgatgcag cgacgccgcg tgatttagaa ggccttcggg ttgtaaaaat 420

cttttctatg ggaagaaaat gacagtacca taggaataag gaccggctaa ttacgtgcca 480

gcagccgcgg taatacgtaa ggtccgagcg ttgtccggaa tcattgggcg taaagggtac 540

gtaggcgggt aagcaagtta gaagtgaaat cctatagctc aactatagta agcttttaaa 600

actgctcatc ttgaggtatg gaagggaaag tggaattcct agtgtagcgg tgaaatgcgc 660

agatattagg aggaataccg gtggcgaagg cgactttctg gccataccct gacgctgagg 720

tacgaaagcg tgggtagcaa accaggatta gataccctgg tagtccacgc cgtaaacgat 780

gagtgttagg tgtctggagt aaatctgggt gccgcagcta acgcattaaa cactccgccc 840

tggggagtac gcgcgcaagc gtgaaactca aaggaattga cggggacccg cacaagcagc 900

ggagcatgtg gtttaattcg acgcaacgcg aagaacctta ccaagtcttg acatattacg 960

gcggaactta gagataagtt cttatgactt cggtcaactg taatacaggt ggtgcatggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtccca taacgagcgc aacccctatt 1080

gttagttacc atcattaagt tggggactct aacgatactg ccggtgacaa accggaggaa 1140

ggtggggacg acgtcaaatc atcatgccct ttatgacttg ggctacacac gtgctacaat 1200

ggcaggtaca cagagcagct aaacagtgat gtcttgcgaa tctcaaaaag cctgtcccag 1260

ttcggattgt actctgcaac tcgagtacat gaagttggag ttgctagtaa tcgtgaatca 1320

gaatgtcgcg gtgaatgcgt tcccggtctt gtacacacgc cgtcacacca tgnagttgca 1380

tacccgagcc tgtgnnnccc ngtgggcgcc gcagtcgaag gtaggtcagt aactggggtg 1440

<210> 155
<211> 1457
<212> DNA
<213> Anaerococcus sp. gpac199

<400> 155
gattaacgct ggcggcgtgc ataacacatg caagtggaac gatgaaactt ttttgatttc 60

ttcggaatga atataagtgg attagtggcg gacgggtgag taacgcgtga gtaacctgcc 120

ttagagaagg ggatagcctt tggaaacgaa gaataatacc ctatgaaacc ataacctcgc 180

atgaggcctt ggtcaaagat ttatcgctct aagatggact tgcgtctgat tagttagttg 240

gtggggtaac ggcctaccaa gacagcgatc agtagccggc ttgagagagt gtacggccac 300

attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa ttttgcacaa 360

tgggggaaac cctgatgcag cgacgccgcg tgatttagaa ggccttcggg gttgtaaaaa 420

tcttttctat gggaagaaaa tgacagtacc atagggaata agggaccggg ctaattacgt 480

gccagcagcc gcgggtaata cgtaaggtcc gcagcgttgt ccggaatcat tgggcgtaaa 540

gggtacgtag gcgggtaagc aagttagaag tgaaatccta tagctcaact atagtaagct 600

tttaaaactg ctcatcttga ggtatggaag ggaaagtggg attcctagtg tagcggtgaa 660

atgcgcagat attaggagga taccgggtgg cgaaggcgac tttctgccaa taccctgacg 720

ctgaggtacg aaagcgtggt agcaaaccag gattagatac cctggtagtc cacgccgtaa 780

acgatgagtg ttaggtgtct ggagtaaatc tgggtgccgc agctaacgca ttaaacactc 840

cgcctgggga gtacgcgcgc aagcgtgaaa ctcaaaggaa ttgacgggga cccgcacaag 900

cagcggagca tgtgtttaat tcgacgcaac gcgaagaacc ttaccaagtc ttgacatatt 960

acggcggaac ttagagataa gttcttatga cttcggtcaa ctgtaataca ggtggtgcat 1020

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccataacgag cgcaacccct 1080

attgttagtt accatcatta agttggggac tctaacgata ctgccggtga caaaccggag 1140

gaaggtgggg acgacgtcaa atcatcatgc cctttatgat cttgggctac acacgtgcta 1200

caatggcagg tacacagagc agctaaacag tgatgtcttg cgaatctcaa aaagcctgtc 1260

ccagttcgga ttgtactctg caactcgagt acatgaagtt ggagttgcta gtaatcgtga 1320

atcagaatgt cgcggtgaat gcgttccccg ggtcttgtac acaccgcccg tcacaccatg 1380

gaagttggca atacccgaag ccctgtgagc gaacccaatt gggcgcagca gtcgaaggta 1440

ggtcagtaac tggggtg 1457

<210> 156
<211> 1458
<212> DNA
<213> Anaerococcus sp. gpac215

<220>
<221> modified_base
<222> (13)..(13)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (737)..(737)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (741)..(741)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (761)..(761)
<223> a, c, t, g, unknown or other

<400> 156
taacgctggc ggncgtgcat aacacatgca agtcgaacga tgaaacttaa atgatttctt 60

cggaatgaac ttaagcggat tagtggcgaa cgggtgagta acacgtgagt aacctgcctt 120

acacaagggg atagcctttg gaaacgaaga ataataccct ataacgtcaa attatcgcat 180

gatagaatga ccaaagattt atcggtgtaa gatggacttg cgtctgatta gctagttggt 240

gagataaagg cccaccaagg caacgatcag tagccggctt tgagagagtg tacggccaca 300

ttgggactga gacacggccc aaactcctac gggaggcagc agtggggaat tttgcacaat 360

gggggaaacc ctgatgcagc gacgccgcgt gatttagaag gccttcgggt tgtaaaaatc 420

ttttttatgg gatgaaaatg acagtaccat aagaataagg tccggctaaa tacgtgccag 480

cagccgcggt aatacgtatg gaccgagcgt tgtccggaat cattgggcgt aaagggtacg 540

taggcggccc agtaagttag aagtgaaata atatagctca actatataaa gcttttaaaa 600

ctgctaggct tgagagatgg aagggaaagt ggaattccta gtgtagcggt gaaatgcgca 660

gatattagga agaataccgg tgccgaagcg actttctggt catcatctgg acgttgaggt 720

acgaaagcgt tggttancaa nccaggatta gataccctg ntagtccacg gcctgtaaac 780

gatgagtgtt agttcttgga ataatctggg agccgcagct aacgcattaa acactccgcc 840

tggggagtac gcacgcaagt gtgaaactca aaggaattga cggggacccg cacaagcagc 900

ggagcatgtg gtttaattcg acgcaacgcg aagaacctta ccaagtcttg acataatacg 960

gagggaatta gagatagttt cttaagactt cggtctactg tattacaggt ggtgcatggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtccca taacgagcgc aacccctatc 1080

gttagttacc atcattaagt tggggactct agcgatactg ccggtgataa accggaggaa 1140

ggtggggacg acgtcaaatc atcaatgccc cttttaatgg aaccttgggc tacacacgtg 1200

ctacaatggc aggtacagag ggcagcgaaa gagcgatctg aagcgaaact caaaaaacct 1260

gtcccagttc ggattgtact ctgcaactcg agtacatgaa gttggagttg ctagtaatcg 1320

cgaatcagaa tgtcgcggtg aatgcgttcc cgggtcttgt acacaccgcc cgtcacacca 1380

tgggagttgg caatacccga agcctgtgag cgacctttta ggacgcagca gtcgaaggta 1440

ggatcagtaa gctgggtg 1458

<210> 157
<211> 1530
<212> DNA
<213> Anaerococcus tetradius

<400> 157
ttatatatga gagtttgatc ctggctcagg attaacgctg gcggcgtgca taacacatgc 60

aagtcgaacg atgaagatat ttagattcct tcgggatgaa aaatattgga ttagtggcgg 120

acgggtgagt aacgcgtgag taacctgcct tacacaaggg gatagccgtt ggaaacgacg 180

aataataccc tatgacataa actcttcgca tgaagagctt atcaaagatt tatcggtgta 240

agatggactc gcgtctgatt agctagttgg tgaggtaacg gcccaccaag gcaacgatca 300

gtagccggct tgagagagtg tacggccaca ttgggactga gacacggccc agactcctac 360

gggaggcagc agtggggaat tttgcacaat gggggaaacc ctgatgcagc gacgccgcgt 420

gatttagaag gccttcgggt tgtaaaaatc ttttgtatgg gaagaaaatg acagtaccat 480

acgaataagg accggctaat tacgtgccag cagccgcggt aatacgtaag gtccgagcgt 540

tgtccggaat cattgggcgt aaagggtacg taggcggata agcaagttag aagtgaaatc 600

ctatagctca actatagtaa gcttttaaaa ctgctcatct tgaggtatgg aagggaaagt 660

ggaattccta gtgtagcggt gaaatgcgca gatattagga ggaataccgg tggcgaaggc 720

gactttctgg ccataaactg acgctgaggt acgaaagcgt gggtagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga gtgttaggtg tctggaataa tctgggtgcc 840

gcagctaacg caataaacac tccgcctggg gagtacgcac gcaagtgtga aactcaaagg 900

aattgacggg gacccgcaca agcagcggag catgtggttt aattcgacgc aacgcgaaga 960

accttaccaa gtcttgacat attacggagg gaattagaga tagttcctta cttcttcgga 1020

agactgtaat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccataac gagcgcaacc cctatattta gttaccatca ttaagttggg gactctagat 1140

atactgccgg tgataaaccg gaggaaggtg gggatgacgt caaatcatca tgccctttat 1200

gacttgggct acacacgtgc tacaatggca ggtacacagg gaagcgagac tgcgaagtta 1260

agcaaaactc aaaaagcctg tcccagttcg gattgcactc tgcaactcga gtgcatgaag 1320

ttggagttgc tagtaatcgt ggatcagaat gccgcggtga atgcgttccc gggtcttgta 1380

cacaccgccc gtcacaccat ggaagttggc aatacccgaa gcctgtgagc taaccattag 1440

gaagcagcag tcgaaggtag ggtcagtaac tggggtgaag tcgtaacaag gtagccgtat 1500

cggaaggtgc ggctggatca cctcctttct 1530

<210> 158
<211> 1425
<212> DNA
<213> Anaerococcus vaginalis

<400> 158
tggattagtg gcgaacgggt gagtaacacg tgagtaacct gccttacaca aggggatagc 60

ctttggaaac gaagaataat accctataaa gtcaaaatat cgcatgataa aatgaccaaa 120

gatttatcgg tgtaagatgg acttgcgtct gattagctag ttggtgagat aaaagcccac 180

caaggcgacg atcagtagcc ggcttgagag agtgtacggc cacattggga ctgagacacg 240

gcccaaactc ctacgggagg cagcagtggg gaattttgca caatggggga aaccctgatg 300

cagcgacgcc gcgtgattta gaaggccttc gggttgtaaa aatcttttt atgggatgaa 360

aatgacagta ccataagaat aaggtccggc taaatacgtg ccagcagccg cggtaatacg 420

tatggaccga gcgttgtccg gaatcattgg gcgtaaaggg tacgtaggcg gcctagtaag 480

ttagaagtga aataatatag ctcaactata taaagctttt aaaactgtta ggcttgagag 540

atgaaaggga aagtggaatt cctagtgtag cggtgaaatg cgcagatatt aggaagaata 600

ccggtggcga aggcgacttt ctggtcatca tctgacgctg aggtacgaaa gcgtgggtag 660

caaacaggat tagataccct ggtagtccac gctgtaaacg atgagtgtta ggttcttgga 720

ataatctggg agccgcagct aacgcattaa acactccgcc tggggagtac gcacgcaagt 780

gtgaaactca aaggaattga cggggacccg cacaagcagc ggagcatgtg gtttaattcg 840

acgcaacgcg aagaacctta ccaagtcttg acataatacg gagggaatta gagataattt 900

tctatgactt cggtctactg tattacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 960

agatgttggg ttaagtccca taacgagcgc aacccctatc gttagttacc atcattaagt 1020

tggggactct agcgatactg ccggtgataa accggaggaa ggtggggacg acgtcaaatc 1080

atcatgccct ttatgacttg ggctacacac gtgctacaat ggcagataca gagggcagcg 1140

aaagagcgat ctgaagcgaa actcacaaag tctgtcccag ttcggattgt actctgcaac 1200

tcgagtacat gaagttggag ttgctagtaa tcgcgaatca gaatgtcgcg gtgaatgcgt 1260

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt tggcaatacc cgaagcctgt 1320

gagcgaacct tttaggacgc agcagtcgaa ggtagggtca gtaactgggg tgaagtcgta 1380

acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1425

<210> 159
<211> 1035
<212> DNA
<213> Anaerofustis stercorihominis

<220>
<221> modified_base
<222> (868)..(868)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (940)..(941)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (956)..(956)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1004)..(1004)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1020)..(1021)
<223> a, c, t, g, unknown or other

<400> 159
gtcgaacgag aagcttacaa ttgatccttc gggtgaagct gtaagtggac agtggcgaac 60

gggtgagtaa cgcgtaggta accaacctca tgcaggggga tagcccaggg aaacttggat 120

taaacccgca taagaccaca gcaccgcatg gtgcagaggt aaaaactccg gtggcatgag 180

acggacctgc gtcttattag gtagttggtg aggtaacggc tcaccaagcc aacgatgagt 240

agccgacctg agagggtgat cggccacatt gggactgaga cacggcccag actcctacgg 300

gaggcagcag tggggaatat tgcgcaatgg ggggaaccct gacgcagcaa cgccgcgtga 360

gcgatgaagg ttttcggatc gtaaagctct gtctttgggg aagataatga cggtacccaa 420

ggaggaagct ccggctaact acgtgccagc agccgcggta atacgtaggg agcaagcgtt 480

gtccggattc actgggcgta aagagcacgt aggcggttaa ttaagtcagg tgtgaaagtt 540

ttcggctcaa ccggaaaagt gcacttgaaa ctgaataact tgagtatcgg agaggtaagc 600

ggaattccta gtgtagcggt gaaatgcgta gagattagga agaacaccgg tggcgaaggc 660

ggcttactgg acgataactg acgctgaggt gcgaaagcgt ggggagcgaa caggattaga 720

taccctggta gtccacgccg taaacgatga atactaggtg ttggggtaac tcagtgccgc 780

agttaacaca ttaagtattc cgcctgggga gtacgctcgc aagagtgaaa ctcaaaggaa 840

ttgacggggg cccgcacaag cagcgganca tgtggtttaa ttcgaagcaa cgcgaagaac 900

cttaccaggt cttgacatcc cttgaccgcc taagagattn nctttccttc gggacnagga 960

gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgtngggtta agtcccgcan 1020

nagcgcaacc cttat 1035

<210> 160
<211> 1316
<212> DNA
<213> Anaeroglobus geminatus

<400> 160
agagtttgat cctggctcag gacaacgctg gcggcgtgcg taacacatgc aagtcgaacg 60

agagagtgag agaagcttgc ttttcttaca atcgagtggc aaacgggtga gtaacgcgta 120

aacaacctgc cccgcagatg gggacaacag ctggaaacgg ctgctaatac cgaatacggt 180

cctcttagcg catggtaaga ggaagaaagg gtggcctctg gaacaagcta ccgctgtggg 240

aggggtttgc gtctgattag ctggttggag gggtaacggc ccaccaaggc gacgatcagt 300

agccggtctg agaggatgaa cggccacatt ggaactgaga cacggtccag actcctacgg 360

gaggcagcag tggggaatct tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga 420

gtgaagacgg ccttcgggtt gtaaagctct gttatagggg acgaacggcc gggtagcgaa 480

gagggagccg gcatgacggt accgtaagag aaagccacgg ctaactacgt gccagcagcc 540

gcggtaatac gtaggtggca agcgttgtcc ggaatgattg ggcgtaaagg gcgcttggcg 600

gctgtgtaag tctgtctaga aagtgcgggg ctaaaccccg tgagaggatg gaaactggac 660

agctgagagt gtcggagagg aaagcggaat tcctagtgta gcggtgaaat gcgtagatat 720

taggaggaac accggtggcg aaagcggctt tctggacgac aactgacgct gaggcgcgaa 780

agccagggga gcaaacggga ttagataccc cggtagtcct ggccgtaaac gatgggtact 840

aggtgtagga ggtatcgacc cctcctgtgc cggagttaac gcaataagta ccccgcctgg 900

ggagtacggc cgcaaggctg aaactcaaag gaattgacgg gggcccgcac aagcggtgga 960

gtatgtggtt taattcgacg caacgcgaag aaccttacca agccttgaca ttgctcgcaa 1020

cgggtagaga tacctggttc ttcttcggaa gacgagacaa caggtggtgc acggctgtcg 1080

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctatcttcag 1140

ttaccagcac gtagaggtgg ggactcagga gagactgccg cagacaatgc ggaggaaggc 1200

ggggacgacg tcaagtcatc atgcccctta tggcttgggc tacacacgta ctacaatggc 1260

tctaaataga gggaagcgaa ggagcgatcc ggagcaaacc ccgcaaacag agtccc 1316

<210> 161
<211> 1390
<212> DNA
<213> Anaerosporobacter mobilis

<400> 161
ggcggcgtgc ttaacacatg caagtcgaac gaagcaacta tcttgcttgc aagagagttg 60

acttagtggc ggacgggtga gtaacgcgtg ggtaacctgc ctcatacagg gggataacag 120

ttggaaacga ctgctaagac cgcataaccc gctagtgtcg catgacacgg acggaaaata 180

tttataggta tgagatgggc ccgcgtctga ttagctagtt ggtaaggtaa cggcttacca 240

aggcgacgat cagtagccga cttgagagag tgatcggcca cattgggact gagacacggc 300

ccaaactcct acgggaggca gcagtgggga atattggaca atgggggaaa ccctgatcca 360

gcgacgccgc gtgagtgaag aagtatttcg gtatgtaaag ctctatcagc agggaagata 420

atgacagtac ctgactaaga agccccggct aactacgtgc cagcagccgc ggtaatacgt 480

aggggcaag cgttatccgg atttactggg tgtaaaggga gcgtaggtgg catggcaagt 540

cagaagtgaa agcccagggc tcaaccctgg gactgctttt gaaactgtca agctagagtg 600

caggagaggt aagtggaatt cctagtgtag cggtgaaatg cgtagatatt aggaggaaca 660

ccagtggcga aggcggctta ctggactgta actgacactg aggctcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gccgtaaacg atgaatacta ggtgtctggg 780

attcgattct caggtgccga cgctaacgca ttaagtattc cacctgggga gtacgttcgc 840

aagaatgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca tgtggtttaa 900

ttcgaagcaa cgcgaagaac cttacctagt cttgacatcc cgatgaccgg actttaatcg 960

gtccttctct tcggagcatc ggagacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1020

agatgttggg ttaagtcccg caacgagcgc aacccctatc tttagtagcc agcatttaag 1080

gtgggcactc tagagagact gccagggata acctggagga aggtggggat gacgtcaaat 1140

catcatgccc cttatgacta gggctacaca cgtgctacaa tggtgataac aaagtgaagc 1200

agcctcgtga gagtgagcaa atcacaaaaa tgtcatctca gttcggattg tagtctgcaa 1260

ctcgactaca tgaagctgga atcgctagta atcgcgaatc agaatgtcgc ggtgaatacg 1320

ttcccgggtc ttgtacacac cgcccgtcac accatgggag ttggtaatgc ccgaagtcag 1380

tgacccaacc 1390

<210> 162
<211> 1539
<212> DNA
<213> Anaerostipes caccae

<400> 162
ttgaacatga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg aagcatttag gattgaagtt ttcggatgga tttcctatat gactgagtgg 120

cggacgggtg agtaacgcgt ggggaacctg ccctatacag gggggataac agctggaaac 180

ggctgctaat accgcataag cgcacagaat cgcatgattc agtgtgaaaa gccctggcag 240

tataggatgg tcccgcgtct gattagctgg ttggtgaggt aacggctcac caaggcgacg 300

atcagtagcc ggcttgagag agtgaacggc cacattggga ctgagacacg gcccaaactc 360

ctacgggagg cagcagtggg gaatattgca caatggggga aaccctgatg cagcgacgcc 420

gcgtgagtga agaagtattt cggtatgtaa agctctatca gcagggaaga aaacagacgg 480

tacctgacta agaagccccg gctaactacg tgccagcagc cgcggtaata cgtagggggc 540

aagcgttatc cggaattact gggtgtaaag ggtgcgtagg tggcatggta agtcagaagt 600

gaaagcccgg ggcttaaccc cgggactgct tttgaaactg tcatgctgga gtgcaggaga 660

ggtaagcgga attcctagtg tagcggtgaa atgcgtagat attaggagga acaccagtgg 720

cgaaggcggc ttactggact gtcactgaca ctgatgcacg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccgtaa acgatgaata ctaggtgtcg gggccgtaga 840

ggcttcggtg ccgcagcaaa cgcagtaagt attccacctg gggagtacgt tcgcaagaat 900

gaaactcaaa ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa 960

gcaacgcgaa gaaccttacc tggtcttgac atcccaatga gcgaacctta accggttttt 1020

tctttcgaga cattggagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaacga gcgcaacccc tatctttagt agccagcatt taaggtgggc 1140

actctagaga gactgccagg gataacctgg aggaaggtgg ggacgacgtc aaatcatcat 1200

gccccttatg gccagggcta cacacgtgct acaatggcgt aaacaaaggg aagcgaagtc 1260

gtgaggcgaa gcaaatccca gaaataacgt ctcagttcgg attgtagtct gcaactcgac 1320

tacatgaagc tggaatcgct agtaatcgtg aatcagaatg tcacggtgaa tacgttcccg 1380

ggtcttgtac acaccgcccg tcacaccatg ggagtcagta acgcccgaag tcagtgaccc 1440

aaccgcaagg agggagctgc cgaaggtggg accgataact ggggtgaagt cgtaacaagg 1500

tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1539

<210> 163
<211> 1344
<212> DNA
<213> Anaerostipes sp. 3_2_56FAA

<220>
<221> modified_base

<222> (25)..(25)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (44)..(44)
<223> a, c, t, g, unknown or other

<400> 163
cggatggatt tcctatatga ctgantggcg gacgggtgag taangcgtgg ggaacctgcc 60

ctatacaggg ggataacagc tggaaacggc tgctaatacc gcataagcgc acagaatcgc 120

atgattcagt gtgaaaagcc ctggcagtat aggatggtcc cgcgtctgat tagctggttg 180

gtgaggtaac ggctcaccaa ggcgacgatc agtagccggc ttgagagagt gaacggccac 240

attgggactg agacacggcc caaactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggggaaac cctgatgcag cgacgccgcg tgagtgaaga agtatttcgg tatgtaaagc 360

tctatcagca gggaagaaaa cagacggtac ctgactaaga agccccggct aactacgtgc 420

agcccggtaa cgggggcaag cgttatcgga attactgggt gtaaagggtg cgtaggtggc 480

atggtaagtc agaagtgaaa gcccggggct taaccccggg actgcttttg aaactgtcat 540

gctggagtgc aggagaggta agcggaattc ctagtgtagc ggtgaaatgc gtagatatta 600

ggaggaacac cagtggcgaa ggcggcttac tggactgtca ctgacactga tgcacgaaag 660

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgaatactag 720

gtgtcggggc cgtagaggct tcggtgccgc agcaaacgca gtaagtattc cacctgggga 780

gtacgttcgc aagaatgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca 840

tgtggtttaa ttcgaagcaa cgcgaagaac cttacctggt cttgacatcc caatgaccga 900

accttaaccg gttttttctt tcgagacatt ggagacaggt ggtgcatggt tgtcgtcagc 960

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctatc tttagtagcc 1020

agcattacgg atgggcactc tagagagact gccagggata acctggagga aggtggggac 1080

gacgtcaaat catcatgccc cttatggcca gggctacaca cgtgctacaa tggcgtaaac 1140

aaagggaagc gaagtcgtga ggcgaagcaa atcccagaaa taacgtctca gttcggattg 1200

tagtctgcaa ctcgactaca tgaagctgga atcgctagta atcgtgaatc agaatgtcac 1260

ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accatgggag tcagtaacgc 1320

ccgaagtcag tgacccaacc gcaa 1344

<210> 164
<211> 1360
<212> DNA
<213> Anaerotruncus colihominis

<400> 164
cttacgtttt gaagttttcg gatggatgaa tgtaagctta gtggcggacg ggtgagtaac 60

acgtgagcaa cctgcctttc agaggggat aacagccgga aacggctgct aataccgcat 120

gatgttgcgg gggcacatgc ccctgcaacc aaaggagcaa tccgctgaaa gatgggctcg 180

cgtccgatta gccagttggc ggggtaacgg cccaccaaag cgacgatcgg tagccggact 240

gagaggttga acggccacat tgggactgag acacggccca gactcctacg ggaggcagca 300

gtgggggata ttgcacaatg ggcgaaagcc tgatgcagcg acgccgcgtg agggaagacg 360

gtcttcggat tgtaaacctc tgtctttggg gaagaaaatg acggtaccca aagaggaagc 420

tccggctaac tacgtgccag cagcgcggta atacgtaggg agcaagcgtt gtccggaatt 480

actgggtgta aagggagcgt aggcgggatg gcaagtagaa tgttaaatcc atcggtcaac 540

cggtggctgc gttctaaact gccgttcttg agtgaagtag aggcaggcgg aattcctagt 600

gtagcggtga aatgcgtaga tattaggagg aacaccagtg gcgaaggcgg cctgctgggc 660

tttaactgac gctgaggctc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 720

ccacgccgta aacgatgatt actaggtgtg gggggactga ccccttccgt gccgcagtta 780

acacaataag taatccacct ggggagtacg gccgcaaggt tgaaactcaa aggaattgac 840

gggggcccgc acaagcagtg gagtatgtgg tttaattcga agcaacgcga agaaccttac 900

caggtcttga catcggatgc atagcctaga gataggtgaa gcccttcggg gcatccagaa 960

aggtggtgca tgagtgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1020

gcgcaaccct tattattagt tgctacgcaa gagcactcta atgagactgc cgttgacaaa 1080

acggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg gctacacacg 1140

tactacaatg gcactaaaac agagggcggc gacaccgcga ggtgaagcga atcccgaaaa 1200

agtgtctcag ttcagattgc aggctgcaac ccgcctgcat gaagtcggaa ttgctagtaa 1260

tcgcggatca gcatgccgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca 1320

ccatgggagt cggtaacacc cgaagccagt agcctaaccg 1360

<210> 165
<211> 1505
<212> DNA
<213> Anaplasma marginale

<400> 165
tcaaacttga gagtttgatc ctggctcaga acgaacgctg gcggcaagct taacacatgc 60

aagtcgaacg gaccgtatac gcagcttgct gcgtgtatgg ttagtggcag acgggtgagt 120

aatgcatagg aatctaccta gtagtatggg atagccacta gaaatggtgg gtaatactgt 180

ataatccctg cgggggaaag atttatcgct attagatgag cctatgtcag attagctagt 240

tggtggggta atggcctacc aaggcggtga tctgtagctg gtctgagagg atgatcagcc 300

acactggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg aatattggac 360

aatgggcgca agcctgatcc agctatgccg cgtgagtgag gaaggcctta gggttgtaaa 420

actctttcag tagggaagat aatgacggta cctacagaag aagtcccggc aaactccgtg 480

ccagcagccg cggtaatacg gagggggcaa gcgttgttcg gaattattgg gcgtaaaggg 540

catgtaggcg gtttggtaag ttaaaggtga aataccaggg cttaaccctg gggctgcttt 600

taatactgca ggactagagt ccggaagagg atagcggaat tcctagtgta gaggtgaaat 660

tcgtagatat taggaggaac accagtggcg aaggcggctg tctggtccgg tactgacgct 720

gaggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgctgtaaac 780

gatgagtgct gaatgtgggg gcttttgcct ctgtgttgta gctaacgcgt taagcactcc 840

gcctggggac tacggtcgca agactaaaac tcaaaggaat tgacggggac ccgcacaagc 900

ggtggagcat gtggtttaat tcgatgcaac gcgaaaaacc ttaccacttc ttgacatgga 960

ggctagatcc ttcttaacag aagggcgcag ttcggctggg cctcgcacag gtgctgcatg 1020

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctca 1080

tccttagtta ccagcgggta atgccgggca ctttaaggaa actgccagtg ataaactgga 1140

ggaaggtggg gatgatgtca agtcagcacg gcccttatgg ggtgggctac acacgtgcta 1200

caatggcgac tacaataggt tgcaacgtcg caaggctgag ctaatccgta aaagtcgtct 1260

cagttcggat tgtcctctgt aactcgaggg catgaagtcg gaatcgctag taatcgtgga 1320

tcagcatgcc acggtgaata cgttctcggg tcttgtacac actgcccgtc acgccatggg 1380

aattggctta actcgaagct ggtgcgccaa ccgtaaggag gcagccattt aaggttgggt 1440

cggtgactgg ggtgaagtcg taacaaggta gctgtaggtg aacctgcggc tggattacct 1500

ccttt 1505

<210> 166
<211> 1508
<212> DNA
<213> Anaplasma phagocytophilum

<400> 166
tcaaacttga gagtttgatc ctggctcaga acgaacgctg gcggcaagct taacacatgc 60

aagtcgaacg gattattctt tatagcttgc tataaagaat agttagtggc agacgggtga 120

gtaatgcata ggaatctacc tagtagtatg ggatagccac tagaaatggt gggtaatact 180

gtataatccc tgcgggggaa agatttatcg ctattagatg agcctatgtt agattagcta 240

gttggtaggg taaaggccta ccaaggcgat gatctatagc tggtctgaga ggatgatcag 300

ccacactgga actgagatac ggtccagact cctacgggag gcagcagtgg ggaatattgg 360

acaatgggcg caagcctgat ccagctatgc cgcgtgagtg aggaaggcct tagggttgta 420

aaactctttc agtagggaag ataatgacgg tacctacaga agaagtcccg gcaaactccg 480

tgccagcagc cgcggtaata cggagggggc aagcgttgtt cggaattatt gggcgtaaag 540

ggcatgtagg cggttcggta agttaaaggt gaaatgccag ggcttaaccc tggagctgct 600

tttaatactg ccagactaga gtccgggaga ggatagcgga attcctagtg tagaggtgaa 660

attcgtagat attaggagga acaccagtgg cgaaggcggc tatctggtcc ggtactgacg 720

ctgaggtgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgctgtaa 780

acgatgagtg ctgaatgtgg ggatttttta tctctgtgtt gtagctaacg cgttaagcac 840

tccgcctggg gactacggtc gcaagactaa aactcaaagg aattgacggg gacccgcaca 900

agcggtggag catgtggttt aattcgatgc aacgcgaaaa accttaccac tccttgacat 960

ggagattaga tccttcttaa cggaagggcg cagttcggct ggatctcgca caggtgctgc 1020

atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgtaaccc 1080

tcatccttag ttgccagcgg gttaagccgg gcactttaag gaaactgcca gtggtaaact 1140

ggaggaaggt ggggatgatg tcaagtcagc acggccctta tggggtgggc tacacacgtg 1200

ctacaatggt gactacaata ggttgcaatg tcgcaaggct gagctaatcc gtaaaagtca 1260

tctcagttcg gattgtcctc tgcaactcga gggcatgaag tcggaatcgc tagtaatcgt 1320

ggatcagcat gccacggtga atacgttctc gggtcttgta cacactgccc gtcacgccat 1380

gggaattggc ttaactcgaa gctggtgcgc caaccgaaag gaggcagcca tttaaggttg 1440

ggtcagtgac tagggtgaag tcgtaacaag gtagctgtag gtgaacctgc ggctggatta 1500

cctccttt 1508

<210> 167
<211> 1393
<212> DNA
<213> Aneurinibacillus aneurinilyticus

<400> 167
gtcgagcgga ccaaagaaga gcttgctctt cggcggttag cggcggacgg gtgagtaaca 60

cgtaggcaac ctgcctgtac gactgggata actccgggaa accggagcta ataccggata 120

cgtttttcag accgcatggt ctgaaagaga aagacctttg gtcacgtaca gatgggcctg 180

cggcgcatta gctagttggt ggggtaacgg cctaccaagg cgacgatgcg tagccgacct 240

gagagggtga tcggccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtagggaatc ttccgcaatg gacgaaagtc tgacggagca acgccgcgtg aacgatgaag 360

gttttcggat cgtaaagttc tgttgttagg gaagaaccgc cgggatgacc tcccggtctg 420

acggtaccta acgagaaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg 480

gggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg caggcggctt cttaagtcag 540

gtgtgaaagc ccacggtcaa ccgtggaggg ccacttgaaa ctgggaggct tgagtgcagg 600

agaggagagc ggaattccac gtgtagcggt gaaatgcgta gagatgtgga ggaacacccg 660

tggcgaaggc ggctctctgg cctgtaactg acgctgagcg cgaaagcgtg gggagcgaac 720

aggattagat accctggtag tccacgccgt aaacgttgag tgctaggtgt tggggactcc 780

aatcctcagt gccgcagcta acgcaataag cactccgcct ggggagtacg gccgcaaggc 840

tgaaactcaa aggaattgac ggggacccgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcga agaaccttac cagggcttga catcccgctg accctcctag agataggagc 960

tctcttcgga gcagcggtga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1020

ttgggttaag tcccgcaacg agcgcaaccc ttgtccttag ttgccagcat tcagttgggc 1080

actctaggga gactgccgtc gacaagacgg aggaaggtgg ggatgacgtc aaatcatcat 1140

gcccccttatg tcctgggcta cacacgtgct acaatggatg gaacaacggg cagccaactc 1200

gcgagagtgc gccaatccct taaaaccatt ctcagttcgg attgcaggct gcaactcgcc 1260

tgcatgaagc cggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg 1320

ggtcttgtac acaccgcccg tcacaccacg agagtttgca acacccgaag tcggtgaggt 1380

aaccgcaagg agc 1393

<210> 168
<211> 1417
<212> DNA
<213> Aneurinibacillus danicus

<220>
<221> modified_base
<222> (809)..(809)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1245)..(1245)
<223> a, c, t, g, unknown or other

<400> 168
cgaacgctgg cggcgtgcct aatacatgca agtcgagcgg accaacggag agcttgctct 60

cctgcggtca gcggcggacg ggtgagtaac acgtaggcaa cctgcctgta cgaccgggat 120

aactccggga aaccggagct aataccggat aggatttcag accgcatggt ttggaatgga 180

aagaccctgt gtcacgtaca gatgggcctg cggcgcatta gctagttggt ggggtaacgg 240

cctaccaagg cgacgatgcg tagccgacct gagagggtga acggccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtagggaatc ttccgcaatg gacgaaagtc 360

tgacggagca acgccgcgtg aacgaagaag gttttcggat cgtaaagttc tgttgttagg 420

gaagaaccgc cgggataacc tcccggtctg acggtaccta acgagaaagc cccggctaac 480

tacgtgccag cagccgcggt aatacgtagg gggcaagcgt tgtccggaat tattgggcgt 540

aaagcgcgcg caggcggctt cttaagtcag gtgtgaaagc ccacggctca accgtggagg 600

gccacttgaa actgggaggc ttgagtgcag gagaggagag cggaattcca cgtgtagcgg 660

tgaaatgcgt agagatgtgg aggaacacct gtggcgaagg cggctctctg gcctgtaact 720

gacgctgagg cgcgaaagcg tggggagcga acaggattag ataccctggt agtccacgcc 780

gtaaacgatg agtgctaggt gttggggtnt ccaaacctca gtgccgcagc taacgcaata 840

agcactccgc ctggggagta cggccgcaag gctgaaactc aaaggaattg acggggaccc 900

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accagggctt 960

gacatcccgc tgacccctct agagatagag gcttccttcg ggacagcggt gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttgtcctt agttgccagc attcagttgg gcactctagg gagactgccg tcgacaagac 1140

ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtcctgggc tacacacgtg 1200

ctacaatgga tggaacaacg ggcagccaac tcgcgagagt gagcnaatcc cttaaaacca 1260

ttctcagttc ggattgcagg ctgcaactcg cctgcatgaa gccggaatcg ctagtaatcg 1320

cggatcagca tgccgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcacacca 1380

cgagagtttg caacacccga agtcggtgag gtaacct 1417

<210> 169
<211> 1483
<212> DNA
<213> Aneurinibacillus migulanus

<400> 169
aggacgaacg ctggcggcgt gcctaataca tgcaagtcga gcggaccaat gaagagcttg 60

ctcttcggcg gttagcggcg gacgggtgag taacacgtag gcaacctgcc tgtacgactg 120

ggataactcc gggaaaccgg agctaatacc ggatacttct ttcagaccgc atggtctgaa 180

agagaaagac ctttggtcac gtacagatgg gcctgcggcg cattagctag ttggtggggt 240

aacggcctac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttccg caatggacga 360

aagtctgacg gagcaacgcc gcgtgaacga tgaaggtttt cggatcgtaa agttctgttg 420

ttagggaaga accgccggga tgacctcccg gtctgacggt acctaacgag aaagccccgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggggggca agcgttgtcc ggaattattg 540

ggcgtaaagc gcgcgcaggc ggcttcttaa gtcaggtgtg aaagcccacg gctcaaccgt 600

ggagggccac ttgaaactgg gaagcttgag tgcaggagag gagagcggaa ttccacgtgt 660

agcggtgaaa tgcgtagaga tgtggaggaa cacccgtggc gaaggcggct ctctggcctg 720

taactgacgc tgaggcgcga aagcgtgggg agcgaacagg attagatacc ctggtagtcc 780

acgccgtaaa cgttgagtgc taggtgttgg ggactccaat cctcagtgcc gcagctaacg 840

caataagcac tccgcctggg gagtacggcc gcaaggctga aactcaaagg aattgacggg 900

gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccag 960

ggcttgacat cccgctgacc ctcctagaga taggagctct cttcggagca gcggtgacag 1020

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1080

gcaacccttg tccttagttg ccagcattta gttgggcact ctagggagac tgccgtcgac 1140

aagacggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtcc tgggctacac 1200

acgtgctaca atggatggaa caacgggcag ccaactcgcg agagtgcgcg aatcccttaa 1260

aaccattctc agttcggatt gcaggctgca actcgcctgc atgaagccgg aatcgctagt 1320

aatcgcggat cagcatgccg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca 1380

caccacgaga gtttgcaaca cccgaagtcg gtgaggtaac cgcaaggagc cagccgccga 1440

aggtggggca gatgattggg gtgaagtcgt aacaaggtat ccg 1483

<210> 170
<211> 1415
<212> DNA

<213> Aneurinibacillus terranovensis

<400> 170
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc ggacytttaa aagcttgctt 60

ttaaaggtta gcggcggacg ggtgagtaac acgtgggcaa cctgcctgta agctcgggat 120

aactccggga aaccggagct aataccgaat acgattcgca accgcatggt tgcgaatgga 180

aagttttcga acacttacag atgggcccgc ggcgcattag ctggttggtg gggtaacggc 240

ctaccaaggc gacgatgcgt agccgacctg agagggtgat cggccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tagggaatct tccgcaatgg acgaaagtct 360

gacggagcaa cgccgcgtga gcgatgaagg ttttcggatc gtaaagctct gttgtcaggg 420

aagaaccgcc gggacgacct cccggtctga cggtacctga cgagaaagcc ccggctaact 480

acgtgccagc agccgcggta atacgtaggg ggcaagcgtt gtccggaatt attgggcgta 540

aagcgcgcgc aggcggcctt ttaagtcagg tgtgaaagcc cgcggctcaa ccgtggaggg 600

ccacctgaaa ctgggaggct tgagtgcagg agaggagagc ggaattccac gtgtagcggt 660

gaaatgcgta gagatgtgga ggaacacccg tggcgaaggc ggctctctgg cctgtaactg 720

acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg 780

taaacgatga gtgctaggtg ttggggactc caatcctcag tgccgcagct aacgcaataa 840

gcactccgcc tggggagtac ggccgcaagg ctgaaactca aaggaattga cggggacccg 900

cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaggacttg 960

acatcccgct gacccctcta gagatagagg ctcccttcgg ggcagcggtg acaggtggtg 1020

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cttgtccgta gttgccagca ttgagttggg cactctacgg agactgccgt cgacaagacg 1140

gaggaaggtg gggatgacgt caaatcatca tgccccttat gtcctgggct acacacgtgc 1200

tacaatggat ggtacaacgg gccgccagct cgcgagagtg agcgaatccc taaaaaccat 1260

tctcagttcg gattgcaggc tgcaactcgc ctgcatgaag ccggaatcgc tagtaatcgc 1320

ggatcagcat gccgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccac 1380

gagagtttgc aacacccgaa gtcggtgagg taacc 1415

<210> 171
<211> 1219
<212> DNA
<213> Aneurinibacillus thermoaerophilus

<400> 171
ttcctgaggt tagcggcgga cgggtgagta acacgtaggc aacctgcctg tacgaccggg 60

ataactccgg gaaaccggag ctaataccgg ataggatgcc gaaccgcatg gttcggcatg 120

gaaaggcctt tgagccgcgt acagatgggc ctgcggcgca ttagctagtt ggtggggtaa 180

cggcctacca aggcgacgat gcgtagccga cctgagaggg tgaacggcca cactgggact 240

gagacacggc ccagactcct acgggaggca gcagtaggga atcttccgca atggacgaaa 300

gtctgacgga gcaacgccgc gtgagtgagg aaggtcttcg gatcgtaaaa ctctgttgtc 360

agggaagaac cgccgggatg acctcccggt ctgacggtac ctgacgagaa agccccggct 420

aactacgtgc cagcagccgc ggtaatacgt aggggggcaag cgttgtccgg aattattggg 480

cgtaaagcgc gcgcaggcgg cttcttaagt caggtgtgaa agcccacggc tcaaccgtgg 540

agggccatct gaaactgggg agcttgagtg cagaaggaga gcggaattcc acgtgtacgg 600

tgaaatgcgt aagatgtgga ggaacaccag tggcgaaggc ggctctctgg cctgtaactg 660

acgtgaggcg cgaaagcgtg gggagcaaac aggattaata ccctggtagt cacccgtaaa 720

cgatgagtgc taggtgttgg ggagtccacc tcctcagtgc gcataacgca ataacactcc 780

cctgggagta cgccgcaagg ctgaaactca aaggaattga cggggacccg cacaagcggt 840

ggagcatgtg gtttaattta agcaacgcga aaaccttacc agggcttgac atcccgctga 900

cccctccaga gatggaggtt tccttcggga cagcggtgac aggtggtgca tggttgtcgt 960

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcctttgt 1020

tgccagcatt cagttgggca ctctaaggag actgccgtcg acaagacgga ggaaggtggg 1080

gatgacgtca aatcatcatg ccccttatgt cctgggctac acacgtgcta caatggacgg 1140

tacaacgggc gtgccaaccc gcgagggtga gccaatccct aaaaaccgtt ctcagttcgg 1200

attgcaggct gcaactcgc 1219

<210> 172
<211> 1541
<212> DNA
<213> Anoxybacillus contaminans

<400> 172
ttagaggttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcggaccgaa aagaagcttg cttcgattcg gttagcggcg gacgggtgag taacacgtgg 120

gcaacctgcc ctgtagacgg ggataacacc gagaaatcgg tgctaatacc ggataacacg 180

aaakgycgca tggyctttcg ttgaaaggcg gcgcaagctg tcgctacagg atgggcccgc 240

ggcgcattag ctagttggtg aggtaacggc tcaccaaggc gacgatgcgt agccgacctg 300

agagggtgat cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg acgaaagtct gacggagcaa cgccgcgtga gcgaagaagg 420

tcttcggatt gtaaagctct gttgttaggg aagaacaagt accgcagtaa ctggcggtac 480

cttgacggta cctaacgaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttgtccg gaattattgg gcgtaaagcg cgcgcaggcg gtcctttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactggg ggacttgagt 660

gcagaagagg agagcggaat tccacgtgta gcggtgaaat gcgtagagat gtggaggaac 720

accagtggcg aaggcggctc tctggtctgt aactgacgct gaggcgcgaa agcgtgggga 780

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttaga 840

ggggttacac cctttagtgc tgtagctaac gcattaagca ctccgcctgg ggagtacgct 900

cgcaagagtg aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca ggtcttgaca tcccttgaca acccaagaga 1020

ttgggcgttc cccttcgggg gacaaggtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgaccttag ttgccagcat 1140

tgagttgggc actctaaggt gactgccgat gacaaatcgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gcccccttatg acctgggcta cacacgtgct acaatgggcg gtacaaaggg 1260

ttgcaaaccc gcgaggggga gccaatccca aaaagccgct ctcagttcgg attgcaggct 1320

gcaactcgcc tgcatgaagc cggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa 1380

tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgca acacccgaag 1440

tcggtgaggt aacccttacg ggagccagcc gccgaaggtg gggcagatga ttggggtgaa 1500

gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc a 1541

<210> 173
<211> 1405
<212> DNA
<213> Anoxybacillus flavithermus

<220>
<221> modified_base
<222> (12)..(12)
<223> a, c, t, g, unknown or other

<400> 173
gcggacgaat cnaaagcttg cttttgattc gttagcggcg gacgggtgag taacacgtgg 60

gcaacctgcc ctgtagacgg ggataacacc gagaaatcgg tgctaatacc ggataacacg 120

aaatgtcgca tgacgtttcg ttgaaagacg gcgcaagctg tcgctacagg atgggcccgc 180

ggcgcattag ctagttggtg aggtaacggc tcaccaaggc gacgatgcgt agccgacctg 240

agagggtgat cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tagggaatct tccgcaatgg acgaaagtct gacggagcaa cgccgcgtga gcgaagaagg 360

ccttcgggtc gtaaagctct gttgttaggg aagaacaagt aacgcagtaa ctggcgttac 420

cgtgacggta cctaacgaga aagccacggc taactacgtg ccagcagccg cggtaatacg 480

taggtggcaa gcgttgtccg gaattattgg gcgtaaagcg cgcgcaggcg gttccttaag 540

tctgatgtga aagccacggc tcaaccgtgg agggtcattg gaaactgggg gacttgagtg 600

cagaagagga gagcggaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca 660

ccagtggcga aggcggctct ctggtctgta actgacgctg aggcgcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgtaa gtgttagagg 780

gtatccgccc tttagtgctg tagctaacgc attaagcact ccgcctgggg agtacgctcg 840

caagagtgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgaagaa ccttaccaag tcttgacatc ccctgacaac ccgagagatc 960

gggcgttccc ccttcggggg gacagggtga caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgaccttag ttgccagcat 1080

tcagttgggc actctaaggt gactgccggc taaaagtcgg aggaaggtgg ggatgacgtc 1140

aaatcatcat gcccccttatg acctgggcta cacacgtgct acaatgggcg gtacaaaggg 1200

tcgcgaaccc gcgaggggga gccaatccca aaaagccgct ctcagttcgg attgcaggct 1260

gcaactcgcc tgcatgaagc cggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa 1320

tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgca acacccgaag 1380

tcggtgaggt aacccttacg ggagc 1405

<210> 174
<211> 1483
<212> DNA
<213> Arcanobacterium haemolyticum

<220>
<221> modified_base
<222> (679)..(679)
<223> a, c, t, g, unknown or other

<400> 174
cgaacgctgg cggcgtgctt aacacatgca agtcgaacga tgaaggctcc tgcttgcggg 60

ggttggatta gtggcgaacg ggtgagtaat acgtgagtaa cctgcccctt tctcttggga 120

taagccttgg aaacgaggtc taatactaga tattctgctt ctgccgcatg gtgggggttg 180

gaaaggtttt ttctggtggg ggatgggctc acggcctatc agcttgttgg tggggtgatg 240

gcctaccaag gcgtcgacgg gtagccggcc tgagagggtg accggccaca ttgggactga 300

gatacggccc agactcctac gggaggcagc agtggggaat attgcacaat ggacggaagt 360

ctgatgcagc gaacgccgcg tgggggatga aggctttcgg gttgtaaact ccttttaaca 420

ctgaacaagg cgaaagttga gggtaggtgt tgaataagcg ccggctaact acgtgccagc 480

agccgcggta atacgtaggg cgcgagcgtt gtccggaatt attgggcgta aagagctcgt 540

aggcggtttg tcgcgtctgc tgtgaaagac cggggcttaa ctccggggct gcagtgggta 600

cgggcaggct agagtgcggt aggggtaatt ggaattcctg gtgtagcggt ggaatgcgca 660

gatatcagga ggaacaccna tggcgaaggc aggttactgg gccgttactg acgctgagga 720

gcgaaagcat ggggagcgaa caggattaga taccctggta gtccatgccg taaacgttgg 780

gcactaggtg tggggccttt tccatgggtt ctgtaccgta gctaacgcat taagtgcccc 840

gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc 900

ggcggagcat gcggattaat tcgatgcaac gcgaagaacc ttaccaaggc ttgacataca 960

ccgggattat gcagagatgt gtgagtcttc ggactggtgt acaggtggtg catggttgtc 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgtcttgt 1080

gttgccagca cgttatggtg gggactcacg agagactgcc ggggttaact cggaggaagg 1140

tggggatgac gtcaaatcat catgcccctt atgtcttggg cttcacgcat gctacaatgg 1200

ctggtacaga gggttgcgag cttgtgaggg tgagcgaatc ccttaaagcc agtctcagtt 1260

cggattgggg tctgcaactc gaccccatga agtcggagtc gctagtaatc gcagatcagc 1320

caacgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg tcacgaaagt 1380

tggtaacacc cgaagcccgt ggcctaactc gtttgagggg gagcggacga aggtgggatt 1440

agccattggg acgaagtcgt aacaaggtag ccgtaccgga agg 1483

<210> 175
<211> 1293
<212> DNA
<213> Arcanobacterium pyogenes

<220>
<221> modified_base
<222> (921)..(921)
<223> a, c, t, g, unknown or other

<400> 175
catgcagtcg aacgatgaag ccggggcttt ttgttttggt ggattagtgg cgaacgggtg 60

agtaatacgt gagtaacctg cccttgtctt tgggataagc ctgggaaact gggtctaata 120

ccggatattc tgcttttgcc gcatggtggg ggttggaaag atttttgga tggggatggg 180

ctcacggcct atcagcttgt tggtggggtg atggcctacc aaggcgtcga cgggtagccg 240

gcctgagagg gtgaccggcc acattgggac tgagatacgg cccagactcc tacgggaggc 300

agcagtgggg aatattgcac aatggacgca agtctgatgc agcgacgccg cgtgggggat 360

gaaggctttc gggttgtaaa ctcctttcag tacagaagaa gcatttttgt gacggtatgt 420

gcagaagaag cgccggctaa ctacgtgcca gcagccgcgg taatacgtag ggcgcgagcg 480

ttgtccggaa ttattgggcg taaagagctc gtaggcggtt tgttgcgcct gctgtgaaag 540

accggggctt aacttcgggg ttgcagtggg tacgggcaga ctagagtgtg gtaggggtaa 600

ttggaattcc tggtgtagcg gtggaatgcg cagatatcag gaggaacacc gatggcgaag 660

gcaggttact gggccattac tgacgctgag gagcgaaagc gtgggtagcg aacaggatta 720

gataccctgg tagtccacgc tgtaaacgtt gggcactagg tgtggggcct tttccacggg 780

ttctgcgccg tagctaacgc tttaagtgcc ccgcctgggg agtacggccg caaggttaaa 840

actcaaggaa ttgacggggg cccgcacaag cggcggagca tgcggattaa ttcgatgcaa 900

cgcgaagaac cttaccaagg nttgacatac actgcgatgt gccagagatg tgcagccttc 960

gggtggtgta caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1020

tcccgcaacg agcgcaaccc ttgtcctgtg ttgccagcat gttgtggtgg ggactcacgg 1080

gagactgccg gggttaactc ggaggaaggt ggggatgacg tcaaatcatc atgccccttа 1140

tgtcttgggc ttcacgcatg ctacaatggc cggtacagag ggttgcgagc ctgtgagggt 1200

gagctaatcc cttaaagctg gtctcagttc ggattggggt ctgcaactcg accccatgaa 1260

gtcggagtcg ctagtaatcg cagatcagca acg 1293

<210> 176
<211> 1519
<212> DNA
<213> Arcobacter butzleri

<400> 176
tttatggaga gtttgatcct ggctcagagt gaacgctggc ggcgtgctta acacatgcaa 60

gtcgaacgag aacggattat agcttgctat aattgtcagc taagtggcgc acgggtgagt 120

aatgtatagg taatatgcct cttactaagg gataacaatt ggaaacgatt gctaatacct 180

tatattcctt tttatcaaaa gataaaaagg gaaagattta ttggtaagag attagcctgt 240

attgtatcag ttagttggtg gggtaatggc ctaccaagac gatgacgcat aactggtttg 300

agaggatgat cagtcacact ggaactgaga cacggtccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg acgaaagtct gatgcagcaa cgccgcgtgg aggatgacac 420

atttcggtgc gtaaactcct tttatataag aagataatga cggtattata tgaataagca 480

ccggctaact ccgtgccagc agccgcggta atacggaggg tgcaagcgtt actcggaatc 540

actgggcgta aagagcgtgt aggcggattg ataagtttga agtgaaatcc tatagcttaa 600

ctatagaact gctttgaaaa ctgttaatct agaatgtggg agaggtagat ggaatttctg 660

gtgtaggggt aaaatccgta gagatcagaa ggaataccga ttgcgaaggc gatctactgg 720

aacaatattg acgctgagac gcgaaagcgt ggggagcaaa caggattaga taccctggta 780

gtccacgccc taaacgatgt acactagttg ttgtgaggct cgaccttgca gtaatgcagt 840

taacacatta agtgtaccgc ctggggagta cggtcgcaag attaaaactc aaaggaatag 900

acggggaccc gcacaagcgg tggagcatgt ggtttaattc gacgatacac gaagaacctt 960

acctggactt gacatagtaa gaatgattta gagatagatt agtgtctgct tgcagaaact 1020

tgcatacagg tgctgcacgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caaccctcgt ccttagttgc taacagttcg gctgagaact ctaaggagac 1140

tgcctacgca agtaggagga aggtgaggat gacgtcaagt catcatggcc cttacgtcca 1200

gggctacaca cgtgctacaa tggggtatac aaagagcagc aatacggtga cgtggagcaa 1260

atctcaaaaa tgcctcccag ttcggattgt agtctgcaac tcgactacat gaagttggaa 1320

tcgctagtaa tcgtagatca gctatgctac ggtgaatacg ttcccgggtc ttgtactcac 1380

cgcccgtcac accatgggag ttgaactcat tcgaagcggg gatgctaaag tagctacctt 1440

ccacagtgga ttcagcgact ggggtgaagt cgtaacaagg taaccgtagg agaacctgcg 1500

gttggatcac ctcctttca 1519

<210> 177
<211> 1462
<212> DNA
<213> Arcobacter cryaerophilus

<220>
<221> modified_base

<222> (195)..(195)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (936)..(936)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1098)..(1098)
<223> a, c, t, g, unknown or other

<400> 177
atggagagtt tgatcctggc tcagagtgaa cgctggcggc gtgcttaaca catgcaagtc 60

gaacgagaac ggattatagc ttgctataat tgtcagctaa gtggcgcacg ggtgagtaat 120

gtataggtaa tatgcctctt actaagggat aacaattgga aacgattgct aataccttat 180

actccttgtt aactnaagtt aataagggaa agatttattg gtaagagatt agcctgtatt 240

gtatcagtta gttggtgggg taatggccta ccaagacaat gacacataac tggtttgaga 300

ggatgatcag tcacactgga actgagacac ggtccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatggacg aaagtctgat gcagcaacgc cgcgtggagg atgacacatt 420

tcggtgcgta aactcctttt atatgagaag ataatgacgg tattatatga ataagcaccg 480

gctaactccg tgccagcagc cgcggtaata cgggggggtgc aagcgttact cggaatcact 540

gggcgtaaag agcatgtagg cggattgata agtttgaagt gaaatcctat agcttaacta 600

tagaactgct ttgaaaactg ttaatctaga atgtgggaga ggtagatgga atttctggtg 660

taggggtaaa atccgtagag atcagaagga ataccgattg cgaaggcgat ctactggaac 720

attattgacg ctgagatgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc 780

cacgccctaa acgatgtaca ctagttgttg tgagacttga tcttgcagta atgcagttaa 840

cacattaagt gtaccgcctg gggagtacgg tcgcaagatt aaaactcaaa ggaatagacg 900

gggacccgca caagcggtgg agcatgtggt ttaatncgaa gatacacgaa gaaccttacc 960

tggacttgac atagtaagaa ctttctagag atagattggt gtctgcttgc agaaacttat 1020

atacaggtgc tgcacggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa ccctcgtntt tagttgctaa cagttcggct gagaactcta aacagactgc 1140

ctacgcaagt aggaggaagg tgaggacgac gtcaagtcat catggccctt acgtccaggg 1200

ctacacacgt gctacaatgg gatatacaaa gagccgcaat acggtgacgt ggagcaaatc 1260

ttataaaata tctcccagtt cggattgtag tctgcaactc gactacatga agttggaatc 1320

gctagtaatc gtagatcagc tatgctacgg tgaatacgtt cccgggtctt gtactcaccg 1380

cccgtcacac catgggagtc gaactcattc gaagcgggga tgctaaaata gctaccttcc 1440

acagtggatt tggcgactgg gg 1462

<210> 178
<211> 1482
<212> DNA

<213> Arthrobacter agilis

<400> 178
gatcctggct caggatgaac gctggcggcg tgcttaacac atgcaagtcg aacgatgaac 60

ctcacttgtg gggggattag tggcgaacgg gtgagtaaca cgtgagtaac ctgcccttga 120

ctctgggata agcctgggaa accgggtcta atactggata cgaccttctg gcgcatgcca 180

tgttggtgga aagcttttgt ggttttggat ggactcgcgg cctatcagct tgttggtggg 240

gtaatggcct accaaggcga cgacgggtag ccggcctgag agggtgaccg gccacactgg 300

gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc 360

gcaagcctga tgcagcgacg ccgcgtgagg gatgaaggcc ttcgggttgt aaacctcttt 420

cagtagggaa gaagcctgtc ttttgggtgg gtgacggtac ctgcagaaga agcgccggct 480

aactacgtgc cagcagccgc ggtaatacgt agggcgcaag cgttatccgg aattattggg 540

cgtaaagagc tcgtaggcgg tttgtcgcgt ctgccgtgaa agtccggggc ttaactccgg 600

atctgcggtg ggtacgggca gactagagtg cagtagggga gactggaatt cctggtgtag 660

cggtgaaatg cgcagatatc aggaggaaca ccgatggcga aggcaggtct ctgggctgta 720

actgacgctg aggagcgaaa gcatggggag cgaacaggat tagataccct ggtagtccat 780

gccgtaaacg ttgggcacta ggtgtggggg acattccacg ttttccgcgc cgtagctaac 840

gcattaagtg ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag gaattgacgg 900

gggcccgcac aagcggcgga gcatgcggat taattcgatg caacgcgaag aaccttacca 960

aggcttgaca tgaaccggaa tgatgcagag atgtgtcagc cacttgtggc cggtttacag 1020

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctcg ttccatgttg ccagcgggtt atgccgggga ctcatgggag actgccgggg 1140

tcaactcgga ggaaggtggg gacgacgtca aatcatcatg ccccttatgt cttgggcttc 1200

acgcatgcta caatggccgg tacaaagggt tgcgatactg tgaggtggag ctaatcccaa 1260

aaagccggtc tcagttcgga ttgaggtctg caactcgacc tcatgaagtt ggagtcgcta 1320

gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcaagtcacg aaagttggta acacccgaag ccggtggcct aacccccttgt gggagggagc 1440

cgtcgaaggt gggaccggcg attgggacta agtcgtaaca ag 1482

<210> 179
<211> 1519
<212> DNA
<213> Arthrobacter arilaitensis

<400> 179
ggagagtttg atcctggctc aggatgaacg ctggcggcgt gcttaacaca tgcaagtcga 60

acgatgaagc ccagcttgct gggtggatta gtggcgaacg ggtgagtaac acgtgagtaa 120

cctgcccccg actctgggat aagcccggga aactgggtct aataccggat attacctctt 180

gccgcatggc aggtggtgga aagatttatc ggtgggggat ggactcgcgg cctatcagct 240

tgttggtgag gtaatggctc accaaggcga cgacgggtag ccggcctgag agggtgaccg 300

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggc gaaagcctga tgcagcgacg ccgcgtgagg gatgacggcc ttcgggttgt 420

aaacctcttt cagtagggaa gaagcgaaag tgacggtacc tgcagaagaa gcgccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggcgcaagc gttatccgga tttattgggc 540

gtaaagagct cgtaggcggt ttgtcgcgtc tgccgtgaaa gtccgaggct caacctcgga 600

tctgcggtgg gtacgggcag actagagtga tgtaggggag actggaattc ctggtgtagc 660

ggtgaaatgc gcagatatca ggaggaacac cgatggcgaa ggcaggtctc tgggcattta 720

ctgacgctga ggagcgaaag catggggagc gaacaggatt agataccctg gtagtccatg 780

ccgtaaacgt tgggcactag gtgtggggga cattccacgt tttccgcgcc gtagctaacg 840

cattaagtgc cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg 900

ggcccgcaca agcggcggag catgcggatt aattcgatgc aacgcgaaga accttaccaa 960

ggcttgacat gtgccagacc gcttcagaga tggagtttcc cttcggggct ggttcacagg 1020

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caaccctcgt tccatgttgc cagcacgtag tggtggggac tcatgggaga ctgccggggt 1140

caactcggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgtc ttgggcttca 1200

cgcatgctac aatggccggt acaatgggtt gcgatactgt gaggtggagc taatccctaa 1260

aagccggtct cagttcggat tggggtctgc aactcgaccc catgaagtcg gagtcgctag 1320

taatcgcaga tcagcaacgc tgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

caagtcacga aagttggtaa cacccgaagc cgatggccta accaccttgt gtgggggggag 1440

tcgtcgaagg tgggactggc gattgggact aagtcgtaac aaggtagccg taccggaagg 1500

tgcggctgga tcacctcct 1519

<210> 180
<211> 1468
<212> DNA
<213> Arthrobacter bergerei

<400> 180
ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg atgaccccgt 60

gcttgcacgg gtgattagtg gcgaacgggt gagtaacacg tgagtaacct gcccctgact 120

ctgggataag cccgggaaac tgggtctaat actggatatg acctttaacc gcatggtttt 180

tggtggaaag atttatcggt tggggatgga ctcgcggcct atcagcttgt tggtgaggta 240

atggctcacc aaggcgacga cgggtagccg gcctgagagg gtgaccggcc acactgggac 300

tgagacacgg cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgaa 360

agcctgatgc agcgacgccg cgtgagggat gacggccttc gggttgtaaa cctctttcag 420

tagggaagaa gcgaaagtga cggtacctgc agaagaagcg ccggctaact acgtgccagc 480

agccgcggta atacgtaggg cgcaagcgtt atccggattt attgggcgta aagagctcgt 540

aggcggtttg tcgcgtctgc cgtgaaagtc cgaggctcaa cctcggatct gcggtgggta 600

cgggcagact agagtgatgt aggggagact ggaattcctg gtgtagcggt gaaatgcgca 660

gatatcagga ggaacaccga tggcgaaggc aggtctctgg gcatctactg acgctgagga 720

gcgaaagcat ggggagcgaa caggattaga taccctggta gtccatgccg taaacgttgg 780

gcactaggtg tggggaacat tccacgtttt ccgcgccgta gctaacgcat taagtgcccc 840

gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc 900

ggcggagcat gcggattaat tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgtt 960

ccagaccgcc tcagagatgg ggtttccctt cggggctggt tcacaggtgg tgcatggttg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccctcgttcc 1080

atgttgccag cacgtaaagg tggggactca tgggagactg ccggggtcaa ctcggaggaa 1140

ggtggggatg acgtcaaatc atcatgcccc ttatgtcttg ggcttcacgc atgctacaat 1200

ggccggtaca atgggttgcg atactgtgag gtggagctaa tccctaaaag ccggtctcag 1260

ttcggattgg ggtctgcaac tcgaccccat gaagtcggag tcgctagtaa tcgcagatca 1320

gcaacgctgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcaa gtcacgaaag 1380

ttggtaacac ccgaagccga tggcctaacc accttgtgtg gagggagtcg tcgaaggtgg 1440

gactggcgat tgggactaag tcgtaaca 1468

<210> 181
<211> 1464
<212> DNA
<213> Arthrobacter globiformis

<400> 181
cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac gatgatccgg 60

tgcttgcacc ggggattagt ggcgaacggg tgagtaacac gtgagtaacc tgcccttgac 120

tctgggataa gcctgggaaa ctgggtctaa taccggatat gactcctcat cgcatggtgg 180

ggggtggaaa gcttttgtgg ttttggatgg actcgcggcc tatcagcttg ttggtgaggt 240

aatggctcac caaggcgacg acgggtagcc ggcctgagag ggtgaccggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcga 360

aagcctgatg cagcgacgcc gcgtgaggga tgacggcctt cgggttgtaa acctctttca 420

gtagggaaga agcgaaagtg acggtacctg cagaagaagc gccggctaac tacgtgccag 480

cagccgcggt aatacgtagg gcgcaagcgt tatccggaat tattgggcgt aaagagctcg 540

taggcggttt gtcgcgtctg ccgtgaaagt ccggggctca actccggatc tgcggtgggt 600

acgggcagac tagagtgatg taggggagac tggaattcct ggtgtagcgg tgaaatgcgc 660

agatatcagg aggaacaccg atggcgaagg caggtctctg ggcattaact gacgctgagg 720

agcgaaagca tggggagcga acaggattag ataccctggt agtccatgcc gtaaacgttg 780

ggcactaggt gtgggggaca ttccacgttt tccgcgccgt agctaacgca ttaagtgccc 840

cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cggcggagca tgcggattaa ttcgatgcaa cgcgaagaac cttaccaagg cttgacatgg 960

accggaccgc cgcagaaatg tggtttctcc ttttggggcc ggttcacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctcgt 1080

tccatgttgc cagcgcgtaa tggcggggac tcatgggaga ctgccggggt caactcggag 1140

gaaggtgggg acgacgtcaa atcatcatgc cccttatgtc ttgggcttca cgcatgctac 1200

aatggccggt acaaagggtt gcgatactgt gaggtggagc taatcccaaa aagccggtct 1260

cagttcggat tggggtctgc aactcgaccc catgaagtcg gagtcgctag taatcgcaga 1320

tcagcaacgc tgcggtgaat acgttcccgg gccttgtaca caccgcccgt caagtcacga 1380

aagttggtaa cacccgaagc cggtggccta acccccttgtg ggagggagcc gtcgaaggtg 1440

ggactggcga ttgggactaa gtcg 1464

<210> 182
<211> 1472
<212> DNA
<213> Arthrobacter nicotianae

<220>
<221> modified_base
<222> (608)..(608)
<223> a, c, t, g, unknown or other

<400> 182
gatcctggct caggatgaac gctggcggcg tgcttaacac atgcaagtcg aacgatgaag 60

cccagcttgc tgggtggatt agtggcgaac gggtgagtaa cacgtgagta acctgccccc 120

gactctggga taagcccggg aaactgggtc taataccgga tatgacctcg caccgcatgg 180

tgcggggtgg aaagatttat cggtggggga tggactcgcg gcctatcagc ttgttggtga 240

ggtaatggct caccaaggcg acgacgggta gccggcctga gagggtgacc ggccacactg 300

ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg 360

cgcaagcctg atgcagcgac gccgcgtgag ggatgacggc cttcgggttg taaacctctt 420

tcagtaggga agaagcgaaa gtgacggtac ctgcagaaga agcgccggct aactacgtgc 480

cagcagccgc ggtaatacgt agggcgcaag cgttatccgg atttattggg cgtaaagagc 540

tcgtaggcgg tttgtcgcgt ctgccgtgaa agtccgaggc tcaacctcgg atctgcggtg 600

ggtacggnca gactagagtg atgtagggga gactggaatt cctggtgtag cggtgaaatg 660

cgcagatatc aggaggaaca ccgatggcga aggcaggtct ctgggcattt actgacgctg 720

aggagcgaaa gcatggggag cgaacaggat tagataccct ggtagtccat gccgtaaacg 780

ttgggcacta ggtgtggggg acattccacg ttttccgcgc cgtagctaac gcattaagtg 840

ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac 900

aagcggcgga gcatgcggat taattcgatg caacgcgaag aaccttacca aggcttgaca 960

tgtgccagac cgctccagag atggggtttc ccttcggggc tggttcacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg 1080

ttccatgttg ccagcacgta gtggtgggga ctcatgggag actgccgggg tcaactcgga 1140

ggaaggtggg gatgacgtca aatcatcatg ccccttatgt cttgggcttc acgcatgcta 1200

caatggccgg tacaatgggt tgcgatactg tgaggtggag ctaatcccta aaagccggtc 1260

tcagttcgga ttggggtctg caactcgacc ccatgaagtc ggagtcgcta gtaatcgcag 1320

atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagtcacg 1380

aaagttggta acacccgaag ccgatggcct aaccacttgt gtgggggagt cgtcgaaggt 1440

gggactggcg attgggacta agtcgtaaca ag 1472

<210> 183
<211> 1345
<212> DNA
<213> Atopobium minutum

<400> 183
tcaggatgaa cgctggcggc gcgcctaaca catgcaagtc gaacgattaa agcatctttt 60

agatgtgtat aaagtggcga acggctgagt aacacgtggg caacctgccc ttttctttgg 120

gatagctacg ggaaaccgtg ggtaataccg aatatttctt gagtgtcgca tggcacacaa 180

gacaaagcgt ctagcggaaa aggatgggcc cgcggcctgt tagcttgttg gtggggtaat 240

ggcctaccaa ggcagttatg ggtagccggg ttgagagacc gaccggccag attgggactg 300

agacacggcc cagactccta cgggaggcag cagtggggaa tcttgcgcaa tgggggaaac 360

cctgacgcag cgacgccgcg tgcgggatga aggccttcgg gttgtaaacc gctttcagca 420

gggacgaggc cgcaaggtga cggtacctgc agaagaagct ccggctaaat acgtgccagc 480

agccgcggta atacgtatgg agcaagcgtt atccggattc attgggcgta aagcgctcgt 540

aggcggtctg ttaggtcggt aagttaaatc cgggggctca acccccgtcc gcttccgata 600

ccggcagact tgagtttggt aggggaaggt ggaattccta gtgtagcggt ggaatgcgca 660

gatattagga agaacaccgg tggcgaaggc ggccttctgg gccataactg acgctgagga 720

gcgaaagcta ggggagcgaa caggattaga taccctggta gtcctagccg taaacgatgg 780

acactaggtg tgggggggatg taccttccgt gccgcagcta acgcattaag tgtcccgcct 840

ggggagtacg accgcaaggt taaaactcaa aggaattgac gggrgcccgc acaagcagcg 900

gagcatgtgg cttaattcga agcaacgcga agaaccttac cagggcttga catttaggtg 960

aagcggcgga aacgtcgtgg ccgaaaggag cctaaacagg tggtgcatgg ctgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttgt cgcatgttgc 1080

cagcaggtca agctgggcac ccgtgcgaga ccgccggcgt caagccggag gaaggtgggg 1140

acgacgtcaa gtcatcatgc cccttatgtc ctgggctgca cacgtgctac aatggtcggc 1200

acagcgggaa gcaaacttgc gaaagtaagc caatccctta aagccggccc cagttcggat 1260

tggaggctgc aacccgcctc catgaagtcg gagttgctag taatcgcgga tcagcacgcc 1320

gcggtgaatg cgttcccggg ccttg 1345

<210> 184
<211> 1517
<212> DNA
<213> Atopobium parvulum

<400> 184
atggagagtt cgatcctggc tcaggatgaa cgctggcggc gcgcctaaca catgcaagtc 60

gaacgattaa agcaccttcg ggtgtgtata aagtggcgaa cggctgagta acacgtgggc 120

aacctgcccc tttcattggg atagccacgg gaaaccgtgg ataataccga atacttcgag 180

acttccgcat ggaagactcg agaaagctcc ggcggagagg gatgggcccg cggcctgtta 240

gcttgttggt ggggtaacgg cctaccaagg caatgatggg tagctgggtt gagagaccga 300

ccagccagat tgggactgag acacggccca gactcctacg ggaggcagca gtggggaatc 360

ttgcacaatg ggcgaaagcc tgatgcagcg acgccgcgtg cgggatgaag gccttcgggt 420

tgtaaaccgc tttcagcagg gacgaggcga aagtgacggt acctgcagaa gaagccccgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggggcga agcgttatcc ggattcattg 540

ggcgtaaagc gctcgtaggc ggtctgttag gtcgggagtt aaatccgggg gctcaacccc 600

cgctcgctct cgataccggc agacttgagt ttggtagggg aaggtggaat tcctagtgta 660

gcggtggaat gcgcagatat taggaagaac accagtggcg aaggcggcct tctgggccat 720

aactgacgct gaggagcgaa agctagggga gcaaacagga ttagataccc tggtagtcct 780

agccgtaaac gatggacact aggtgtgggg gagtatttct tccgtgccgc agctaacgca 840

ttaagtgtcc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cagcggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggg 960

cttgacattt aggtgaagcg gcggaaacgt cgtggccgaa aggagcctaa acaggtggtg 1020

catggctgtc gtcagctcgt gtcgtgagat gttaggttaa gtcctgcaac gagcgcaacc 1080

ctcgtcgtat gttgccagcg gttaggccgg gcacccatac gagaccgccg gcgtcaagcc 1140

ggaggaaggt ggggacgacg tcaagtcatc atgcccctta tgtcctgggc tacacacgtg 1200

ctacaatggc cggcacaatg ggctgccaac ccgcgagggt gagcgaatcc ctaaagccgg 1260

tcccagttcg gattggaggc tgcaacccgc ctccatgaag tcggagttgc tagtaatcgc 1320

ggatcagcac gccgcggtga atgcgttccc gggccttgta cacaccgccc gtcacaccac 1380

ccgagtcgat tgcacccgaa gtcgtcggcc taaccttta ggagggagac gccgaaggtg 1440

tggttggtaa ggggggtgaa gtcgtaacaa ggtagccgta ccggaaggtg cggctggatc 1500

acctcctttc tagggag 1517

<210> 185
<211> 1518
<212> DNA
<213> Atopobium rimae

<400> 185

atggagagtt cgatcctggc tcaggatgaa cgctggcggc gcgcctaaca catgcaagtc 60

gaacggttaa agcacctttt aggtgtgtat aaagtggcga acggctgagt aacacgtggg 120

caacctgccc tcctcttggg gatagcctcg ggaaaccgag gataataccc gatacttcaa 180

tgtggccgca tgacgacatt gagaaagctt ttgcggagaa ggatgggccc gcggcctgtt 240

agcttgttgg tggggtagag gcctaccaag gcaatgatgg gtagctgggt tgagagaccg 300

accagccaga ttgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

cttgcacaat gggcgaaagc ctgatgcagc gacgccgcgt gcgggacgaa ggccttcggg 420

ttgtaaaccg ctttcagcag ggacgaggcg aaagtgacgg tacctgcaga agaagccccg 480

gctaactacg tgccagcagc cgcggtaata cgtaggggcc aagcgttatc cggattcatt 540

gggcgtaaag cgctcgtagg cggtctgtta ggtcgggagt taaatccgga ggctcaacct 600

ccgcccgctc ccgataccgg cagacttgag tttggtaggg gaaggtggaa ttcctagtgt 660

agcggtggaa tgcgcagata ttaggaagaa caccagtggc gaaggcggcc ttctgggcca 720

taactgacgc tgaggagcga aagctagggg agcaaacagg attagatacc ctggtagtcc 780

tagctgtaaa cgatggacac taggtgtggg agaatacgtc ttccgtgccg cagctaacgc 840

attaagtgtc ccgcctgggg agtacggccg caaggctaaa actcaaagga attgacgggg 900

acccgcacaa gcagcggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg 960

gcttgacatg taggtgaagc ggcggaaacg tcgtggccga aaggagccta cacaggtggt 1020

gcatggctgt cgtcagctcg tgtcgtgaga tgttaggtta agtcctgcaa cgagcgcaac 1080

cctcgtcgta tattgccagc ggttcggccg ggcacctata cgagaccgcc ggcgtcaagc 1140

cggaggaagg tggggacgac gtcaagtcat catgcccctt atgtcctggg ctacacacgt 1200

gctacaatgg ccggcacaat gagctgccaa cccgcaaggg cgagcgaatc tctaaagccg 1260

gtcccagttc ggattggagg ctgcaacccg cctccatgaa gtcggagttg ctagtaatcg 1320

cggatcagca cgccgcggtg aatgcgttcc cgggtcttgt acacaccgcc cgtcacacca 1380

cccgagtcga ttgcacccga agtcgtcggc ctaacctttt aggagggaga cgccgaaggt 1440

gtggttggta agggggggtga agtcgtaaca aggtagccgt accggaaggt gcggctggat 1500

cacctccttt ctagggag 1518

<210> 186
<211> 1355
<212> DNA
<213> Atopobium sp. BS2

<400> 186
aaagcacctt cgggtgtgta taaagtggcg aacggctgag taacacgtgg gcaacctgcc 60

cctctcattg ggatagccac gggaaaccgt ggataatacc gaatacttcg agacttccgc 120

atggaagact cgagaaagct ccggcggaga gggatgggcc cgcggcctgt tagcttgttg 180

gtggggtaac ggcctaccaa ggcaatgatg ggtagctggg ttgagagacc gaccagccag 240

attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa tcttgcacaa 300

tgggcgaaag cctgatgcag cgacgccgcg tgcgggatga aggccttcgg gttgtaaacc 360

gctttcagca gggacgaggc gaaagtgacg gtacctgcag aagaagcccc ggctaactac 420

gtgccagcag ccgcggtaat acgtaggggg caagcgttat ccggattcat tgggcgtaaa 480

gcgctcgtag gcggtctgtt aggtcgggag ttaaatccgg gggctcaacc cccgttcgct 540

cccgataccg gcagacttga gtttggtagg ggaaggtgga attcctagtg tagcggtgga 600

atgcgcagat attaggaaga acaccagtgg cgaaggcggc cttctgggcc ataactgacg 660

ctgaggagcg aaagctaggg gagcaaacag gattagatac cctggtagtc ctagccgtaa 720

acgatggaca ctaggtgtgg gggaatattt cttccgtgcc gcagctaacg cattaagtgt 780

cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca 840

agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccag ggcttgacat 900

ttaggtgaag cggcggaaac gtcgtggccg aaaggagcct aaacaggtgg tgcatggctg 960

tcgtcagctc gtgtcgtgag atgttaggtt aagtcctgca acgagcgcaa ccctcgtcgt 1020

atgttgccag cggttaggcc gggcacccat acgagaccgc cggcgtcaag ccggaggaag 1080

gtggggacga cgtcaagtca tcatgcccct tatgtcctgg gctacacacg tgctacaatg 1140

gccggcacaa tgggctgcca acccgcgagg gtgagcgaat ccctaaagcc ggtcccagtt 1200

cggattggag gctgcaaccc gcctccatga agtcggagtt gctagtaatc gcggatcagc 1260

acgccgcggt gaatgcgttc ccgggccttg tacacaccgc ccgtcacacc acccgagtcg 1320

attgcacccg aagtcgtcgg cctaaccttt tagga 1355

<210> 187
<211> 1487
<212> DNA
<213> Atopobium sp. F0209

<400> 187
gagtttgatc ctggctcagg atgaacgctg gcggcacgct taacacatgc aagtcgaacg 60

attaaagcac cttcgggtgt gtatagagtg gcgaacggct gagtaacacg tgggcaacct 120

gcccttcagt ttggaatagc tacgggaaac cgtgggtaat accggatgat ccacttccct 180

cgcatgaagg aagtggcaaa gatttatcgc tgaaggatgg gcccgcggcc tgttagcttg 240

ttggtgaggt aacggctcac caaggcagta atgggtagcc gggttgagag accgaccggc 300

cagattggga ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatcttgcg 360

caatgggcga aagcctgacg cagcgatgcc gcgtgcggga tgaaggcctt cgggtcgtaa 420

accgctttca gcagggacga ggccgcaagg tgacggtacc tgcagaagaa gccccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggggcgagc gttatccgga ttcattgggc 540

gtaaagcgcg cgtaggcggc ctgttaggtc aggagttaaa tccgggggct caacccccgt 600

ccgctcctga taccggcagg cttgagtctg gtaggggaag gcggaattcc aagtgtagcg 660

gtggaatgcg cagatatttg gaagaacacc ggtggcgaag gcggccttct gggccacgac 720

tgacgctgag gcgcgaaagc taggggagcg aacaggatta gataccctgg tagtcctagc 780

cgtaaacgat ggacactagg tgtgggggga tcatccctcc gtgccgcagc taacgcatta 840

agtgtcccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg acgggggccc 900

gcacaagcag cggagcatgt ggcttaattc gaagcaacgc gaagaacctt accagggctt 960

gacatatagg tgaagcggtg gaaacaccgt agccgaaagg agcctataca ggtggtgcat 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccccc 1080

gtcgtatgtt gccagcggtt cggccgggca cccatacgag accgccggcg tcaagccgga 1140

ggaaggtggg gacgacgtca agtcatcatg cccttatgt cctgggctgc acacgtgcta 1200

caatggccgg cacaatgggc tgccaggtcg cgagaccgag cgaatcccta aagccggccc 1260

cagttcggat tggaggctgc aacccgcctc catgaagtcg gagttgctag taatcgcgga 1320

tcagcacgcc gcggtgaatg cgttcccggg ccttgtacac accgcccgtc acaccacccg 1380

agtcgtctgc acccgaagtc gccggcccaa ccttttggag ggaggtgccg aaggtgtgga 1440

gggtaagggg ggtgaagtcg taacaaggta gccgtaccgg aaggtgc 1487

<210> 188
<211> 1473
<212> DNA
<213> Atopobium sp. ICM42b10

<400> 188
agagtttgat cctggctcag gatgaacgct ggcggcgcgc ctaacacatg caagtcgaac 60

gattaaagca ccttcgggtg tgtataaagt ggcgaacggc tgagtaacac gtgggcaacc 120

tgcccctctc attgggatag ccacgggaaa ccgtggataa taccgaatac ttcgagtctc 180

ccgcatggaa gactcgagaa agctccggcg gagagggatg ggcccgcggc ctgttagctt 240

gttggtgggg taacggccta ccaaggcaat gatgggtagc tgggttgaga gaccgaccag 300

ccagattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatcttgc 360

acaatgggcg aaagcctgat gcagcgacgc cgcgtgcggg atgaaggcct tcgggttgta 420

aaccgctttc agcagggacg aggcgaaagt gacggtacct gcagaagaag ccccggctaa 480

ctacgtgcca gcagccgcgg taatacgtag ggggcaagcg ttatccggat tcattgggcg 540

taaagcgctc gtaggcggtc tgttaggtcg ggagttaaat ccgggggctc aacccccgtt 600

cgctcccgat accggcagac ttgagtttgg taggggaagg tggaattcct agtgtagcgg 660

tggagtgcgc agatattagg aagaacacca gtggcgaagg cggccttctg ggccataact 720

gacgctgagg agcgaaagct aggggagcaa acaggattag ataccctggt agtcctagcc 780

gtaaacgatg gacactaggt gtgggggaat atttcttccg tgccgcagct aacgcattaa 840

gtgtcccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg 900

cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccagggcttg 960

acatttaggt gaagcggcgg aaacgtcgtg gccgaaagga gcctaaacag gtggtgcatg 1020

gctgtcgtca gctcgtgtcg tgagatgtta ggttaagtcc tgcaacgagc gcaaccctcg 1080

tcgtatgttg ccagcggtta ggccgggcac ccatacgaga ccgccggcgt caagccggag 1140

gaaggtgggg acgacgtcaa gtcatcatgc cccttatgtc ctgggctaca cacgtgctac 1200

aatggccggc acaatgggct gccaacccgc gagggtgagc gaatccctaa agccggtccc 1260

agttcggatt ggaggctgca acccgcctcc atgaagtcgg agttgctagt aatcgcggat 1320

cagcacgccg cggtgaatgc gttcccgggc cttgtacaca ccgcccgtca caccacccga 1380

gtcgattgca cccgaagtcg tcggcctaac cttttaggag ggagacgccg aaggtgtggt 1440

tggtaagggg ggtgaagtcg taacaaggta acc 1473

<210> 189
<211> 1267
<212> DNA
<213> Atopobium sp. ICM57

<400> 189
cgctggcggc gcgcctaaca catgcaagtc gaacgagtgg cgaacggctg agtaacacgt 60

gggcaacctg cccctctcat tgggatagcc acgggaaacc gtggataata ccgaatactg 120

aaaggcggag agggatgggc ccgcggcctg ttagcttgtt ggtggggtaa cggcctacca 180

aggcaatgat gggtagctgg gttgagagac cgaccagcca gattgggact gagacacggc 240

ccagactcct acgggaggca gcagtgggga atcttgcaca atgggcgaaa gcctgatgca 300

gcgacgccgc gtgcgggatg aaggccttcg ggttgtaaac cgctttcagc agggacgatg 360

acggtacctg cagaagaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg 420

gggcaagcgt tatccggatt cattgggcgt aaagcgctcg taggcggtct gttaggtcgg 480

gagttaaatc cgggggctca acccccgttc gctcccgata ccggcagact tgagtttggt 540

aggggaaggt ggaattccta gtgtagcggt ggaatgcgca gatattagga agaacaccag 600

tggcgaaggc ggccttctgg gccaactgac gctgaggagc gaaagctagg ggagcaaaca 660

ggattagata ccctggtagt cctagccgta aacgatggac actaggtgtg ggggcttccg 720

tgccgcagct aacgcattaa gtgtcccgcc tggggagtac ggccgcaagg ctaaaactca 780

aaggaattga cgggggcccg cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg 840

aagaacctta ccagggcttg acattaacag gtggtgcatg gctgtcgtca gctcgtgtcg 900

tgagatgtta ggttaagtcc tgcaacgagc gcaaccctcg tcgtatgttg ccagcggccg 960

ggcacccata cgagaccgcc ggcgtcaagc cggaggaagg tggggacgac gtcaagtcat 1020

catgcccctt atgtcctggg ctacacacgt gctacaatgg ccggcaatgg gctgccaacc 1080

cgcgagggtg agcgaatccc tccggtccca gttcggatgg aggctgcaac ccgcctccag 1140

aagtcggagt tgctagtaat cgcggatcag cacgccgcgg tgaatgcgtt cccgggcctt 1200

gtacacaccg cccgtcacac cacccgagtc gattgcaccc gaagtcgtcg cctagggaga 1260

cgccgaa 1267

<210> 190

<211> 1521
<212> DNA
<213> Atopobium vaginae

<400> 190
tttgaacgga gagttcgatc ctggctcagg atgaacgctg gcggcgcgcc taacacatgc 60

aagtcgaacg attaaagcac cttcgggtgt gtataaagtg gcgaacggct gagtaacacg 120

tgggcaacct gcccttttgca ctgggatagc ctcgggaaac cgaggttaat accggatact 180

ccatatatat cgcatgatgt atatgggaaa gctccgacgg caaaggatgg gcccgcggcc 240

tgttagctag ttggtggggt aacggcctac caaggcaatg atgggtagcc gggttgagag 300

accgaccggc cagattggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 360

gaatcttgca caatgggcga aagcctgatg cagcgacgcc gcgtgcggga tgaaggcctt 420

cgggttgtaa accgctttca gcagggacga ggccgcaagg tgacggtacc tgcagaagaa 480

gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc gttatccgga 540

ttcattgggc gtaaagcgcg cgtaggcggt ttgttaggtc aggagttaaa tctgggggct 600

caacccctat ccgctcctga taccggcagg cttgagtctg gtaggggaag gcggaattcc 660

aagtgtagcg gtgaaatgcg cagatatttg gaagaacacc ggtggcgaag gcggccttct 720

gggccacgac tgacgctgag gcgcgaaagc taggggagcg aacaggatta gataccctgg 780

tagtcctagc cgtaaacgat ggacactagg tgtggggaga ttatactttc cgtgccgcag 840

ccaacgcatt aagtgtcccg cctggggagt acggtcgcaa gactaaaact caaaggaatt 900

gacgggggcc cgcacaagca gcggagcatg tggcttaatt cgaagcaacg cgaagaacct 960

taccagggct tgacatttag gtgaagcagt ggaaacactg tggccgaaag gagcctaaac 1020

aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct tgtcgcatgt tgccagcggt taaagccggg cacccatgcg agaccgccgg 1140

cgttaagccg gaggaaggtg gggacgacgt caagtcatca tgcccccttat gtcctgggct 1200

gcacacgtgc tacaatggcc ggcacagagg gctgcaactg cgcgagcaga agcgaatccc 1260

taaagccggt cccagttcgg attggaggct gcaacccgcc tccatgaagt cggagttgct 1320

agtaatcgcg gatcagcacg ccgcggtgaa tgcgttcccg ggccttgtac acaccgcccg 1380

tcacaccacc cgagtcgtct gcacccgaag tcgtcggcct aacctgcaaa ggagggagac 1440

gccgaaggtg tggagggtaa ggggggtgaa gtcgtaacaa ggtagccgta ccggaaggtg 1500

cggctggatc acctcctttc t 1521

<210> 191
<211> 1285
<212> DNA
<213> Aurantimonas coralicida

<400> 191
gtaacgcgtg ggaatctacc catccctacg ggatagctcc gggaaactgg agataatacc 60

gtatacgtcc tccgggagaa agatttatcg gggatggatg agcccgcgtt ggattagcta 120

gttggtgggg taatggccta ccaaggcgac gatccatagc tggtctaaga ggatgatcag 180

ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtgg ggaatattgg 240

acaatgggcg caagcctgat ccagccatgc cgcgtgagtg atgaaggccc tagggttgta 300

aagctctttc agtggggacg ataatgacgg tacccacaga agaagccccg gctaacttcg 360

tgccagcagc cgcggtaata cgaaggggc tagcgttgtt cggaattact gggcgtaaag 420

cgcacgtagg cggacattta agtcaggggt gaaatcccgg ggctcaaccc cggaactgcc 480

tctgatactg ggtgtcttga gtgtggtaga ggtgagtgga attgcgagtg tagaggtgaa 540

attcgtagat attcgcagga acaccagtgg cgaaggcggc tcactggacc acaactgacg 600

ctgaggtgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 660

acgatggaag ctagccgtcg gaggatttat ccttcggtgg cgcagttaac gcattaagct 720

tcccgcctgg ggagtacggt cgcaagatta aaactcaaag gaattgacgg gggcccgcac 780

aagcggtgga gcatgtggtt taattcgaag caacgcgcag aaccttacca gctcttgaca 840

tgcctcgacg gtatccggag acggatgcct tccttcggga cgagtgcaca ggtgctgcat 900

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc 960

gcccttagtt gccagcattc agttgggcac tctaggggga ctgccggtga taagccgaga 1020

ggaaggtggg gatgacgtca agtcctcatg gcccttacgg gctgggctac acacgtgcta 1080

caatggcggt gacagtgggc agccaactcg cgagagtgag ctaatcccaa aaaaccgtct 1140

cagttcggat tgcactctgc aactcgggtg catgaagttg gaatcgctag taatcgtgga 1200

tcagcatgcc acggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatggk 1260

agwkgkttmt mmcsgaasat rgtsc 1285

<210> 192
<211> 1390
<212> DNA
<213> Aureimonas altamirensis

<400> 192
ctcagaacga acgctggcgg caggcttaac acatgcaagt cgaacgcacc tttcggggtg 60

agtggcagac gggtgagtaa cgcgtgggaa tctacccttc tctacgggat agctccggga 120

aactggaatt aataccgtat acgtcctgag ggagaaagat ttatcgggga aggatgagcc 180

cgcgttggat tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc catagctggt 240

ctaagaggat gatcagccac attgggactg agacacggcc caaactccta cgggaggcag 300

cagtggggaa tattggacaa tgggcgcaag cctgatccag ccatgccgcg tgagtgatga 360

aggccctagg gttgtaaagc tctttcagtg gggacgataa tgacggtacc cacagaagaa 420

gccccggcta acttcgtgcc agcagccgcg gtaatacgaa gggggctagc gttgttcgga 480

attactgggc gtaaagcgca cgtaggcgga tatttaagtc aggggtgaaa tcccggggct 540

caaccccgga actgcctttg atactgggta tcttgagttc ggaagaggta agtggaattg 600

cgagtgtaga ggtgaaattc gtagatattc gcaggaacac cagtggcgaa ggcggcttac 660

tggtccgata ctgacgctga ggtgcgaaag cgtggggagc aaacaggatt agataccctg 720

gtagtccacg ccgtaaacga tggaagctag ccgtcgggtg atttatcact cggtggcgca 780

gcaaacgcat taagcttccc gcctggggag tacggtcgca agattaaaac tcaaaggaat 840

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgcagaacc 900

ttaccagctc ttgacatgcc acgacgatga ccggagacgg acatcttcct tcgggacgtg 960

gacacaggtg ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1020

aacgagcgca accctcgccc ttagttgcca gcattgagtt gggcactcta aggggactgc 1080

cggtgataag ccgagaggaa ggtggggatg acgtcaagtc ctcatggccc ttacgggctg 1140

ggctacacac gtgctacaat ggcggtgaca atgggcagcc aactcgcgag agtgcgctaa 1200

tcccaaaaag ccgtctcagt tcggattgca ctctgcaact cgggtgcatg aagttggaat 1260

cgctagtaat cgtggatcag catgccacgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt ggttctaccc gaaggtggtg cgctaaccgc aaggaggcag 1380

ccaaccacgg 1390

<210> 193
<211> 1319
<212> DNA
<213> Auritibacter ignavus

<400> 193
ctggcggcgt gcttaacaca tgcaagtcga acgagtggcg aacgggtgag tatcacgtga 60

gtaacctgcc cttgactctg ggataagcct gggaaactgg gtctaatact ggatatggaa 120

aggcggtttt ggatggactc gcggcctatc agcttgttgg tggggtaatg gcctaccaag 180

gcttcgacgg gtagccggcc tgagagggtg accggccaca ctgggactga gacacggccc 240

agactcctac gggaggcagc agtgggggat attgcacaat gggcgcaagc ctgatgcagc 300

gacgtcgcgt gagggatgac ggccttcggg ttgtaaacct ctttcagcag ggaagatgac 360

ggtacctgca gaagaagcac cggctaacta cgtgccagca gccgcggtaa tacgtagggt 420

gcgagcgtta tccggaatta ttgggcgtaa agagctcgta ggcggtttgt cgcgtctgct 480

gtgaaagctc agggcttaac tctgagtttg cagtgggtac gggcagactg gagtgcagta 540

ggggagattg gaattcctgg tgtagcggtg gaatgcgcag atatcaggag gaacaccgat 600

ggcgaaggca ggtctctggg ctgactgacg ctgaggagcg aaagcatggg gagcgaacag 660

gattagatac cctggtagtc catgccgtaa acggtgggcg ctaggtgtga gtcggttcgt 720

gccgtagcta acgcattaag cgccccgcct ggggagtacg gccgcaaggc taaaactcaa 780

aggaattgac gggggcccgc acaagcggcg gagcatgtgg attaattcga tgcaacgcga 840

agaaccttac ctgggcttga catatacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 900

gagatgttgg gttaagtccc gcaacgagcg caacccttgt cttatgttgc cagcacgtgg 960

ggactcatag gagactgccg gggtcaactc ggaggaaggt ggggatgacg tcaaatcatc 1020

atgcccctta tgtcttgggc ttcacgcatg ctacaatggc cggcagaggg ttgcgatact 1080

gtgaggttga gctaatccct tctggtctca gttcggatgg ggtctgcaac tcgaccccag 1140

aagtcggagt cgctagtaat cgcagatcag caatgctgcg gtgaatacgt tcccgggcct 1200

tgtacacacc gcccgtcgag tcacgaaagt tggtaacacc cgaagccggt gcctagggag 1260

ccgtcgaagg tgggactggc gattgggact aagtcgtaac aaggtagccg taccggaag 1319

<210> 194
<211> 1429
<212> DNA
<213> Averyella dalhousiensis

<400> 194
ccaggagcta catgcagtcg agcggtagca caggggagct tgctcctggg tgacgagcgg 60

cggacgggtg agtaatgtct gggaaactgc ctgatggagg gggataacta ctggaaacgg 120

tagctaatac cgcataacgt ctacggacca aagtggggga ccttcgggcc tcatgccatc 180

agatgtgccc agatgggatt agctagtagg tggggtaatg gctcacctag gcgacgatcc 240

ctagctggtc tgagaggatg accagccaca ctggaactga gacacggtcg agactcctac 300

gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc catgccgcgt 360

gtgtgaagaa ggccttcggg ttgtaaagca ctttcagcga ggaggaaggg ttcagtgtta 420

atagcactgt tcattgacgt tactcgcaga agaagcaccg gctaactccg tgccagcagc 480

cgcggtaata cggagggtgc aagcgttaat cggaattact gggcgtaaag cgcacgcagg 540

cggtctgtca agtcggatgt gaaatccccg ggctcaacct gggaactgca ttcgaaactg 600

gcaggctaga gtcttgtaga gggggggtaga attccaggtg tagcggtgaa atgcgtagag 660

atctggagga ataccggtgg cgaaggcggc cccctggaca aagactgacg ctcaggtgcg 720

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgtcga 780

cttggaggtt gtgcccttga ggcgtggctt ccggagctaa cgcgttaagt cgaccgcctg 840

gggagtacgg ccgcaaggtt aaaactcaaa tgaattgacg gggcccgca caagcggtgg 900

agcatgtggt ttaattcgat gcaacgcgaa gaaccttacc tactcttgac atccagagaa 960

cttagcagag atgctttggt gccttcggga actctgagac aggtgctgca tggctgtcgt 1020

cagctcgtgt tgtgaaatgt tgggttaagt cccgcaacga gcgcaaccct tatcctttgt 1080

tgccagcggt tcggccggga actcaaagga gactgccagt gataaactgg aggaaggtgg 1140

ggatgacgtc aagtcatcat ggcccttacg agtagggcta cacacgtgct acaatggcgc 1200

atacaaagag aagcgacctc gcgagagcaa gcggacctca taaagtgcgt cgtagtccgg 1260

attggagtct gcaactcgac tccatgaagt cggaatcgct agtaatcgta gatcagaatg 1320

ctacggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagtgggtt 1380

gcaaaagaag taggtagctt aaccttcggg agggcgctac cctgtataa 1429

<210> 195
<211> 1403

<212> DNA
<213> Bacillus aeolius

<400> 195
tggcggcgtg cctaatacat gcaagtcgag cgaacggatg gagagcttgc tctcctgacg 60

ttagcggcgg acgggtgagt aacacgtggg caacctgcct gtaagaccgg gataacttcg 120

ggaaaccgga gctaataccg gataattcct ttcctcgcat gaggaaaggt tgaaaggcgg 180

cttcggctgt cacttacaga tgggcccgcg gcgcattagc tagttggtga ggtaacggct 240

caccaaggcg acgatgcgta gccgacctga gagggtgatc ggccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt agggaatctt ccgcaatgga cgaaagtctg 360

acggagcaac gccgcgtgag cgatgaaggt cttcggatcg taaagctctg ttgttaggga 420

agaacaagta ccgttcgaat aggcggtacc ttgacggtac ctaaccagaa agccacggct 480

aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg aattattggg 540

cgtaaagcgc gcgcaggcgg tctcttaagt ctgatgtgaa agcccacggc tcaaccgtgg 600

agggtcattg gaaactggga gacttgagtg cagaagagga gagcggaatt ccatgtgtag 660

cggtgaaatg cgtagagata tggaggaaca ccagtggcga aggcggctct cttgtctgta 720

actgacgctg aggcgcgaaa gcgttgggag caaacaggat tagataccct ggtagtccac 780

gccgtaaacg atgagtgcta agtgttagag ggtttccgcc ctttagtgct gcagctaacg 840

cattaagcac tccgcctggg gagtacggcc gcaaggctga aactcaaagg aattgacggg 900

ggcccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccag 960

gtcttgacat cctctgctac ctctagatag agggttcccc ttcgggggac ggaatgacag 1020

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgaac 1080

gcaacccttg accttagttg ccagcattca gttgggcact ctaaggtgac tgccggtgac 1140

aaaccggaag aaagtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac 1200

acgtgctaca atgggtggta caaagggctg cgatgccgcg aggctgagcc aatcccaaaa 1260

aaccactctc agttcggatt gcaggctgca actcgcctgc atgaagccgg aatcgctagt 1320

aatcgcggat cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

caccacgaga gtttgcaaca ccc 1403

<210> 196
<211> 1382
<212> DNA
<213> Bacillus aerophilus

<220>
<221> modified_base
<222> (8)..(12)
<223> a, c, t, g, unknown or other

<400> 196
agcggacnnn nnggagcttg ctcccggatg ttagcggcgg acgggtgagt aacacgtggg 60

taacctgcct gtaagactgg gataactccg ggaaaccgga gctaataccg gatagttcct 120

tgaaccgcat ggttcaagga tgaaagacgg tttcggctgt cacttacaga tggacccgcg 180

gcgcattagc tagttggtga ggtaacggct caccaaggcg acgatgcgta gccgacctga 240

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

agggaatctt ccgcaatgga cgaaagtctg acggagcaac gccgcgtgag tgatgaaggt 360

tttcggatcg taaagctctg ttgttaggga agaacaagtg caagagtaac tgcttgcacc 420

ttgacggtac ctaaccagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt 480

aggtggcaag cgttgtccgg aattattggg cgtaaagggc tcgcaggcgg tttcttaagt 540

ctgatgtgaa agcccccggc tcaaccgggg agggtcattg gaaactggga aacttgagtg 600

cagaagagga gagtggaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca 660

ccagtggcga aggcgactct ctggtctgta actgacgctg agagcgaaag cgtggggagc 720

gaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagggg 780

gtttccgccc cttagtgctg cagctaacgc attaagcact ccgcctgggg agtacggtcg 840

caagactgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctctgataac cctagagata 960

gggctttccc ttcggggacc ggggagggtg atgggaaact gggaaacttg ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caacccttga tcttagttgc cagcattcag 1080

ttgggcactc taaggtgact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1140

catcatgccc cttatgacct gggctacaca cgtgctacaa tggacagaac aaagggctgc 1200

gagaccgcaa ggtttagcca atcccacaaa tctgttctca gttcggatcg cagtctgcaa 1260

ctcgactgcg tgaagctgga atcgctagta atcgcggatc agcatgccgc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgcaacac ccgaagtcgg 1380

tg 1382

<210> 197
<211> 1392
<212> DNA
<213> Bacillus aestuarii

<400> 197
gcggaccaat agaagcttgc ttctgttggt tagcggcgga cgggtgagta acacgtgggc 60

aacctgcctg taagactggg ataacttcgg gaaaccggag ctaataccgg ataattcatc 120

ccctcgcatg agggggtgct gaaagtcggt tcacgctgac acttacagat gggcccgcgg 180

cgcattagct agttggtgag gtaatggctc accaaggcga cgatgcgtag ccgacctgag 240

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 300

gggaatcttc cacaatggac gaaagtctga tggagcaacg ccgcgtgagc gatgaaggcc 360

ttcgggtcgt aaagctctgt tgttagggaa gaacaagtac cggagtaact gccggtacct 420

tgacggtacc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 480

ggtggcaagc gttgtccgga attattgggc gtaaagcgcg cgcaggcggt cctttaagtt 540

gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactggggga cttgagtgca 600

gaagaggaaa gcggaattcc acgtgtagcg gtgaaatgcg tagagatgtg gaggaacacc 660

agtggcgaag gcggctttct ggtctgtaac tgacgctgag gcgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag tgttagaggg 780

tttccgccct ttagtgctgc agctaacgca ttaagcactc cgcctgggga gtacggccgc 840

aaggctgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 900

ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc ttacgacctc cctagagata 960

gggatttccc cttcggggga cggaagtgac aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgatcttagt tgccagcatt 1080

cagttgggca ctctaaggtg actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1140

aatcatcatg ccccttatga cctgggctac acacgtgtta caatggatgg tacaaagggc 1200

agcgaaaccg cgaggtcgag ccaatcccat aaaaccattc tcagttcgga ttgcaggctg 1260

caactcgcct gcatgaagcc ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt 1380

cggtggggta ac 1392

<210> 198
<211> 1505
<212> DNA
<213> Bacillus alcalophilus

<220>
<221> modified_base
<222> (97)..(97)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (203)..(203)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (441)..(441)
<223> a, c, t, g, unknown or other

<400> 198
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc ggaccaaagg gagcttgctc 60

ccagaggtta gcggcggacg ggtgagtaac acgtggncaa cctgccctgt agactgggat 120

aacatcgaga aatcggtgct aataccggat aatcaaagga atcacatggt tcttttgtaa 180

aagatggctc cggctatcac tangggatgg gcccgcggcg cattagctag ttggtaaggt 240

aatggcttac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttccg caatggacga 360

aagtctgacg gagcaacgcc gcgtgagtga tgaaggtttt cggatcgtaa agctctgttg 420

ttagggaaga acaagtgccg ntcgaatagg tcggcacctt gacggtacct aaccagaaag 480

ccacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg ttgtccggaa 540

ttattgggcg taaagcgcgc gcaggcggtc ttttaagtct gatgtgaaat atcggggctc 600

aaccccgagg ggtcattgga aactgggaga cttgagtaca gaagaggaga gtggaattcc 660

acgtgtagcg gtgaaatgcg tagatatgtg gaggaacacc agtggcgaag gcgactctct 720

ggtctgtaac tgacgctgag gcgcgaaagc gtggggagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gagtgctagg tgttaggggt ttcgatgccc ttagtgccga 840

agttaacaca ttaagcactc cgcctgggga gtacggccgc aaggctgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cagtggagca tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaggt cttgacatcc tttgaccact ctagagatag agctttcccc ttcgggggac 1020

aaagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg atcttagttg ccagcattta gttgggcact ctaaggtgac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc 1200

tgggctacac acgtgctaca atggatggta caaagggcag cgaaaccgcg aggtcgagcc 1260

aatcccataa agccattctc agttcggatt gtaggctgca actcgcctac atgaagccgg 1320

aattgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg gtggggtaac cttttggagc 1440

cagccgccta aggtgggaca gatgattggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtg 1505

<210> 199
<211> 1410
<212> DNA
<213> Bacillus amyloliquefaciens

<220>
<221> modified_base
<222> (965)..(965)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1393)..(1393)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1397)..(1398)
<223> a, c, t, g, unknown or other

<400> 199
tcgagcggac agatgggagc ttgctccctg atgttagcgg cggacgggtg agtaacacgt 60

gggtaacctg cctgtaagac tgggataact ccgggaaacc ggggctaata ccggatggtt 120

gtttgaaccg catggttcag acataaaagg tggcttcggc taccacttac agatggaccc 180

gcggcgcatt agctagttgg tgaggtaacg gctcaccaag gcgacgatgc gtagccgacc 240

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa 360

ggttttcgga tcgtaaagct ctgttgttag ggaagaacaa gtgccgttca aatagggcgg 420

caccttgacg gtacctaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttgt ccggaattat tgggcgtaaa gggctcgcag gcggtttctt 540

aagtctgatg tgaaagcccc cggctcaacc ggggagggtc attggaaact ggggaacttg 600

agtgcagaag aggagagtgg aattccacgt gtagcggtga aatgcgtaga gatgtggagg 660

aacaccagtg gcgaaggcga ctctctggtc tgtaactgac gctgaggagc gaaagcgtgg 720

ggagcgaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 780

agggggtttc cgcccccttag tgctgcagct aacgcattaa gcactccgcc tggggagtac 840

ggtcgcaaga ctgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg 900

gtttaattcg aagcaacgcg aagaaactta ccgcggttat acgtcggtgg caagcgttag 960

acagnaatcg tcccccttcgg gggcagagtg acaggtggtg catggttgtc gtcagctcgt 1020

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgatctta gttgccagca 1080

ttcagttggg cactctaagg tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt 1140

caaatcatca tgcccccttat gacctgggct acacacgtgc tacaatgggc agaacaaagg 1200

gcagcgaaac cgcgaggtta agccaatccc acaaatctgt tctcagttcg gatcgcagtc 1260

tgcaactcga ctgcgtgaag ctggaatcgc tagtaatcgc ggatcagcat gccgcggtga 1320

atacgttccc gggccttgta cacaccgccc gtcacaccac gagagtttgt aacacccgaa 1380

gtcggtgagg tancctnnag gagccagccg 1410

<210> 200
<211> 1391
<212> DNA
<213> Bacillus anthracis

<220>
<221> modified_base
<222> (9)..(11)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1380)..(1380)
<223> a, c, t, g, unknown or other

<400> 200
cttgctctnn ngaagttagc ggcggacggg tgagtaacac gtgggtaacc tgcccataag 60

actgggataa ctccgggaaa ccggggctaa taccggataa tattttgaac tgcatggttc 120

gaaattgaaa ggcggcttcg gctgtcactt atggatggac ccgcgtcgca ttagctagtt 180

ggtgaggtaa cggctcacca aggcaacgat gcgtagccga cctgagaggg tgatcggcca 240

cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga atcttccgca 300

atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg aaggctttcg ggtcgtaaaa 360

ctctgttgtt agggaagaac aagtgctagt tgaataagct ggcaccttga cggtacctaa 420

ccagaaagcc acggctaact acgtgccagc agccgcggta atacgtaggt ggcaagcgta 480

tccggaatta ttgggcgtaa agcgcgcgca ggtggtttct taagtctgat gtgaaagccc 540

cggctcaacc gtggagggtc attggaaact gggagacttg agtgcagaag aggaaagtgg 600

aattccatgt gtagcggtga aatgcgtaga gatatggagg aacaccagtg gcgaaggcga 660

ctttctggtc tgtaactgac actgaggcgc gaaagcgtgg ggagcaaaca ggattagata 720

ccctggtagt ccacgccgta aacgatgagt gctaagtgtt agagggtttc cgcccctttag 780

tgctgaagtt aacgcattaa gcactccgcc tggggagtac ggccgcaagg ctgaaactca 840

aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 900

aagaacctta ccaggtcttg acatcctctg aaaaccctag agatagggct tctccttcgg 960

gagcagagtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1020

gtcccgcaac gagcgcaacc cttgatctta gttgccatca ttaagttggg cactctaagg 1080

tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1140

gacctgggct acacacgtgc tacaatggac ggtacaaaga gctgcaagac cgcgaggtgg 1200

agctaatctc ataaaaccgt tctcagttcg gattgtaggc tgcaactcgc ctacatgaag 1260

ctggaatcgc tagtaatcgc ggatcagcat gccgcggtga atacgttccc gggccttgta 1320

cacaccgccc gtcacaccac gagagtttgt aacacccgaa gtcggtgggg taacctttan 1380

ggagccagcc g 1391

<210> 201
<211> 1411
<212> DNA
<213> Bacillus atrophaeus

<400> 201
tcgagcggac agatgggagc ttgctccctg atgttagcgg cggacgggtg agtaacacgt 60

gggtaacctg cctgtaagac tgggataact ccgggaaacc ggggctaata ccggatggtt 120

gtttgaaccg catggttcaa acataaaagg tggcttcggc taccacttac agatggaccc 180

gcggcgcatt agctagttgg tgaggtaacg gctcaccaag gcaacgatgc gtagccgacc 240

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa 360

ggttttcgga tcgtaaagct ctgttgttag ggaagaacaa gtaccgttcg aatagggcgg 420

taccttgacg gtacctaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttgt ccggaattat tgggcgtaaa gggctcgcag gcggtttctt 540

aagtctgatg tgaaagcccc cggctcaacc ggggagggtc attggaaact ggggaacttg 600

agtgcagaag aggagagtgg aattccacgt gtagcggtga aatgcgtaga gatgtggagg 660

aacaccagtg gcgaaggcga ctctctggtc tgtaactgac gctgaggagc gaaagcgtgg 720

ggagcgaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 780

agggggtttc cgcccccttag tgctgcagct aacgcattaa gcactccgcc tggggagtac 840

ggtcgcaaga ctgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg 900

gtttaattcg aagcaacgcg aagaacctta ccaggtcttg acatcctctg acaatcctag 960

agataggacg tccccttcgg gggcagagtg acaggtggtg catggttgtc gtcagctcgt 1020

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgatctta gttgccagca 1080

ttcagttggg cactctaagg tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt 1140

caaatcatca tgccccttat gacctgggct acacacgtgc tacaatggac agaacaaagg 1200

gcagcgaaac cgcgaggtta agccaatccc acaaatctgt tctcagttcg gatcgcagtc 1260

tgcaactcga ctgcgtgaag ctggaatcgc tagtaatcgc ggatcagcat gccgcggtga 1320

atacgttccc gggccttgta cacaccgccc gtcacaccac gagagtttgt aacacccgaa 1380

gtcggtgagg taacctttta ggagccagcc g 1411

<210> 202
<211> 1442
<212> DNA
<213> Bacillus badius

<400> 202
acgaacgctg gcggcgtgcc taatacatgc aagtcgagcg gacttgacgg aagcttgctt 60

ccgttcaagt tagcggcgga cgggtgagta acacgtgggt aacctgcctg taagactggg 120

ataactccgg gaaaccgggg ctaataccgg atattctttt tcttcgcatg aagaagaatg 180

gaaaggcggc ttttaactgt cacttacaga tggacccgcg gcgcattagc tagttggtga 240

ggtaacggct caccaaggca acgatgcgta gccgacctga gagggtgatc ggccacactg 300

ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt ccgcaatgga 360

cgaaagtctg acggagcaac gccgcgtgag tgaagaaggt tttcggatcg taaagctctg 420

ttgtcaggga agaacaagta cggaagtaac tgtccgtacc ttgacggtac ctgaccagaa 480

agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg 540

aattattggg cgtaaagcgc gcgcaggcgg cttcttaagt ctgatgtgaa agcccacggc 600

tcaaccgtgg agggtcattg gaaactggga ggcttgagtg cagaagagga gagcggaatt 660

ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca ccagtggcga aggcggctct 720

ctggtctgta actgacgctg aggcgcgaaa gcgtggggag cgaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgagtgcta agtgttggag ggtttccgcc cttcagtgct 840

gcagctaacg cattaagcac tccgcctggg gagtacggcc gcaaggctga aactcaaagg 900

aattgacggg ggccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccagg tcttgacatc ccgctgaccg gtctggagac aggcctttct tcggggacag 1020

cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttga tcttagttgc cagcattcag ttgggcactc taaggtgact 1140

gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc cttatgacct 1200

gggctacaca cgtgctacaa tggatggtac aaagggctgc aagaccgcaa ggtttagcca 1260

atcccataaa accattctca gttcggattg caggctgcaa ctcgcctgca tgaagccgga 1320

atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac aacacgagag tttgcaacac ccgaagtcgg tggggtaacc ttacgggagc 1440

ca 1442

<210> 203
<211> 1389
<212> DNA
<213> Bacillus cereus

<400> 203
tcgagcgaat ggattaagag cttgctctta tgaagttagc ggcggacggg tgagtaacac 60

gtgggtaacc tgcccataag actgggataa ctccgggaaa ccggggctaa taccggataa 120

cattttgaac cgcatggttc gaaattgaaa ggcggcttcg gctgtcactt atggatggac 180

ccgcgtcgca ttagctagtt ggtgaggtaa cggctcacca aggcaacgat gcgtagccga 240

cctgagaggg tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtaggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg 360

aaggctttcg ggtcgtaaaa ctctgttgtt agggaagaac aagtgctagt tgaataagct 420

ggcaccttga cggtacctaa ccagaaagcc acggctaact acgtgccagc agccgcggta 480

atacgtaggt ggcaagcgtt atccggaatt attgggcgta aagcgcgcgc aggtggtttc 540

ttaagtctga tgtgaaagcc cacggctcaa ccgtggaggg tcattggaaa ctgggagact 600

tgagtgcaga agaggaaagt ggaattccat gtgtagcggt gaaatgcgta gagatatgga 660

ggaacaccag tggcgaaggc gactttctgg tctgtaactg acactgaggc gcgaaagcgt 720

ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatga gtgctaagtg 780

ttagagggtt tccgcccttt agtgctgaag ttaacgcatt aagcactccg cctggggagt 840

acggccgcaa ggctgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg 900

tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcctc tgaaaaccct 960

agagataggg cttctccttc gggagcagag tgacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgatct tagttgccat 1080

cattaagttg ggcactctaa ggtgactgcc ggtgacaaac cggaggaagg tggggatgac 1140

gtcaaatcat catgcccctt atgacctggg ctacacacgt gctacaatgg acggtacaaa 1200

gagctgcaag accgcgaggt ggagctaatc tcataaaacc gttctcagtt cggattgtag 1260

gctgcaactc gcctacatga agctggaatc gctagtaatc gcggatcagc atgccgcggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg 1380

aagtcggtg 1389

<210> 204
<211> 1371
<212> DNA
<213> Bacillus circulans

<400> 204
aagcttgctt ttaaagttag cggcggacgg gtgagtaaca cgtgggcaac ctgcctgtaa 60

gactgggata acttcgggaa accggagcta ataccggata atccttttcc tctcatgagg 120

aaaagctgaa agacggttta cgctgtcact tacagatggg cccgcggcgc attagctagt 180

tggtgaggta acggctcacc aaggcgacga tgcgtagccg acctgagagg gtgatcggcc 240

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg aatcttccgc 300

aatggacgaa agtctgacgg agcaacgccg cgtgagtgat gaaggttttc ggatcgtaaa 360

actctgttgt tagggaagaa caagtacaag agtaactgct tgtaccttga cggtacctaa 420

ccagaaagcc acggctaact acgtgccagc agccgcggta atacgtaggt ggcaagcgtt 480

gtccggaatt attgggcgta aagcgcgcgc aggcggtcct ttaagtctga tgtgaaagcc 540

cacggctcaa ccgtggaggg tcattggaaa ctgggggact tgagtgcaga agagaagagt 600

ggaattccac gtgtagcggt gaaatgcgta gagatgtgga ggaacaccag tggcgaaggc 660

gactctttgg tctgtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga 720

taccctggta gtccacgccg taaacgatga gtgctaagtg ttagagggtt tccgcccttt 780

agtgctgcag caaacgcatt aagcactccg cctggggagt acggccgcaa ggctgaaact 840

caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 900

cgaaaaacct taccaggtct tgacatcctc tgacactcct agagatagga cgttcccctt 960

cgggggacag agtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1020

ttaagtcccg caacgagcgc aacccttgat cttagttgcc agcattcagt tgggcactct 1080

aaggtgactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgcccc 1140

ttatgacctg ggctacacac gtgctacaat ggatggtaca aagggcagca aaaccgcgag 1200

gtcgagcaaa tcccataaaa ccattctcag ttcggattgt aggctgcaac tcgcctacat 1260

gaagctggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggcct 1320

tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt g 1371

<210> 205
<211> 1351
<212> DNA
<213> Bacillus clausii

<220>
<221> modified_base
<222> (230)..(230)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1341)..(1342)
<223> a, c, t, g, unknown or other

<400> 205
ggacgggtga gtaacacgtg ggcaacctgc cctttagact gggataactc cgggaaaccg 60

gagctaatac cggataatcc ctttctccac ctggagagag ggtgaaagat ggcttcggct 120

atcactaggg gatgggcccg cggcgcatta tctagttggt aaggtaacgg cttaccaagg 180

caacgatgcg tacccgacct gagagggtga tcggccacac tgggactgan acacggccca 240

gactcctacg ggaggcagca gtagggaatc ttccgcaatg gacgaaagtc tgacggagca 300

acgccgcgtg agtgaggaag gccttcgggt cgtaaagctc tgttgtgagg gaagaagcgg 360

taccgttcga atagggcggt accttgacgg tacctcacca gaaaccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc 480

gcgcgcagcg gcttcttaag tctgatgtga aatctcgggg ctcaaccccg agcggccatt 540

gaaactgggg agcttgagtg caaagagaga gtggaattcc acgtgtagcg gtgaaatgcg 600

tagagatgtg gaggaacacc agtggcagga ctctctggtc tgtaactgac ctgagcgcga 660

aagcgtggag caaacagatt aataccctgg tagtccacgc cgtaaacgat gagtgctagt 720

gttaggggtt tccatgcccg tagtgccaaa gttaacacat taagcactcc gcctggggag 780

tacggccgca aggctgaaac tcaaaggaat tgacggggac ccgcacaagc agtggagcat 840

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatcct ttgaccaccc 900

aagagattgg gcttcccctt cgggggcaaa gtgacaggtg gtgcatggtt gtcgtcagct 960

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgatc ttagttgcca 1020

gcattcagtt gggcactcta aggtgactgc cggtgacaaa ccggaggaag gtggggatga 1080

cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg gatggtacaa 1140

agggcagcga aaccgcgagg tgaagccaat cccataaagc cattctcagt tcggattgca 1200

ggctgcaact cgcctgcatg aagccggaat tgctagtaat cgcggatcag catgccgcgg 1260

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc 1320

gaagtcggtg aggcaacctt nnggagccag c 1351

<210> 206
<211> 1411
<212> DNA
<213> Bacillus coagulans

<220>
<221> modified_base
<222> (10)..(10)
<223> a, c, t, g, unknown or other

<400> 206
tcgtgcggan cttttaaagc ttgcttttaa aaggttagcg gcggacgggt gagtaacacg 60

tgggcaacct gcctgtaaga tcgggataac gccgggaaac cggggctaat accggatagt 120

ttttcctcc gcatggagga aaaaggaaag acggcttctg ctgtcactta cagatgggcc 180

cgcggcgcat tagctagttg gtggggtaac ggctcaccaa ggcaacgatg cgtagccgac 240

ctgagagggt gatcggccac attgggactg agacacggcc caaactccta cgggaggcag 300

cagtagggaa tcttccgcaa tggacgaaag tctgacggag caacgccgcg tgagtgaaga 360

aggccttcgg gtcgtaaaac tctgttgccg gggaagaaca agtgccgttc gaacagggcg 420

gcgccttgac ggtacccggc cagaaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca ggcggcttct 540

taagttgatg tgaaatcttg cggctcaacc gcaagcggtc attggaaact gggaggcttg 600

agtgcagaag aggagagtgg aattccacgt gtagcggtga aatgcgtaga gatgtggagg 660

aacaccagtg gcgaaggcgg ctctctggtc tgtaactgac gctgaggcgc gaaagcgtgg 720

ggagcaaaca ggattagata ccctggtagt cacgccgtaa acgatgagtg ctaagtgtta 780

gagggtttcc gcccttagt gctgcagcta acgcattaag cactccgcct ggggagtacg 840

gccgcaaggc tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac caggtcttga catcctctga cctccctgga 960

gacagggcct tccccttcgg gggacagagt gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgacctt agttgccagc 1080

attcagttgg gcactctaag gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatgga tggtacaaag 1200

ggctgcgaga ccgcgaggtt aagccaatcc cagaaaacca ttcccagttc ggattgcagg 1260

ctgcaacccg cctgcatgaa gccggaatcg ctagtaatcg cggatcagca tgccgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagtttg taacacccga 1380

agtcggtgag gtaaccttac ggagccagcc g 1411

<210> 207
<211> 1483
<212> DNA
<213> Bacillus firmus

<400> 207
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc ggacggatgg gagcttgctc 60

acacgtcagc ggcggacggg tgagtaacac gtgggcaacc tgcctgtaag actgggataa 120

ctccgggaaa ccggggctaa taccggataa tgcttttcct cgcatgagga aaagctgaaa 180

gatggcatct cgctatcact tacagatggg cccgcggcgc attagctagt tggtgaggta 240

acggctcacc aaggcgacga tgcgtagccg acctgagagg gtgatcggcc acactgggac 300

tgagacacgg cccagactcc tacgggaggc agcagtaggg aatcttccgc aatggacgaa 360

agtctgacgg agcaacgccg cgtgagtgat gaaggttttc ggatcgtaaa actctgttgt 420

cagggaagaa caagtaccgg agtaactgcc ggtaccttga cggtacctga ccagaaagcc 480

acggctaact acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggaatt 540

attgggcgta aagcgcgcgc aggcggttcc ttaagtctga tgtgaaagcc cccggctcaa 600

ccggggaggg tcattggaaa ctggggaact tgagtgcaga agagaagagt ggaattccac 660

gtgtagcggt gaaatgcgta gagatgtgga ggaacaccag tggcgaaggc gactctttgg 720

tctgtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 780

gtccacgccg taaacgatga gtgctaagtg ttagagggtt tccgcccttt agtgctgcag 840

caaacgcatt aagcactccg cctggggagt acggccgcaa ggctgaaact caaaggaatt 900

gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct 960

taccaggtct tgacatctcc tgacaaccct agagataggg cgttcccctt cgggggacag 1020

gatgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

caacgagcgc aacccttgat cttagttgcc agcattcagt tgggcactct aaggtgactg 1140

ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgacctg 1200

ggctacacac gtgctacaat ggatggtaca aagggctgca agaccgcgag gttaagcgaa 1260

tcccataaaa ccattctcag ttcggattgc aggctgcaac tcgcctgcat gaagccggaa 1320

tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggcct tgtacacacc 1380

gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt ggggtaacct tttggagcca 1440

gccgcctaag gtgggacaga tgattggggt gaagtcgtaa caa 1483

<210> 208
<211> 1529
<212> DNA
<213> Bacillus flexus

<400> 208
gatcctggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg agcgaactga 60

ttagaagctt gcttctatga cgttagcggc ggacgggtga gtaacacgtg ggcaacctgc 120

ctgtaagact gggataactc cgggaaaccg gagctaatac cggataacat tttctcttgc 180

ataagagaaa attgaaagat ggtttcggct atcacttaca gatgggcccg cggtgcatta 240

gctagttggt gaggtaacgg ctcaccaagg caacgatgca tagccgacct gagagggtga 300

tcggccacac tgggactgag acacggccca gactcctacg ggaggcagca gtagggaatc 360

ttccgcaatg gacgaaagtc tgacggagca acgccgcgtg agtgatgaag gctttcgggt 420

cgtaaaactc tgttgttagg gaagaacaag tacaagagta actgcttgta ccttgacggt 480

acctaaccag aaagccacgg ctaactacgt gccagcagcc gcggtaatac gtaggtggca 540

agcgttatcc ggaattattg ggcgtaaagc gcgcgcaggc ggtttcttaa gtctgatgtg 600

aaagcccacg gctcaaccgt ggagggtcat tggaaactgg ggaacttgag tgcagaagag 660

aaaagcggaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa caccagtggc 720

gaaggcggct ttttggtctg taactgacgc tgaggcgcga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgagtgc taagtgttag agggtttccg 840

ccctttagtg ctgcagctaa cgcattaagc actccgcctg gggagtacgg tcgcaagact 900

gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa 960

gcaacgcgaa gaaccttacc aggtcttgac atcctctgac aactctagag atagagcgtt 1020

ccccttcggg ggacagagtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttgatctta gttgccagca tttagttggg 1140

cactctaagg tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt caaatcatca 1200

tgccccttat gacctgggct acacacgtgc tacaatggat ggtacaaagg gctgcaagac 1260

cgcgaggtca agccaatccc ataaaaccat tctcagttcg gattgtaggc tgcaactcgc 1320

ctacatgaag ctggaatcgc tagtaatcgc ggatcagcat gccgcggtga atacgttccc 1380

gggccttgta cacaccgccc gtcacaccac gagagtttgt aacacccgaa gtcggtgggg 1440

taacctttat ggagccagcc gcctaaggtg ggacagatga ttggggtgaa gtcgtaacaa 1500

ggtagccgta tcggaaggtg cggctggat 1529

<210> 209
<211> 1462
<212> DNA
<213> Bacillus fordii

<400> 209
gtgcctaata catcgcaagt cgagcggatg aaagagagct tgctctctgg attcagcggc 60

ggacgggtga gtaacacgtg ggcaacctgc ctgtaagact gggataactc cgggaaaccg 120

gggctaatac cggataactt cttttcccgc atggggagag gttgaaagac ggttatgctg 180

tcacttacag atgggcccgc ggcgcattag ctagttggtg gggtaacggc ctaccaaggc 240

gacgatgcgt agccgacctg agagggtgat cggccacact gggactgaga cacggcccag 300

actcctacgg gaggcagcag tagggaatct tccgcaatgg acgaaagtct gacggagcaa 360

cgccgcgtga gtgacgaagg ccttcgggtc gtaaaactct gttatcaggg aagaacaagc 420

atcgtttaac tgacggtgcc atgacggtac ctgaccagaa agccacggct aactacgtgc 480

cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg aattattggg ccgtaaagcg 540

cgcgcaggcg gcttcttaag tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt 600

ggaaactggg aggcagttgt gcagaagagg agagcggaat tccacgtgta gcggtgaaat 660

gcgtaaagat gtggaggaac accagtggcg aaggcggctc tctggtctgt aactgacgct 720

gaggcgcgaa agcgtgggta gcgaacagga ttagataccc tggtagtcca cgccgtaaac 780

gatgagtgct aagtgttagg gggtttccgc cccttagtgc tgcagcaaac gcattaagca 840

ctccgcctgg ggagtacggc cgcaaggctg aaactcaaag gaattgacgg gggcccgcac 900

aagcggtgga gcatgtggtt taattcgaag caacgcgaag aaccttacca ggtcttgaca 960

tcccgctgac cggtctggag acagatcttt cccttcgggg acagcggtga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttgatcttag ttgccagcat tcagttgggc actctaaggt gactgccggt gacaaaccgg 1140

aggaaggtgg ggatgacgtc aaatcatcat gcccccttatg acctgggcta cacacgtgct 1200

acaatggatg gtacagaggg cagcgagacc gcgaggtgga gcgaatccct taaaaccatt 1260

ctcagttcgg attgcaggct gcaactcgcc tgcatgaagc cggaatcgct agtaatcgcg 1320

gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg 1380

agagtttgta acacccgaag tcggtggggt aacctttttgg agccagccgc cgaaggtggg 1440

acagatgatt ggggtgaagt cg 1462

<210> 210
<211> 1485
<212> DNA
<213> Bacillus gelatini

<400> 210
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc ggacggaagg agagcttgct 60

ctctggaagt tagcggcgga cgggtgagta acacgtgggc aacctgcctc atagatgggg 120

ataacaccga gaaatcggtg ctaataccga ataatagagc ggagcgcatg ctccgcgctt 180

gaaagtcggc tttgagctga cactatgaga tgggcccgcg gcgcattagc tagtaggtga 240

ggtaacggct cacctaggcg acgatgcgta gccgacctga gagggtgatc ggccacactg 300

ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt cggcaatgga 360

cgaaagtctg accgagcaac gccgcgtgag tgatgaaggt tttcggatcg taaaactctg 420

ttgtcaggga agaacaagta cgagagtaac tgctcgtacc ttgacggtac ctgaccagaa 480

agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg 540

aattattggg cgtaaagcgc gcgcaggcgg ttctttaagt ctgatgtgaa agcccacggc 600

tcaaccgtgg agggtcattg gaaactgggg aacttgagtg caggagagaa aagtggaatt 660

ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca ccagtggcga aggcggcttt 720

ttggcctgta actgacgctg aggcgcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgagtgcta ggtgttgggg ggttccaccc tcagtgctga 840

cgttaacaca ttaagcactc cgcctgggga gtacgaccgc aaggttgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cagtggagca tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaggt cttgacatcc tctgaccact tgagagatca agctttcccc ttcgggggac 1020

agagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg accttagttg ccagcattca gttgggcact ctaaggtgac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc 1200

tgggctacac acgtgctaca atggatggta caaagggctg cgaaaccgca aggtggagcc 1260

aatcccaaaa agccattctc agttcggatt gtaggctgca actcgcctac atgaagccgg 1320

aattgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg gtgaggtaac cttttggagc 1440

cagccgccga aggtgggaca gatgattggg gtgaagtcgt aacaa 1485

<210> 211
<211> 1504
<212> DNA
<213> Bacillus halmapalus

<220>
<221> modified_base
<222> (46)..(46)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (661)..(661)
<223> a, c, t, g, unknown or other

<400> 211
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc ggactnacac aagcttgctt 60

ttgtaagtta gcggcggacg ggtgagtaac acgtgggcaa cctgccctta agactgggat 120

aacttcggga aaccggagct aataccggat aatataaaga acctcctggt tctttattga 180

aagatggttt cggctatcgc ttatggatgg gcccgcggcg cattagctag ttggtgaggt 240

aacggctcac caagccaacg atgcgtagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttcca caatggacga 360

aagtctgatg gagcaacgcc gcgtgagtga tgaaggcctt cgggtcgtaa agctctgttg 420

ttagggaaga acaagtgcga gagtaactgc tcgcaccttg acggtaccta accagaaagc 480

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tgtccggaat 540

tattgggcgt aaagcgcgcg caggtggttt cttaagtctg atgtgaaagc ccacggctca 600

accgtggagg gtcattggaa actggggaac ttgagtgcag aagaggaaag tggaattcca 660

ngtgtagcgg tgaaatgcgt agagatttgg aggaacacca gtggcgaagg cgactttctg 720

gtctgtaact gacactgagg cgcgaaagcg tggggagcaa acaggattag ataccctggt 780

agtccacgcc gtaaacgatg agtgctaagt gttagagggt ttccgcccct tagtgctgca 840

gctaacgcat taagcactcc gcctggggag tacggtcgca agactgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttaccaggtc ttgacatcct ctgccaaccc tagagatagg gcgttcccct tcgggggaca 1020

gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttga tcttagttgc cagcattcag ttgggcactc taaggtgact 1140

gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc cttatgacct 1200

gggctacaca cgtgctacaa tggacggtac aaagggcagc aaaaccgcga ggtcgagcca 1260

atcccagaaa accgttctca gttcggattg caggctgcaa ctcgcctgca tgaagccgga 1320

atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac accacgagag tttgtaacac ccgaagtcgg tggggtaacc ttttggagcc 1440

agccgcctaa ggtgggacag atgattgggg tgaagtcgta acaaggtagc cgtatcggaa 1500

ggtg 1504

<210> 212
<211> 1457
<212> DNA
<213> Bacillus halodurans

<400> 212
acgctggcgg cgtgcctaat acatgcaagt cgagcggacc aaagggagct tgctcctgga 60

ggttagcggc gaacgggtga gtaacacgtg ggcaacctgc ctgtaagact gggataacat 120

cgagaaatcg gtgctaatac cggataataa aaagaactgc atggttcttt tttgaaagat 180

ggtttcggct atcacttaca gatgggcccg cggcgcatta gctagttggt ggggtaacgg 240

ctcaccaagg cgacgatgcg tagccgacct gagagggtga tcggccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtagggaatc ttccgcaatg gacgaaagtc 360

tgacggagca acgccgcgtg agtgatgaag gttttcggat cgtaaaactc tgttgttagg 420

gaagaacaag tgccgttcga aagggcggca ccttgacggt acctaacgag aaagccacgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggaattattg 540

ggcgtaaagc gcgcgcaggc ggtctcttaa gtctgatgtg aaagcccccg gctcaaccgg 600

ggagggtcat tggaaactgg gagacttgag tacagaagag gagagtggaa ttccacgtgt 660

agcggtgaaa tgcgtagaga tgtggaggaa caccagtggc gaaggcgact ctctggtctg 720

taactgacgc tgaggcgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgccgtaaa cgatgagtgc taggtgttag gggtttcgac gcccttagtg ccgaagttaa 840

cacattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 900

ggggcccgca caagcagtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 960

aggtcttgac atcctttgac cacctagag atagggcttt ccccttcggg ggacaaagtg 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttgacctta gttgccagca ttcagttggg cactctaagg tgactgccgg 1140

tgacaaaccg gaggaaggtg gggatgacgt caaatcatca tgcccccttat gacctgggct 1200

acacacgtgc tacaatggat ggtacaaagg gttgcgaagc cgcgaggtga agccaatccc 1260

agaaagccat tctcagttcg gattgcaggc tgcaactcgc ctgcatgaag ccggaattgc 1320

tagtaatcgc ggatcagcat gccgcggtga atacgttccc gggccttgta cacaccgccc 1380

gtcacaccac gagagtttgt aacacccgaa gtcggtgggg taacctttttg gagccagccg 1440

cctaaggtgg gacagat 1457

<210> 213
<211> 1464
<212> DNA
<213> Bacillus herbersteinensis

<400> 213
acgaacgctg gcggcgtgcc taatacatgc aagtcgagcg gacatttgag agcttgctct 60

caaatgttag cggcggacgg gtgagtaaca cgtgggtaac ctgcctgtaa gattgggata 120

actccgggaa accggagcta ataccggata acattttgaa ccgcatggtt cgaaattgaa 180

agatggcttt cgrctatcac ttacagatgg acccgcggcg cattagctag ttggtgaggt 240

aatggctcac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttccg caatggacga 360

aagtctgacg gagcaacgcc gcgtgaacga tgaaggcctt cgggtcgtaa agttctgttg 420

ttagggaaga acaagtacca gagtaactgc tggtaccttg acggtaccta accagaaagc 480

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tgtccggaat 540

tattgggcgt aaagcgcgcg caggcggttt tttaagtctg atgtgaaagc ccacggctca 600

accgtggagg gtcattggaa actggagaac ttgagtgcag aagaggagag cggaattcca 660

cgtgtagcgg tgaaatgcgt agagatgtgg aggaacacca gtggcgaagg cggctctctg 720

gtctgtaact gacgctgagg cgcgaaagcg tggggagcaa acaggattag ataccctggt 780

agtccacgcc gtaaacgatg agtgctaagt gttagagggt ttccgcccct tagtgctgca 840

gcaaacgcat taagcactcc gcctggggag tacggtcgca agactgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttaccaggtc ttgacatcct ctgacaaccc tagagatagg gcgttcccct tcgggggaca 1020

gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttga tcttagttgc cagcatttag ttgggcactc taaggtgact 1140

gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc cttatgacct 1200

gggctacaca cgtgctacaa tggatggtac aaagggctgc garaccgcga ggttaagcga 1260

atcccataaa accattctca gttcggattg caggctgcaa ctcgcctgca tgaagctgga 1320

atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac accacgagag tttgtaacac ccgaagtcgg tggggtaacc gtaaggagcc 1440

agccgcctaa ggtggacaga tgat 1464

<210> 214
<211> 1512
<212> DNA
<213> Bacillus horti

<220>
<221> modified_base
<222> (761)..(763)
<223> a, c, t, g, unknown or other

<400> 214
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gagtgaaact gacggaagcc 60

ttcgggtgga agacagtgga tctagcggcg gacgggtgag taacacgtag gcaacctgcc 120

tgtaagatgg ggataactcc gggaaaccgg agctaatacc gaataatcgt tttgctcgca 180

tgagcaaaag gtgaaaggtg gcgcaastac cgcttacaga tgggcctgcg gcgcattagc 240

tagttggtga ggtaacggct caccaaggcg acgatgcgta gccgacctga gagggtgatc 300

ggccacactg ggactgagac acggcccaga ctctacggga ggcagcagta gggaatcttc 360

ggcaatggac gaaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt ttcggattgt 420

aaaactctgt tgttagggaa gaacaagtat cggttgaata agccggtacc ctgacggtac 480

ctaacgagaa agccccggct aactacgtgc cagcagccgc ggtaatacgt aggggcaag 540

cgttgtccgg aattattggg cgtaaagcgc gcgcaggcgg tctcttaagt ctgatgtgaa 600

agcccacggc tcaaccgtgg agggtcattg gaaactggga gacttgagtg taggagagga 660

aagcggaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca ccagtggcga 720

aggcggcttt ctggcctata actgacgctg aggcgcgaaa nnntggggag caaacaggat 780

tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttaggg gtttcgatac 840

ccttagtgcc gacgctaacg caataagcac tccgcctggg gagtacggcc gcaaggctga 900

aactcaaagg aattgacggg gacccgcaca agcagtggag catgtggttt aattcgaagc 960

aacgcgaaga accttaccag gacttgacat ccctctgaat cctctagaga tagaggcgac 1020

cttcgggaca gaggtgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta atcttagttg ccagcattca gttgggcact 1140

ctaaggtgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc 1200

ccttatgtcc tgggctacac acgtgctaca atgggcagta caaagggtag cgaagcgcga 1260

ggtggagcca atcccataaa gctgctctca gttcggattg caggctgcaa ctcgcctgca 1320

tgaagccgga attgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggtc 1380

ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg tgaggtaacc 1440

ttttggagcc agccgcctaa ggtgggatag atgattgggg tgaagtcgta acaaggtagc 1500

cgtatcggaa gg 1512

<210> 215
<211> 1437
<212> DNA
<213> Bacillus idriensis

<400> 215
cctaatacat gcaagtcgag cggacttgct ggagcttgct ccagcaggtt agcggcggac 60

gggtgagtaa cacgtgggca acctgcctgt aagactggga taactccggg aaaccggagc 120

taataccgga tagtatcttg aaccgcatgg ttcaagttgg aaagacggtt tcggctgtca 180

cttacagatg ggcccgcggc gcattagcta gttggtgagg taatggctca ccaaggcaac 240

gatgcgtagc cgacctgaga gggtgatcgg ccacactggg actgagacac ggcccagact 300

cctacgggag gcagcagtag ggaatcttcc gcaatggacg aaagtctgac ggagcaacgc 360

cgcgtgagtg atgaaggttt tcggatcgta aaactctgtt gttagggaag aacaagtgcg 420

agagtaactg ctcgcacctt gacggtacct aaccagaaag ccacggctaa ctacgtgcca 480

gcagccgcgg taatacgtag gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc 540

gcaggcggtt tcttaagtct gatgtgaaag cccccggctc aaccggggag ggtcattgga 600

aactgggaaa cttgagtgca gaagaggaga gtggaattcc acgtgtagcg gtgaaatgcg 660

tagagatgtg gaggaacacc agtggcgaag gcgactctct ggtctgtaac tgacgctgag 720

gcgcgaaagc gtggggagcg aacaggatta gataccctgg tagtccacgc cgtaaacgat 780

gagtgctaag tgttagaggg tttccgccct ttagtgctgc agctaacgca ttaagcactc 840

cgcctgggga gtacggtcgc aagactgaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc 960

tttgccactt ctagagatag aaggttcccc ttcgggggac aaagtgacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 1080

atcttagttg ccagcattca gttgggcact ctaaggtgac tgccggtgac aaaccggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1200

atggatggta caaagggctg cgagaccgcg aggtttagcc aatcccataa aaccattctc 1260

agttcggatt gcaggctgca actcgcctgc atgaagctgg aatcgctagt aatcgcggat 1320

cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacgaga 1380

gtttgcaaca cccgaagtcg gtggggtaac cgcaaggagc cagccagccg cctaagt 1437

<210> 216
<211> 1535
<212> DNA
<213> Bacillus lentus

<400> 216
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaatggatgg gagcttgctc ccagaagtta gcggcggacg ggtgagtaac acgtgggcaa 120

cctacctgta agactgggat aacttcggga aaccggagct aataccggat aacttctttc 180

ttctcctgga gaaaggttga aagacggctt cggctgtcac ttacagatgg gcccgcggcg 240

cattagctag ttggtgaggt aacggctcac caaggcaacg atgcgtagcc gacctgagag 300

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 360

gaatcttccg caatggacga aagtctgacg gagcaacgcc gcgtgagtga tgaaggtttt 420

cggatcgtaa aactctgtta tcagggaaga acaagtatcg gagtaactgc cggtaccttg 480

acggtacctg accagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg 540

tggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg caggcggttt cttaagtctg 600

atgtgaaagc ccacggctca accgtggaag gtcattggaa actgggagac ttgagtgcag 660

aagagaagag cggaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaacacca 720

gtggcgaagg cggctctttg gtctgtaact gacgctgagg cgcgaaagcg tggggagcga 780

acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaagt gttagagggt 840

ttccgccctt tagtgctgca gttaacgcat taagcactcc gcctggggag tacggccgca 900

aggctgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgaagcaac gcgaagaacc ttaccaggtc ttgacatcct ctgaccaccc tagagatagg 1020

gacttcccct tcgggggaca gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttaa ccttagttgc cagcattcag 1140

ttgggcactc taaggtgact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggatggtac aaagggttgc 1260

aagaccgcga ggtttagcta atcccataaa accattctca gttcggattg caggctgcaa 1320

ctcgcctgca tgaagccgga atcgctagta atcgtggatc agcatgccac ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tggggtaacc cttacgggag ccagccgccg aaggtgggac agatgattgg ggtgaagtcg 1500

taacaaggta gcgtatcgga aggtgcggtg gatca 1535

<210> 217
<211> 1548
<212> DNA
<213> Bacillus licheniformis

<400> 217
ggagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcggaccgac gggagcttgc tcccttaggt cagcggcgga cgggtgagta acacgtgggt 120

aacctgcctg taagactggg ataactccgg gaaaccgggg ctaataccgg atgcttgatt 180

gaaccgcatg gttccaatca taaaaggtgg cttttagcta ccacttacag atggacccgc 240

ggcgcattag ctagttggtg aggtaacggc tcaccaaggc gacgatgcgt agccgacctg 300

agagggtgat cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg acgaaagtct gacggagcaa cgccgcgtga gtgatgaagg 420

ttttcggatc gtaaaactct gttgttaggg aagaacaagt accgttcgaa tagggcggca 480

ccttgacggt acctaaccag aaagccacgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc ggtttcttaa 600

gtctgatgtg aaagcccccg gctcaaccgg ggagggtcat tggaaactgg ggaacttgag 660

tgcagaagag gagagtggaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 720

caccagtggc gaaggcgact ctctggtctg taactgacgc tgaggcgcga aagcgtgggg 780

agcgaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtgc taagtgttag 840

agggtttccg ccctttagtg ctgcagcaaa cgcattaagc actccgcctg gggagtacgg 900

tcgcaagact gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt 960

ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac atcctctgac aaccctagag 1020

atagggcttc cccttcgggg gcagagtgac aggtggtgca tggttgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgatcttagt tgccagcatt 1140

cagttgggca ctctaaggtg actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1200

aatcatcatg ccccttatga cctgggctac acacgtgcta caatgggcag aacaaagggc 1260

agcgaagccg cgaggctaag ccaatcccac aaatctgttc tcagttcgga tcgcagtctg 1320

caactcgact gcgtgaagct ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt 1440

cggtgaggta acctttttgga gccagccgcc gaaggtggga cagatgattg gggtgaagtc 1500

gtaacaaggt agccgtatcg gaaggtgcgg ctggatcacc tcctttct 1548

<210> 218
<211> 1404
<212> DNA
<213> Bacillus megaterium

<400> 218
tcgagcgaac tgattagaag cttgcttcta tgacgttagc ggcggacggg tgagtaacac 60

gtgggcaacc tgcctgtaag actgggataa cttcgggaaa ccgaagctaa taccggatag 120

gatcttctcc ttcatgggag atgattgaaa gatggtttcg gctatcactt acagatgggc 180

ccgcggtgca ttagctagtt ggtgaggtaa cggctcacca aggcaacgat gcatagccga 240

cctgagaggg tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtaggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg 360

aaggctttcg ggtcgtaaaa ctctgttgtt agggaagaac aagtacgaga gtaactgctc 420

gtaccttgac ggtacctaac cagaaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcaagcgtta tccggaatta ttgggcgtaa agcgcgcgca ggcggtttct 540

taagtctgat gtgaaagccc acggctcaac cgtggagggt cattggaaac tggggaactt 600

gagtgcagaa gagaaaagcg gaattccacg tgtagcggtg aaatgcgtag agatgtggag 660

gaacaccagt ggcgaaggcg gcttttttggt ctgtaactga cgctgaggcg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaagtgt 780

tagagggttt ccgcccttta gtgctgcagc taacgcatta agcactccgc ctggggagta 840

cggtcgcaag actgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 900

ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcctct gacaactcta 960

gagatagagc gttcccttc gggggacaga gtgacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgatc ttagttgcca 1080

gcatttagtt gggcactcta aggtgactgc cggtgacaaa ccggaggaag gtggggatga 1140

cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg gatggtacaa 1200

agggctgcaa gaccgcgagg tcaagccaat cccataaaac cattctcagt tcggattgta 1260

ggctgcaact cgcctacatg aagctggaat cgctagtaat cgcggatcag catgccgcgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc 1380

gaagtcggtg gagtaaccgt aagg 1404

<210> 219
<211> 878
<212> DNA
<213> Bacillus nealsonii

<220>
<221> modified_base
<222> (121)..(121)
<223> a, c, t, g, unknown or other

<400> 219
gcggacttta aaagcttgct tttaaagtta gcggcggacg ggtgagtaac acgtgggcaa 60

cctgcctgta agactgggat aacttcggga aaccggagct aataccggat aattctttcc 120

nccacatggt ggaaagctga aagacggcat ctcgctgtca cttacagatg ggcccgcggc 180

gcattagcta gttggtgagg taacggctca ccaaggcaac gatgcgtagc cgacctgaga 240

gggtgatcgg ccacactggg actgaaacac ggcccaaact cctacgggag gcagcagtag 300

ggaatcttcc gcaatggacg aaagtctgac ggagcaacgc cgcgtgagtg atgaaggttt 360

tcggatcgta aagctctgtt gttagggaag aacaagtaca agagtaactg cttgtacctt 420

gacggtacct aaccagaaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 480

gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggcggtc ctttaagtct 540

gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactggggga cttgagtgca 600

gaagagaaga gtggaattcc acgtgtagcg gtgaaatgcg tagagatgtg gaggaacacc 660

agtggcgaag gcgactcttt ggtctgtaac tgacgctgag gcgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag tgttagaggg 780

tttccgccct ttagtgctgc agcaaacgca ttaagcactc cgcctgggga gtacggccgc 840

aaggctgaaa ctcaaaggaa ttgacggggg cccgcaca 878

<210> 220
<211> 950
<212> DNA
<213> Bacillus niabensis

<220>
<221> modified_base
<222> (37)..(37)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (43)..(43)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (80)..(80)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (85)..(85)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (939)..(939)
<223> a, c, t, g, unknown or other

<400> 220
gccagcagcc gcggtaatac gtaggtggca agcgttntcc ggnaattatt gggcgtaaag 60

cgcgcgcagg cggttccttn aagtntgatg tgaaagccca cggctcaacc gtggagggtc 120

attggaaact ggggaacttg agtgcagaag aggagagcgg aattccacgt gtagcggtga 180

aatgcgtaga gatgtggagg aacaccagtg gcgaaggcgg ctctctggtc tgtaactgac 240

gctgaggcgc gaaagcgtgg ggagcgaaca ggattagata ccctggtagt ccacgccgta 300

aacgatgagt gctaagtgtt agagggtttc cgcccttag tgctgcagca aacgcattaa 360

gcactccgcc tggggagtac ggtcgcaaga ctgaaactca aaggaattga cggggacccg 420

cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaggtcttg 480

acatcctctg ctacttctag agatagaagg ttcccttcgg ggacagagtg acaggtggtg 540

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 600

cttgatctta gttgccagca ttcagttggg cactctaagg tgactgccgg tgacaaaccg 660

gaggaaggtg gggatgacgt caaatcatca tgcccccttat gacctgggct acacacgtgc 720

tacaatggat ggtacaaagg gctgcaaaac cgtgaggtcg agccaatccc ataaaaccat 780

tctcagttcg gattgtaggc tgcaactcgc ctacatgaag ccggaatcgc tagtaatcgc 840

ggatcagcat gccgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccac 900

gagagtttgt aacacccgaa gtcggtgagg taacctttng gagccagccg 950

<210> 221
<211> 929
<212> DNA
<213> Bacillus niacini

<220>
<221> modified_base
<222> (76)..(76)
<223> a, c, t, g, unknown or other

<400> 221
gccgcggtaa tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca 60

ggcggtcctt taagtntgat gtgaaagctc acggctcaac cgtggagggt cattggaaac 120

tgggggactt gagtgcagaa gaggaaagcg gaattccacg tgtagcggtg aaatgcgtag 180

agatgtggag gaacaccagt ggcgaaggcg gctttctggt ctgtaactga cgctgaggcg 240

cgaaagcgtg gggagcaaac aggattagat accctggtag ttcacgccgt aaacgatgag 300

tgctaagtgt tagagggttt ccgcccttta gtgctgcagc taacgcatta agcactccgc 360

ctggggagta cggccgcaag gctgaaactc aaaggaattg acgggggccc gcacaagcgg 420

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcctta 480

cgacctccct agagataggg atttcccctt cgggggacgg aagtgacagg tggtgcatgg 540

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttga 600

tcttagttgc cagcattcag ttgggcactc taaggtgact gccggtgaca aaccggagga 660

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgttacaa 720

tggatggtac aaagggcagc gaaaccgcga ggtcgagcca atcccataaa accattctca 780

gttcggattg caggctgcaa ctcgcctgca tgaagccgga atcgctagta atcgcggatc 840

agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accacgagag 900

tttgtaacac ccgaagtcgg tggggtaac 929

<210> 222
<211> 1495
<212> DNA
<213> Bacillus pocheonensis

<400> 222
aggacgaacg ctggcggcgt gcctaataca tgcaagtcga gcgaatcatt aggagcttgc 60

tcctattggt tagcggcgga cgggtgagta acacgtgggc aacctgcctg taagactggg 120

ataacttcgg gaaaccggag ctaataccgg ataatccttt tcctctcatg agggaaagtt 180

gaaagatggc gtcagctatc acttacagat gggcccgcgg cgcattagct agttggtgag 240

gtaacggctc accaaggcga cgatgcgtag ccgacctgag agggtgatcg gccacactgg 300

gactgagaca cggcccagac tcctacggga ggcagcagta gggaatcttc cgcaatggac 360

gaaagtctga cggagcaacg ccgcgtgagc gatgaaggcc ttcgggtcgt aaagctctgt 420

tgttagggaa gaacaagtat cggagtaact gccggtacct tgacggtacc taaccagaaa 480

gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc gttgtccgga 540

attattgggc gtaaagcgcg cgcaggcggt cctttaagtc tgatgtgaaa gcccacggct 600

caaccgtgga gggtcattgg aaactggggg acttgagtgc agaagaggaa agtggaattc 660

cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac cagtggcgaa ggcgactttc 720

tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc aaacaggatt agataccctg 780

gtagtccacg ccgtaaacga tgagtgctaa gtgttagagg gtttccgccc tttagtgctg 840

cagctaacgc attaagcact ccgcctgggg agtacggccg caaggctgaa actcaaagga 900

attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccagg tcttgacatc ctctgacaat cctagagata ggacgttccc cttcggggga 1020

cagagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt gatcttagtt gccagcattc agttgggcac tctaaggtga 1140

ctgccggtga caaaccggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgac 1200

ctgggctaca cacgtgctac aatggatggt acaaagggct gcaaaaccgc aaggttaagc 1260

caatcccata aaaccattct cagttcggat tgtaggctgc aactcgccta catgaagccg 1320

gaatcgctag taatcgcgga tcagcatgcc gcggtgaata cgttcccggg ccttgtacac 1380

accgcccgtc acaccacgag agtttgtaac acccgaagtc ggtggggtaa ccgtaaggag 1440

ccagccgcct aaggtgggac agatgattgg ggtgaagtcg taacaaggta gccgt 1495

<210> 223
<211> 1410
<212> DNA
<213> Bacillus pumilus

<220>
<221> modified_base
<222> (1399)..(1399)
<223> a, c, t, g, unknown or other

<400> 223
tcgagcgaac agaagggagc ttgctcccgg atgttagcgg cggacgggtg agtaacacgt 60

gggtaacctg cctgtaagac tgggataact ccgggaaacc ggagctaata ccggatagtt 120

ccttgaaccg catggttcaa ggatgaaaga cggtttcggc tgtcacttac agatggaccc 180

gcggcgcatt agctagttgg tggggtaatg gctcaccaag gcgacgatgc gtagccgacc 240

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa 360

ggttttcgga tcgtaaagct ctgttgttag ggaagaacaa gtgcgagagt aactgctcgc 420

accttgacgg tacctaacca gaaagccacg gctaactacg tgccagcagc cgcggtaata 480

cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag ggctcgcagg cggtttctta 540

agtctgatgt gaaagccccc ggctcaaccg gggagggtca ttggaaactg ggaaacttga 600

gtgcagaaga ggagagtgga attccacgtg tagcggtgaa atgcgtagag atgtggagga 660

acaccagtgg cgaaggcgac tctctggtct gtaactgacg ctgaggagcg aaagcgtggg 720

gagcgaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaagtgtta 780

gggggtttcc gccccttagt gctgcagcta acgcattaag cactccgcct ggggagtacg 840

gtcgcaagac tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac caggtcttga catcctctga caaccctaga 960

gatagggctt tcccttcggg gacagagtga caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgatcttag ttgccagcat 1080

ttagttgggc actctaaggt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc 1140

aaatcatcat gccccttatg acctgggcta cacacgtgct acaatggaca gaacaaaggg 1200

ctgcgagacc gcaaggttta gccaatccca taaatctgtt ctcagttcgg atcgcagtct 1260

gcaactcgac tgcgtgaagc tggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa 1320

tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgca acacccgaag 1380

tcggtgaggt aacctttang gagccagccg 1410

<210> 224
<211> 1411
<212> DNA
<213> Bacillus safensis

<220>
<221> modified_base
<222> (1400)..(1400)
<223> a, c, t, g, unknown or other

<400> 224
gtcgagcgga cagaagggag cttgctcccg gatgttagcg gcggacgggt gagtaacacg 60

tgggtaacct gcctgtaaga ctgggataac tccgggaaac cggagctaat accggatagt 120

tccttgaacc gcatggttca aggatgaaag acggtttcgg ctgtcactta cagatggacc 180

cgcggcgcat tagctagttg gtggggtaat ggctcaccaa ggcgacgatg cgtagccgac 240

ctgagagggt gatcggccac actgggactg agacacggcc cagactccta cgggaggcag 300

cagtagggaa tcttccgcaa tggacgaaag tctgacggag caacgccgcg tgagtgatga 360

aggttttcgg atcgtaaagc tctgttgtta gggaagaaca agtgcgagag taactgctcg 420

caccttgacg gtacctaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttgt ccggaattat tgggcgtaaa gggctcgcag gcggtttctt 540

aagtctgatg tgaaagcccc cggctcaacc ggggagggtc attggaaact gggaaacttg 600

agtgcagaag aggagagtgg aattccacgt gtagcggtga aatgcgtaga gatgtggagg 660

aacaccagtg gcgaaggcga ctctctggtc tgtaactgac gctgaggagc gaaagcgtgg 720

ggagcgaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 780

agggggtttc cgcccccttag tgctgcagct aacgcattaa gcactccgcc tggggagtac 840

ggtcgcaaga ctgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg 900

gtttaattcg aagcaacgcg aagaacctta ccaggtcttg acgtcctctg acaacctctg 960

agatagggct ttcccttcgg ggacagagtg acaggtggtg catggttgtc gtcagctcgt 1020

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgatctta gttgccagca 1080

ttcagttggg cactctaagg tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt 1140

caaatcatca tgcccccttat gacctgggct acacacgtgc tacaatggac agaacaaagg 1200

gctgcaagac cgcaaggttt agccaatccc ataaatctgt tctcagttcg gatcgcagtc 1260

tgcaactcga ctgcgtgaag ctggaatcgc tagtaatcgc ggatcagcat gccgcggtga 1320

atacgttccc gggccttgta cacaccgccc gtcacaccac gagagtttgc aacacccgaa 1380

gtcggtgagg taacctttan ggagccagcc g 1411

<210> 225
<211> 1522
<212> DNA

<213> Bacillus simplex

<400> 225
cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gaatcgatgg 60

gagcttgctc cctgagatta gcggcggacg ggtgagtaac acgtgggcaa cctgcctata 120

agactgggat aacttcggga aaccggagct aataccggat acgttctttt ctcgcatgag 180

agaagatgga aagacggttt acgctgtcac ttatagatgg gcccgcggcg cattagctag 240

ttggtgaggt aatggctcac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc 300

cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttccg 360

caatggacga aagtctgacg gagcaacgcc gcgtgaacga agaaggcctt cgggtcgtaa 420

agttctgttg ttagggaaga acaagtacca gagtaactgc tggtaccttg acggtaccta 480

accagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt 540

tgtccggaat tattgggcgt aaagcgcgcg caggtggttc cttaagtctg atgtgaaagc 600

ccacggctca accgtggagg gtcattggaa actggggaac ttgagtgcag aagaggaaag 660

tggaattcca agtgtagcgg tgaaatgcgt agagatttgg aggaacacca gtggcgaagg 720

cgactttctg gtctgtaact gacactgagg cgcgaaagcg tggggagcaa acaggattag 780

ataccctggt agtccacgcc gtaaacgatg agtgctaagt gttagagggt ttccgccctt 840

tagtgctgca gctaacgcat taagcactcc gcctggggag tacggccgca aggctgaaac 900

tcaaaggaat tgacgggggc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaggtct tgacatcctc tgacaaccct agagataggg ctttcccctt 1020

cgggggacag agtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccttgat cttagttgcc agcattcagt tgggcactct 1140

aaggtgactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgcccc 1200

ttatgacctg ggctacacac gtgctacaat ggatggtaca aagggctgca aacctgcgaa 1260

ggtaagcgaa tcccataaag ccattctcag ttcggattgt aggctgcaac tcgcctacat 1320

gaagccggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt gaggtaacct 1440

ttatggaagc cagccgccta aggtgggaca gatgattggg gtgaagtcgt aacaaggtag 1500

ccgtatcgga aggtgcggct gg 1522

<210> 226
<211> 971
<212> DNA
<213> Bacillus sonorensis

<400> 226
tcgagcgaac cgacgggagc ttgctccctt aggttagcgg cggacgggtg agtaacacgt 60

gggtaacctg cctgtaagac tgggataact ccgggaaacc ggggctaata ccggatgctt 120

gattgaaccg catggttcaa ttataaaagg tggcttttag ctaccactta cagatggacc 180

cgcggcgcat tagctagttg gtgaggtaac ggctcaccaa ggcgacgatg cgtagccgac 240

ctgagagggt gatcggccac actgggactg agacacggcc cagactccta cgggaggcag 300

cagtagggaa tcttccgcaa tggacgaaag tctgacggag caacgccgcg tgagtgatga 360

aggttttcgg atcgtaaaac tctgttgtta gggaagaaca agtaccgttc gaacagggcg 420

gtgccttgac ggtacctaac cagaaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca ggcggtttct 540

taagtctgat gtgaaagccc ccggctcaac cggggagggt cattggaaac tggggaactt 600

gagtgcagaa gaggagagtg gaattccacg tgtagcggtg aaatgcgtag agatgtggag 660

gaacaccagt ggcgaaggcg actctctggt ctgtaactga cgctgaggcg cgaaagcgtg 720

gggagcgaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaagtgt 780

tagagggttt ccgcccttta gtgctgcagc aaacgcatta agcactccgc ctggggagta 840

cggtcgcaag actgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 900

ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcctct gacacccta 960

gagatagggc t 971

<210> 227
<211> 935
<212> DNA
<213> Bacillus sp. 10403023 MM10403188

<220>
<221> modified_base
<222> (843)..(843)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (926)..(926)
<223> a, c, t, g, unknown or other

<400> 227
tcgagcggag atttgaaaag cttgcttttc aaatcttagc ggcggacggg tgagtaacac 60

gtgggcaacc tgcccttgag acggggataa ctccgggaaa ccggagctaa taccggataa 120

cacatatctt cgcatgagga tatgttagaa ggtggctttt agctaccact caaggatggg 180

cccgcggcgc attagctagt tggtgaggta acggctcacc aaggcgacga tgcgtagccg 240

acctgagagg gtgatcggcc acactgggac tgagacacgg cccagactcc tacgggaggc 300

agcagtaggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg cgtgagtgat 360

gaaggttttc ggatcgtaaa gctctgttgt tagggaagaa caagtacctg ttgaataagc 420

aggtaccttg acggtaccta accagaaagc cacggctaac tacgtgccag cagccgcggt 480

aatacgtagg tggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg caggcggttc 540

cttaagtctg atgtgaaagc ccacggctca accgtggagg gtcattggaa actggggaac 600

ttgagtgcag aagaggagag cggaattcca cgtgtagcgg tgaaatgcgt agagatgtgg 660

aggaacacca gtggcgaagg cggctctctg gtctgtaact gacgctgagg cgcgaaagcg 720

tggggagcga acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaagt 780

gttagagggt ttccgccctt tagtgctgca gcaaacgcat taagcactcc gcctggggag 840

tanggtcgca agactgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 900

gtggtttaat tcgaagcaac gcgaanaacc ttacc 935

<210> 228
<211> 1485
<212> DNA
<213> Bacillus sp. 2008724126

<400> 228
ggctcaggac gaacgctggc ggcgtgccta atacatgcaa gtcgagcgaa tcgaygggag 60

cttgctccct gagattagcg gcggacgggt gagtaacacg tgggcaacct gcctataaga 120

ctgggataac ttcgggaaac cggagctaat accggatacg ttcttytctc gcatgagaga 180

agatggaaag acggtttacg ctgtcactta tagatgggcc cgcggcgcat tagctagttg 240

gtgaggtaat ggctcaccaa ggcgacgatg cgtagccgac ctgagagggt gatcggccac 300

actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa tcttccgcaa 360

tggacgaaag tctgacggag caacgccgcg tgaacgaaga aggccttcgg gtcgtaaagt 420

tctgttgtta gggaagaaca agtaccagag taactgctgg taccttgacg gtacctaacc 480

agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt 540

ccggaattat tgggcgtaaa gcgcgcgcag gtggttcctt aagtctgatg tgaaagccca 600

cggctcaacc gtggagggtc attggaaact ggggaacttg agtgcagaag aggaaagtgg 660

aattccaagt gtagcggtga aatgcgtaga gatttggagg aacaccagtg gcgaaggcga 720

ctttctggtc tgtaactgac actgaggcgc gaaagcgtgg ggagcaaaca ggattagata 780

ccctggtagt ccacgccgta aacgatgagt gctaagtgtt agagggtttc cgccctttag 840

tgctgcagct aacgcattaa gcactccgcc tggggagtac ggccgcaagg ctgaaactca 900

aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 960

aagaacctta ccaggtcttg acatcctctg acaaccctag agatagggct ttccccttcg 1020

ggggacagag tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa cccttgatct tagttgccag cattcagttg ggcactctaa 1140

ggtgactgcc ggtgacaaac cggaggaagg tggggatgac gtcaaatcat catgcccctt 1200

atgacctggg ctacacacgt gctacaatgg atggtacaaa gggctgcaaa cctgcgaagg 1260

taagcgaatc ccataaagcc attctcagtt cggattgcag gctgcaactc gcctgcatga 1320

agccggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcacacc acgagagttt gtaacacccg aagtcggtga ggtaaccttc 1440

atggagccag ccgcctaagg tgggacagat gattggggtg aagtc 1485

<210> 229
<211> 1495
<212> DNA
<213> Bacillus sp. 2008724139

<400> 229
gttgatcctg gctcaggacg aacgctggcg gcgtgcctaa tacatgcaag tcgagcgaat 60

cgacgggagc ttgctccctg agattagcgg cggacgggtg agtaacacgt gggcaacctg 120

cctataagac tgggataact tcgggaaacc ggagctaata ccggatacgt tcttttctcg 180

catgagagaa gatggaaaga cggtttacgc tgtcacttat agatgggccc gcggcgcatt 240

agctagttgg tgaggtaatg gctcaccaag gcgacgatgc gtagccgacc tgagagggtg 300

atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc agtagggaat 360

cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gaacgaagaa ggccttcggg 420

tcgtaaagtt ctgttgttag ggaagaacaa gtaccagagt aactgctggt accttgacgg 480

tacctaacca gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc 540

aagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg tggttcctta agtctgatgt 600

gaaagcccac ggctcaaccg tggagggtca ttggaaactg gggaacttga gtgcagaaga 660

ggaaagtgga attccaagtg tagcggtgaa atgcgtagag atttggagga acaccagtgg 720

cgaaggcgac tttctggtct gtaactgaca ctgaggcgcg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaagtgtta gagggtttcc 840

gcccttttagt gctgcagcta acgcattaag cactccgcct ggggagtacg gccgcaaggc 900

tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 960

agcaacgcga agaaccttac caggtcttga catcctctga caaccctaga gatagggctt 1020

tcccccttcgg gggacagagt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1080

tgttgggtta agtcccgcaa cgagcgcaac ccttgatctt agttgccagc attcagttgg 1140

gcactctaag gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc 1200

atgcccctta tgacctgggc tacacacgtg ctacaatgga tggtacaaag ggctgcaaac 1260

ctgcgaaggt aagcgaatcc cataaagcca ttctcagttc ggattgcagg ctgcaactcg 1320

cctgcatgaa gccggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcacacca cgagagtttg taacacccga agtcggtgag 1440

gtaaccttya tggagccagc cgcctaaggt gggacagatg attggggtga agtcg 1495

<210> 230
<211> 1547
<212> DNA
<213> Bacillus sp. 2_A_57_CT2

<400> 230
ggagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcggacagat gggagcttgc tccctgaagt cagcggcgga cgggtgagta acacgtgggc 120

aacctgcctg taagactggg ataactccgg gaaaccgggg ctaataccgg ataattcttt 180

ccctcacatg agggaaagct gaaagatggt ttcggctatc acttacagat gggcccgcgg 240

cgcattagct agttggtgag gtaacggctc accaaggcaa cgatgcgtag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgagt gatgaaggtt 420

ttcggatcgt aaaactctgt tgttagggaa gaacaagtac cggagtaact gccggtacct 480

tgacggtacc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttgtccgga attattgggc gtaaagcgcg cgcaggcggt tccttaagtc 600

tgatgtgaaa gcccccggct caaccgggga gggtcattgg aaactgggga acttgagtgc 660

agaagagaag agtggaattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac 720

cagtggcgaa ggcgactctt tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagagg 840

gtttccgccc tttagtgctg cagcaaacgc attaagcact ccgcctgggg agtacggccg 900

caaggctgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc tcctgacaac cctagagata 1020

gggcgttccc cttcgggggа caggatgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gatcttagtt gccagcattc 1140

agttgggcac tctaaggtga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1200

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggatggt acaaagggct 1260

gcgagaccgc gaggttaagc gaatcccata aaaccattct cagttcggat tgcaggctgc 1320

aactcgcctg catgaagccg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc 1440

ggtggggtaa ccttttggag ccagccgcct aaggtgggac agatgattgg ggtgaagtcg 1500

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctttct 1547

<210> 231
<211> 1493
<212> DNA
<213> Bacillus sp. 7-16AIA

<400> 231
tggctcagga cgaacgctgg cggcgtgcct aatacatgca agtcgagcgg atgacgagga 60

gcttgctcct ctgattcagc ggcggacggg tgagtaacac gtgggcaacc tgcctgtaag 120

actgggataa ctccgggaaa ccggggctaa taccggatag gtgatgtctt cgcatgaaga 180

gatcaggaaa gatggcttcg gctatcactt acagatgggc ccgcggcgca ttagctagtt 240

ggtgaggtaa cggctcacca aggcgacgat gcgtagccga cctgagaggg tgatcggcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga atcttccgca 360

atggacgaaa gtctgacgga gcaacgccgc gtgagcgaag aaggtcttcg gatcgtaaag 420

ctctgttgtt agggaagaac aagtaccgtt cgaatagggc ggtaccgtga cggtacctaa 480

ccagaaagcc acggctaact acgtgccagc agccgcggta atacgtaggt ggcaagcgtt 540

gtccggaatt attgggcgta aagcgcgcgc aggcggcttc ttaagtctga tgtgaaagcc 600

cgcagctcaa ctgcggaggg tcattggaaa ctgggaagct tgagtgcaga agaggagagt 660

ggaattccac gtgtagcggt gaaatgcgta gagatgtgga ggaacaccag tggcgaaggc 720

ggctctctgg tctgtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga gtgctaagtg ttagagggtt tccgcccttt 840

agtgctgcag ctaacgcatt aagcactccg cctggggagt acggccgcaa ggctgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaggtct tgacatcctc tgctacttct agagatagaa ggttcccctt 1020

cgggggacgg agtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccttgac cttagttgcc agcattcagt tgggcactct 1140

aaggtgactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgcccc 1200

ttatgacctg ggctacacac gtgctacaat ggacggtaca aagggctgcg aaaccgcgag 1260

gtggagccaa tcccagaaaa ccgttctcag ttcggattgc aggctgcaac tcgcctgcat 1320

gaagccggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt gaggtaaccg 1440

caaggagcca gccgccgaag gtgggacaga tgattggggt gaagtcgtaa caa 1493

<210> 232
<211> 1503
<212> DNA
<213> Bacillus sp. 9-3AIA

<400> 232
tggcaggacg aacgctggcg gcgtgcctaa tacatgcaag tcgagcgagt gaaacgatca 60

gaagccttcg ggtggacgat cgtggatcta gcggcggacg ggtgagtaac acgtaggcaa 120

cctgcctgta agacggggat aactccggga aaccggagct aataccggat gaaccttcag 180

ctcgcatgag ctggagttga aaggtggcgc aagctaccac ttacagatgg gcctgcggcg 240

cattagctag ttggtgaggt aagggctcac caaggcgacg atgcgtagcc gacctgagag 300

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 360

gaatcttcgg caatggacgc aagtctgacc gagcaacgcc gcgtgagtga ggaaggtttt 420

cggattgtaa aactctgttg ttagggaaga acaagtaccg tttgaataag gcggtacctt 480

gacggtacct aacgagaaag ccccggctaa ctacgtgcca gcagccgcgg taatacgtag 540

ggggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggcggtt tcttaagtct 600

gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactgggaaa cttgagtgta 660

ggagaggaaa gcggaattcc acgtgtagcg gtgaaatgcg tagagatgtg gaggaacacc 720

agtggcgaag gcggctttct ggcctataac tgacgctgag gcgcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgttaggggt 840

ttcgataccc ttagtgccga cgttaacaca ataagcactc cgcctgggga gtacggccgc 900

aaggctgaaa ctcaaaggaa ttgacgggga cccgcacaag cagtggagca tgtggtttaa 960

ttcgaagcaa cgcgaagaac cttaccagga cttgacatcc ctctgaatcc tctagagata 1020

gaggcggcct tcgggacaga ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttaat cttagttgcc agcattcagt 1140

tgggcactct aaggtgactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgtcctg ggctacacac gtgctacaat gggcagtaca acgggtagcg 1260

aagccgtgag gtggagccaa tcccataaag ctgctctcag ttcggattgc aggctgcaac 1320

tcgcctgcat gaagccggaa ttgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccacgagagc ttgtaacacc cgaagtcggt 1440

gaggtaacct tttggagcca gccgccgaag gtgggatagg tgattggggt gaagtcgtaa 1500

caa 1503

<210> 233
<211> 1514
<212> DNA
<213> Bacillus sp. AP8

<400> 233
tagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgag 60

cgaacggagg agagcttgct ctccgaagtt agcggcggac gggtgagtaa cacgtgggca 120

acctgcctat aagactggga taactccggg aaaccggggc taataccgga tagttctttt 180

ctccwcatgg agaaaagggg aaagatggtt tcggctatca cttatagatg ggcccgcggc 240

gcattagcta gttggtaggg taacggccta ccaaggcgac gatgcgtagc cgacctgaga 300

gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag 360

ggaatcttcc gcaatggacg aaagtctgac ggagcaacgc cgcgtgaacg atgaaggtct 420

tcggatcgta aagttctgtt gttagggaag aacaagtacg agagtaactg ctcgtacctt 480

gacggtacct aaccagaaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggtggtt ccttaagtct 600

gatgtgaaag cccacggctc aaccgtggaa ggtcattgga aactggggaa cttgagtgca 660

gaagaggaaa gtggaattcc aagtgtagcg gtgaaatgcg tagatatttg gaggaacacc 720

agtggcgaag gcgactttct ggtctgtaac tgacactgag gcgcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag tgttagaggg 840

tttccgccct ttagtgctgc agctaacgca ttaagcactc cgcctgggga gtacggtcgc 900

aagactgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 960

ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc tctgccactc ctagagatag 1020

gacgttcccc ttcgggggac agagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg atcttagttg ccagcattca 1140

gttgggcact ctaaggtgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1200

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggatggta caaagggcag 1260

cgaaaccgcg aggtttagcc aatcccataa agccattctc agttcggatt gtaggctgca 1320

actcgcctac atgaagccgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg 1440

gtggggtaac cgcaaggagc cagccgccta aggtgggaca gatgattggg gtgaagtcgt 1500

aacaaggtag ccgt 1514

<210> 234
<211> 1402
<212> DNA
<213> Bacillus sp. B27(2008)

<220>
<221> modified_base
<222> (1389)..(1389)
<223> a, c, t, g, unknown or other

<400> 234
agcggacaga tgggagcttg ctccctgatg ttagcggcgg acgggtgagt aacacgtggg 60

taacctgcct gtaagactgg gataactccg ggaaaccggg gctaataccg gatggttgtt 120

tgaaccgcat ggttcaaaca taaaaggtgg cttcggctac cacttacaga tggacccgcg 180

gcgcattagc tagttggtga ggtaatggct caccaaggca acgatgcgta gccgacctga 240

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

agggaatctt ccgcaatgga cgaaagtctg acggagcaac gccgcgtgag tgatgaaggt 360

tttcggatcg taaagctctg ttgttaggga agaacaagta ccgttcgaat agggcggtac 420

cttgacggta cctaaccaga aagccacggc taactacgtg ccagcagccg cggtaatacg 480

taggtggcaa gcgttgtccg gaattattgg gcgtaaaggg ctcgcaggcg gtttcttaag 540

ttgatgtgaa agcccccggc tcaaccgggg agggtcattg gaaactgggg aacttgagtg 600

cagaagagga gagtggaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca 660

ccagtggcga aggcgactct ctggtctgta actgacgctg aggagcgaaa gcgtggggag 720

cgaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttaggg 780

ggtttccgcc ccttagtgct gcagctaacg cattaagcac tccgcctggg gagtacggtc 840

gcaagactga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 900

aattcgaagc aacgcgaaga accttaccag gtcttgacat cctctgacaa tcctagagat 960

aggacgtccc cttcgggggc agagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg atcttagttg ccagcattca 1080

gttgggcact ctaaggtgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1140

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggacagaa caaagggcag 1200

cgaaaccgcg aggttaagcc aatcccacaa atctgttctc agttcggatc gcagtctgca 1260

actcgactgc gtgaagctgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg 1380

gtgaggtanc cttttaggag cc 1402

<210> 235
<211> 1411
<212> DNA
<213> Bacillus sp. BT1B_CT2

<220>
<221> modified_base
<222> (1400)..(1400)
<223> a, c, t, g, unknown or other

<400> 235
gtcgagcgga ccgacgggag cttgctccct taggtcagcg gcggacgggt gagtaacacg 60

tgggtaacct gcctgtaaga ctgggataac tccgggaaac cggggctaat accggatgct 120

tgtttgaacc gcatggttca aacataaaag gtggcttttc gctaccactt acagatggac 180

ccgcggcgca ttagctagtt ggtggggtaa cggctcacca aggcgacgat gcgtagccga 240

cctgagaggg tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtaggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg 360

aaggttttcg gatcgtaaaa ctctgttgtt agggaagaac aagtaccgtt cgaacagggc 420

ggtaccttga cggtacctaa ccagaaagcc acggctaact acgtgccagc agccgcggta 480

atacgtaggt ggcaagcgtt gtccggaatt attgggcgta aagcgcgcgc aggcggtttt 540

taagtctgat gtgaaagccc ccggctcaac cggggagggt cattggaaac tggggaactt 600

gagtgcagaa gaggagagtg gaattccacg tgtagcggtg aaatgcgtag agatgtggag 660

gaacaccagt ggcgaaggcg actctctggt ctgtaactga cgctgaggcg cgaaagcgtg 720

gggagcgaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaagtgt 780

tagagggttt ccgcccttta gtgctgcagc aaacgcatta agcactccgc ctggggagta 840

cggtcgcaag actgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 900

ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcctct gacaacccta 960

gagatagggc ttcccccttcg ggggcagagt gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgatctt agttgccagc 1080

attcagttgg gcactctaag gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg cagaacaaag 1200

ggcagcgaag ccgcgaggct aagccaatcc cacaaatctg ttctcagttc ggatcgcagt 1260

ctgcaactcg actgcgtgaa gctggaatcg ctagtaatcg cggatcagca tgccgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagtttg taacacccga 1380

agtcggtgag gtaacctttn ggagccagcc g 1411

<210> 236
<211> 1429
<212> DNA
<213> Bacillus sp. GB1.1

<400> 236
ggggaggaga gggactgctc ctgagtcagc ggcggacggg tgagtaacac gtgggcaacc 60

tgcctgtaag actgggataa cttcgggaaa ccggagctaa taccggataa tgcacagcct 120

ctcatgaggc tatgctgaaa gatggtttcg gctatcactt acagatgggc ccgcggcgca 180

ttagctagtt ggtgaggtaa cggctcacca aggcaacgat gcgtagccga cctgagaggg 240

tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga 300

atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg aaggttttcg 360

gatcgtaaaa ctctgttgtc agggaagaac aagtgccgga gtaactgccg gcaccttgac 420

ggtacctgac cagaaagcca cggctaacta cgtgccagca gccgcggtaa tacgtaggtg 480

gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca ggcggtctct taagtctgat 540

gtgaaagccc acggctcaac cgtggagggt cattggaaac tgggggactt gagtgcagaa 600

gaggaaagtg gaattccacg tgtagcggtg aaatgcgtag agatgtggag gaacaccagt 660

ggcgaaggcg actttctggt ctgtaactga cgctgaggcg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgccgt aaacgatgag tgctaagtgt tagagggttt 780

ccgcccttta gtgctgcagc aaacgcatta agcactccgc ctggggagta cggccgcaag 840

gctgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 900

gaagcaacgc gaagaacctt accaggtctt gacatctcct gacaacccta gagatagggc 960

gttccccttc gggggacagg atgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca acccttgatc ttagttgcca gcattaggtt 1080

gggcactcta aggtgactgc cggtgacaaa ccggaggaag gtggggatga cgtcaaatca 1140

tcatgcccct tatgacctgg gctacacacg tgctacaatg gatggtacaa agggctgcaa 1200

gaccgcgagg ttaagcgaat cccataaaac cattctcagt tcggattgca ggctgcaact 1260

cgcctgcatg aagctggaat cgctagtaat cgcggatcag catgccgcgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc gaagtcggtg 1380

gggtaacctt tggagccagc cgcctaaggt ggacagagat gggatcctt 1429

<210> 237
<211> 1218
<212> DNA
<213> Bacillus sp. GB9

<220>
<221> modified_base

<222> (1162)..(1162)
<223> a, c, t, g, unknown or other

<400> 237
gggggggagag aagggactgc tcctgagtca gcggcggacg ggtgagtaac acgtgggcaa 60

cctgcctgta agactgggat aactccggga aaccggggct aataccggat aattctttcc 120

ctcacatgag ggaaagctga aagatggttt cggctatcac ttacagatgg gcccgcggcg 180

cattagctag ttggtgaggt aacggctcac caaggcaacg atgcgtagcc gacctgagag 240

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 300

gaatcttccg caatggacga aagtctgacg gagcaacgcc gcgtgagtga tgaaggtttt 360

cggatcgtaa aactctgttg ttagggaaga acaagtaccg gagtaactgc cggtaccttg 420

acggtaccta accagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg 480

tggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg caggcggttc cttaagtctg 540

atgtgaaagc ccccggctca accggggagg gtcattggaa actggggaac ttgagtgcag 600

aagagaagag tggaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaacacca 660

gtggcgaagg cgactctttg gtctgtaact gacgctgagg cgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaagt gttagagggt 780

ttccgcccct tagtgctgca gcaaacgcat taagcactcc gcctggggag tacggccgca 840

aggctgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 900

tcgaagcaac gcgaagaacc ttaccaggtc ttgacatctc ctgacaaccc tagagatagg 960

gcgttcccct tcgggggaca ggatgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caacccttga tcttagttgc cagcattcag 1080

ttgggcactc taaggtgact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1140

catcatgccc cttatgacct gngctacaca cgtgctacaa tggatggtac aaagggctgc 1200

gagaccgcga ggtaagcg 1218

<210> 238
<211> 1413
<212> DNA
<213> Bacillus sp. HU19.1

<400> 238
agctcttcgg agatcagcgg cggacgggtg agtaacacgt gggcaacctg cctgtaagac 60

tgggataact ccgggaaacc ggagctaata ccggatacta tgtcaaaccg catggtttga 120

cattcaaaga cggtttcggc tgtcacttac agatgggccc gcggcgcatt agctagttgg 180

tgaggtaatg gctcaccaag gcgacgatgc gtagccgacc tgagagggtg atcggccaca 240

ctgggactga gacacggccc agactcctac gggaggcagc agtagggaat cttccgcaat 300

ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa ggttttcgga tcgtaaaact 360

ctgttgtcag ggaagaacaa gtgccggagt aactgccggc gccttgacgg tacctgacca 420

gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc 480

cggaattatt gggcgtaaag cgcgcgcagg cggtttctta agtctgatgt gaaagccccc 540

ggctcaaccg gggagggtca ttggaaactg ggaaacttga gtgcagaaga ggagagtgga 600

attccacgtg tagcggtgaa atgcgtagag atgtggagga acaccagtgg cgaaggcgac 660

tctctggtct gtaactgacg ctgaggcgcg aaagcgtggg gagcgaacag gattagatac 720

cctggtagtc cacgccgtaa acgatgagtg ctaagtgtta gagggtttcc gcccctttagt 780

gctgcagcta acgcattaag cactccgcct ggggagtacg gtcgcaagac tgaaactcaa 840

aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 900

agaaccttac caggtcttga catcctttgc cacttctaga gatagaaggt tcccccttcgg 960

gggacaaagt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttgatctt agttgccagc attcagttgg gcactctaag 1080

gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta 1140

tgacctgggc tacacacgtg ctacaatgga tggtacaaag ggctgcgaga ccgcgaggtt 1200

tagccaatcc cataaaacca ttctcagttc ggattgcagg ctgcaactcg cctgcatgaa 1260

gctggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca cgagagtttg caacacccga agtcggtggg gtaaccgcaa 1380

ggagccagcc gcctaaggtg gggtagattg atc 1413

<210> 239
<211> 1428
<212> DNA
<213> Bacillus sp. HU29

<400> 239
acggaaggga gcttgctcat acgtcagcgg cggacgggtg agtaacacgt gggcaacctg 60

cctgtaagac tgggataact ccgggaaacc ggggctaata ccggataatg cttttcctca 120

catgagggaa agctgaaaga tggcttctcg ctatcactta cagatgggcc cgcggcgcat 180

tagctagttg gtgaggtaac ggctcaccaa ggcaacgatg cgtagccgac ctgagagggt 240

gatcggccac actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa 300

tcttccgcaa tggacgaaag tctgacggag caacgccgcg tgagtgatga aggttttcgg 360

atcgtaaaac tctgttgtta gggaagaaca agtaccggag taactgccgg taccttgacg 420

gtacctaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg 480

caagcgttgt ccggaattat tgggcgtaaa gcgcgcgcag gcggttcctt aagtctgatg 540

tgaaagcccc cggctcaacc ggggagggtc attggaaact ggggaacttg agtgcagaag 600

agaagagtgg aattccacgt gtagcggtga aatgcgtaga gatgtggagg aacaccagtg 660

gcgaaggcga ctctttggtc tgtaactgac gctgaggcgc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt agagggtttc 780

cgcccttag tgctgcagca aacgcattaa gcactccgcc tggggagtac ggccgcaagg 840

ctgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg aagaacctta ccaggtcttg acatctcctg acaaccctag agatagggcg 960

ttcccccttcg ggggacagga tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgca acgagcgcaa cccttgatct tagttgccag cattcagttg 1080

ggcactctaa ggtgactgcc ggtgacaaac cggaggaagg tggggatgac gtcaaatcat 1140

catgcccctt atgacctggg ctacacacgt gctacaatgg atggtacaaa gggctgcaag 1200

accgcgaggt taagcgaatc ccataaaacc attctcagtt cggattgcag gctgcaactc 1260

gcctgcatga agccggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg aagtcggtgg 1380

ggtaaccttt tggagccagc cgcctaaggt gggacagatg attgggat 1428

<210> 240
<211> 1418
<212> DNA
<213> Bacillus sp. HU33.1

<400> 240
gatcgctttg gagtcagcgg cggacgggtg agtaacacgt gggcaacctg cctgtaagac 60

tgggataact ccgggaaacc ggagctaata ccggatacta tgtcaaaccg catggtttga 120

cattcaaaga cggtttcggc tgtcacttac agatgggccc gcggcgcatt agctagttgg 180

tgaggtaatg gctcaccaag gcgacgatgc gtagccgacc tgagagggtg atcggccaca 240

ctgggactga gacacggccc agactcctac gggaggcagc agtagggaat cttccgcaat 300

ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa ggttttcgga tcgtaaaact 360

ctgttgtcag ggaagaacaa gtgccggagt aactgccggc gccttgacgg tacctgacca 420

gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc 480

cggaattatt gggcgtaaag cgcgcgcagg cggtttctta agtctgatgt gaaagccccc 540

ggctcaaccg gggagggtca ttggaaactg ggaaacttga gtgcagaaga ggagagtgga 600

attccacgtg tagcggtgaa atgcgtagag atgtggagga acaccagtgg cgaaggcgac 660

tctctggtct gtaactgacg ctgaggcgcg aaagcgtggg gagcgaacag gattagatac 720

cctggtagtc cacgccgtaa acgatgagtg ctaagtgtta gagggtttcc gcccctttagt 780

gctgcagcta acgcattaag cactccgcct ggggagtacg gtcgcaagac tgaaactcaa 840

aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 900

agaaccttac caggtcttga catcctttgc cacttctaga gatagaaggt tcccccttcgg 960

gggacaaagt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttgatctt agttgccagc attcagttgg gcactctaag 1080

gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta 1140

tgacctgggc tacacacgtg ctacaatgga tggtacaaag ggctgcgaga ccgcgaggtt 1200

tagccaatcc cataaaacca ttctcagttc ggattgcagg ctgcaactcg cctgcatgaa 1260

gctggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca cgagagtttg caacacccga agtcggtggg gtaaccgcaa 1380

ggagccagcc gcctaaggtg gggtagatga ttgggatg 1418

<210> 241
<211> 1475
<212> DNA
<213> Bacillus sp. JC6

<400> 241
tagagttttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcggatctga gggagcttgc tcccaaagat tagcggcgga cgggtgagta acacgtgggc 120

aacctgccta taagactggg ataacttcgg gaaaccggag ctaataccgg ataatgcttt 180

tggacacatg tccggaagct gaaagatggc ttctcgctat cacttataga tgggcccgcg 240

gcgcattagc tagttggtga ggtaacggct caccaaggca acgatgcgta gccgacctga 300

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

agggaatctt ccgcaatgga cgaaagtctg acggagcaac gccgcgtgag tgatgaaggt 420

tttcggatcg taaaactctg ttgttaggga agaacaagta ccggagtaac tgccggtacc 480

ttgacggtac ctaaccagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtggcaag cgttgtccgg aattattggg cgtaaagcgc gcgcaggcgg ttctttaagt 600

ctgatgtgaa agcccccggc tcaaccgggg agggtcattg gaaactgggg aacttgagtg 660

cagaagagaa gagcggaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca 720

ccagtggcga aggcggctct ttggtctgta actgacgctg aggcgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttagag 840

ggtttccgcc ctttagtgct gcagcaaacg cattaagcac tccgcctggg gagtacggcc 900

gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgaagc aacgcgaaga accttaccag gtcttgacat ccttatgcca tccctagaga 1020

tagggctttc ccttcgggga cataagtgac aggtggtgca tggttgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgatcttagt tgccagcatt 1140

gagttgggca ctctaaggtg actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1200

aatcatcatg ccccttatga cctgggctac acacgtgcta caatggatgg tacaaagggc 1260

agcgaagccg cgaggtgaag cgaatcccat aaaaccattc tcagttcgga ttgtaggctg 1320

caactcgcct acatgaagcc ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt 1440

cggtggggta accgtaagga gccagccgcc taagg 1475

<210> 242
<211> 1525
<212> DNA

<213> Bacillus sp. SRC_DSF10

<400> 242
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaactgatta gaagcttgct tctatgacgt tagcggcgga cgggtgagta acacgtgggc 120

aacctgcctg taagactggg ataactccgg gaaaccggag ctaataccgg ataacatttt 180

ctcttgcata agagaaaatt gaaagatggt ttcggctatc acttacagat gggcccgcgg 240

tgcattagct agttggtgag gtaacggctc accaaggcaa cgatgcatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgagt gatgaaggct 420

ttcgggtcgt aaaactctgt tgttagggaa gaacaagtac aagagtaact gcttgtacct 480

tgacggtacc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttatccgga attattgggc gtaaagcgcg cgcaggcggt ttcttaagtc 600

tgatgtgaaa gcccacggct caaccgtgga gggtcattgg aaactgggga acttgagtgc 660

agaagagaaa agcggaattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac 720

cagtggcgaa ggcggctttt tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagagg 840

gtttccgccc tttagtgctg cagctaacgc attaagcact ccgcctgggg agtacggtcg 900

caagactgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctctgacaac tctagagata 1020

gagcgttccc cttcggggga cagagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gatcttagtt gccagcattt 1140

agttgggcac tctaaggtga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1200

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggatggt acaaagggct 1260

gcaagaccgc gaggtcaagc caatcccata aaaccattct cagctcggat tgtaggctgc 1320

aactcgccta catgaagctg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc 1440

ggtggggtaa cctttatgga gccagccgcc taaggtggga cagatgattg gggtgaagtc 1500

gtaacaaggt aaccgtagcg gccgc 1525

<210> 243
<211> 934
<212> DNA
<213> Bacillus sp. SRC_DSF1

<220>
<221> modified_base
<222> (76)..(76)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (233)..(233)
<223> a, c, t, g, unknown or other

<400> 243
gccgcggtaa tacgtaggtg gcaagcgtta tccggaatta ttgggcgtaa agcgcgcgca 60

ggcggtttct taagtntgat gtgaaagccc acggctcaac cgtggagggt cattggaaac 120

tggggaactt gagtgcagaa gagaaaagcg gaattccacg tgtagcggtg aaatgcgtag 180

agatgtggag gaacaccagt ggcgaaggcg gctttttggt ctgtaactga cgntgaggcg 240

cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag 300

tgctaagtgt tagagggttt ccgcccttta gtgctgcagc taacgcatta agcactccgc 360

ctggggagta cggtcgcaag actgaaactc aaaggaattg acgggggccc gcacaagcgg 420

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcctct 480

gacaactcta gagatagagc gttccccttc gggggacaga gtgacaggtg gtgcatggtt 540

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgatc 600

ttagttgcca gcattcagtt gggcactcta aggtgactgc cggtgacaaa ccggaggaag 660

gtggggatga cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg 720

gatggtacaa agggctgcaa gaccgcgagg tcaagccaat cccataaaac cattctcagt 780

tcggattgta ggctgcaact cgcctacatg aagctggaat cgctagtaat cgcggatcag 840

catgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgagagtt 900

tgtaacaccc gaagtcggtg gagtaaccgt aagg 934

<210> 244
<211> 1526
<212> DNA
<213> Bacillus sp. SRC_DSF2

<400> 244
agagtttgat catggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaactgatta gaagcttgct tctatgacgt tagcggcgga cgggtgagta acacgtgggc 120

aacctgcctg taagactggg ataactccgg gaaaccggag ctaataccgg ataacatttt 180

ctcttgcata agagaaaatt gaaagatggt ttcggctatc acttacagat gggcccgcgg 240

tgcattagct agttggtgag gtaacggctc accaaggcaa cgatgcatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgagt gatgaaggct 420

ttcgggtcgt aaaactctgt tgttagggaa gaacaagtac aagagtaact gcttgtacct 480

tgacggtacc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttatccgga attattgggc gtaaagcgcg cgcaggcggt ttcttaagtc 600

tgatgtgaaa gcccacggct caaccgtgga gggtcattgg aaactgggga acttgagtgc 660

agaagagaaa agcggaattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac 720

cagtggcgaa aggcggcttt ttggtctgta actgacgctg aggcgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttagag 840

ggtttccgcc ctttagtgct gcagctaacg cattaagcac tccgcctggg gagtacggtc 900

gcaagactga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgaagc aacgcgaaga accttaccag gtcttgacat cctctgacaa ctctagagat 1020

agagcattcc ccttcggggg acagagtgac aggtggtgca tggttgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgatcttagt tgccagcatt 1140

tagttgggca ctctaaggtg actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1200

aatcatcatg ccccttatga cctgggctac acacgtgcta caatggatgg tacaaagggc 1260

tgcaagaccg cgaggtcaag ccaatcccat aaaaccattc tcagttcgga ttgtaggctg 1320

caactcgcct acatgaagct ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat 1380

acgttcccag gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt 1440

cggtggggta acctttatgg agccagccgc ctaaggtggg acagatgatt ggggtgaagt 1500

cgtaacaagg taaccgtagc ggccgc 1526

<210> 245
<211> 1525
<212> DNA
<213> Bacillus sp. SRC_DSF6

<400> 245
agagtttgat catggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaactgatta gaagcttgct tctatgacgt tagcggcgga cgggtgagta acacgtgggc 120

aacctgcctg taagactggg ataactccgg gaaaccggag ctaataccgg ataacatttt 180

ctcttgcata agagaaaatt gaaagatggt ttcggctatc acttacagat gggcccgcgg 240

tgcattagct agttggtgag gtaacggctc accaaggcaa cgatgcatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgagt gatgaaggct 420

ttcgggtcgt aaaactctgt tgttagggaa gaacaagtac aagagtaact gcttgtacct 480

tgacggtacc taaccagaaa gctacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttatccgga attattgggc gtaaagcgcg cgcaggcggt ttcttaagtc 600

tgatgtgaaa gcccacggct caaccgtgga gggtcattgg aaactgggga acttgagtgc 660

agaagagaaa agcggaattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac 720

cagtggcgaa ggcggctttt tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagagg 840

gtttccgccc tttagtgctg cagctaacgc attaagcact ccgcctgggg agtacggtcg 900

caagactgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctctgacaac tctagagata 1020

gagcattccc cttcggggga cagagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gatcttagtt gccagcattt 1140

agttgggcac tctaaggtga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1200

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggatggt acaaagggct 1260

gcaagaccgc gaggtcaagc caatcccata aaaccattct cagttcggat tgtaggctgc 1320

aactcgccta catgaagctg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc 1440

ggtggggtaa cctttatgga gccagccgcc taaggtggga cagatgattg gggtgaagtc 1500

gtaacaaggt aaccgtagcg gccgc 1525

<210> 246
<211> 1552
<212> DNA
<213> Bacillus sp. oral taxon F26

<400> 246
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggagatttaa aagcttgctt ttaaatctta gcggcggacg ggtgagtaac acgtgggcaa 120

cctgccctgt agactgggat aacttcggga aaccgaagct aataccggat aatcgaaggg 180

acctcatggt tctttagtaa aagttgggtt tacctaacac tacaggatgg gcccgcgtcg 240

cattagctag ttggtagggt aatggcctac caaggcgacg atgcgtagcc gacctgagag 300

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 360

gaatcttccg caatggacga aagtctgacg gagcaacgcc gcgtgagcga tgaaggcctt 420

cgggtcgtaa agctctgttg ttagggaaga acaagtactg ttcaaatagg gcagtacctt 480

gacggtacct aacgagaaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggcggtt tcttaagtct 600

gatgtgaaag cccccggctc aaccggggag ggtcattgga aactgggaga cttgagtgca 660

gaagaggaga gtggaattcc atgtgtagcg gtgaaatgcg tagatatatg gaggaacacc 720

agtggcgaag gcgactctct ggtctgtaac tgacgctgag gcgcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgttaggggt 840

ttcgatgccc ttagtgccga agttaacaca ttaagcactc cgcctgggga gtacgaccgc 900

aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cagtggagca tgtggtttaa 960

ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc ccatgacctc tctagagata 1020

gagatttccc ttcggggaca tgggtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg atcttagttg ccagcattaa 1140

gttgggcact ctaaggtgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1200

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggatggta caaagggctg 1260

cgagaccgcg aggttaagcc aatcccataa agccattctc agttcggatt gtaggctgca 1320

actcgcctac atgaagccgg aattgctagt aatcgcggat cagcatgccg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg 1440

gtggggtaac ctaagagttt gcggagcaat cttgcttcgt aagcgttgac ctaggagcca 1500

gccgcctaag gtgggacaga tgattggggt gaagtcgtaa caaggtagcc gt 1552

<210> 247
<211> 1478
<212> DNA
<213> Bacillus sp. oral taxon F28

<400> 247
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gcgggaagct tgcggaatcc ttcgggagga agtgagcgga ccgagcggcg gacgggtgag 120

taacacgtgg gcaacctgcc cgtaagacgg ggataacccc gggaaaccgg ggctaatacc 180

ggataggtga cctttctgca tggaggggtc atgaaaggcg gcggaagccg tcgcttacgg 240

aggggcccgc ggcgcattag ctagttggtg agggaagggc tcaccaaggc gacgatgcgt 300

agccggcctg agagggtgaa cggccacact gggactgaga cacggcccag actcctacgg 360

gaggcagcag tagggaatct tccgcaatgg acggaagtct gacggagcaa cgccgcgtga 420

gtgaggaagg ccttcgggtc gtaaagctct gttgttcgtg aagaaggggt tggccaggaa 480

atgggccgac attgacggta gcgaaccaga aagccccggc taactacgtg ccagcagccg 540

cggtaacacg taggggcaa gcgttgtccg gaatgattgg gcgtaaaggg cgcgcaggcg 600

gcctcttaag tctgatgtga aagcccacgg ctcaaccgtg gagggacatt ggaaactggg 660

gggcttgagt gcaggagagg ggagtggaat tccacgtgta gcggtgaaat gcgtagagat 720

gtggaggaac accagtggcg aaggcggctc tctggcctgt gactgacgct gaggcgcgaa 780

agcgtgggga gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct 840

aggtgttagg ggggagcacc ccttagtgct gaagtcaaca cattaagcac tccgcctggg 900

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcagtggag 960

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat ccctctgatg 1020

ggttcagaga tggaccgttc cttcgggaca gaggagacag gtggtgcatg gttgtcgtca 1080

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg acctttgttg 1140

ccagcattaa gttgggcact cagaggtgac tgccggtgac aaaccggagg aaggtgggga 1200

tgacgtcaaa tcatcatgcc cctgatgacc tgggcgacac acgtgctaca atgggcggta 1260

cagagggcag cgaagccgcg aggcggagcg aatcccagaa agccgctctc agttcggatt 1320

gcaggctgca actcgcctgc atgaaggagg aattgctagt aatcgcggat cagcatgccg 1380

cggtgaatcc gttcccgggc cttgtacaca ccgcccgtca caccacgaga gtctgtaaca 1440

cccgaagtcg gtgaggcaac cggaaggagc cagccgcc 1478

<210> 248
<211> 1507
<212> DNA
<213> Bacillus sp. oral taxon F79

<220>
<221> modified_base
<222> (880)..(880)
<223> a, c, t, g, unknown or other

<400> 248
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gcttgcatat tgaaagcttg ctttcaatat gcttgagcgg cggacgggtg agtaacacgt 120

gggcaacctg cctgtaagac tgggataact tcgggaaacc ggagctaata ccggataatg 180

cttttgaaca catgttcgaa agctgaaaga tggtttcggc tatcacttac agatgggccc 240

gcggcgcatt agctagttgg tgaggtaacg gctcaccaag gcgacgatgc gtagccgacc 300

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 360

agtagggaat cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa 420

ggttttcgga tcgtaaaact ctgttgttag ggaagaacaa gtaccggagt aactgccggt 480

accttgacgg tacctaacca gaaagccacg gctaactacg tgccagcagc cgcggtaata 540

cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggtctttta 600

agtctgatgt gaaagccccc ggctcaaccg gggagggtca ttggaaactg ggagacttga 660

gtgcagaaga gaagagcgga attccacgtg tagcggtgaa atgcgtagag atgtggagga 720

acaccagtgg cgaaggcggc tctttggtct gtaactgacg ctgaggcgcg aaagcgtggg 780

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaagtgtta 840

gagggtttcc gcccttagt gctgcagcaa acgcattaan cactccgcct ggggagtacg 900

gccgcaaggc tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 960

tttaattcga agcaacgcga agaaccttac caggtcttga catcctctga caaccctaga 1020

gatagggcgt tccccttcgg gggacagagt gacaggtggt gcatggttgt cgtcagctcg 1080

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgatctt agttgccagc 1140

atttagttgg gcactctaag gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg 1200

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatgga tggtacaaag 1260

ggcagcaaaa ccgcgaggtc gagccaatcc cataaaacca ttctcagttc ggattgtagg 1320

ctgcaactcg cctacatgaa gccggaatcg ctagtaatcg cggatcagca tgccgcggtg 1380

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagtttg taacacccga 1440

agtcggtggg gtaaccgtaa ggagccagcc gcctaaggtg ggacagatga ttggggtgaa 1500

gtcgtaa 1507

<210> 249
<211> 1405
<212> DNA

<213> Bacillus sp. tc09

<400> 249
tgcagtcgag cgaatggatt aagagcttgc tcttatgaag ttagcggcgg acgggtgagt 60

aacacgtggg taacctgccc ataagactgg gataactccg ggaaaccggg gctaataccg 120

gataacattg aaccgcatgg ttcgaaattg aaaggcggct tcggctgtca cttatggatg 180

gacccgcgtc gcattagcta gttggtgagg taacggctca ccaaggcaac gatgcgtagc 240

cgacctgaga ggggtcggcc acactgggac tgagacacgg cccagactcc tacgggaggc 300

agcagtaggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg cgtgagtgat 360

gaaggctttc gggtcgtaaa cctgttgtta gggaagaaca agtgctagtt gaataagctg 420

gcaccttgac ggtacctaac cagaaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcaagcgtta tccggatttt gggcgtaaag cgcgcgcagg tggtttctta 540

agtctgatgt gaaagcccac ggctcaaccg tggagggtca ttggaaactg ggagacttga 600

gtgcagaaga ggaaagtgga attccatgtg tgcgggaaat gcgtagagat atggaggaac 660

accagtggcg aaggcgactt tctggtctgt aactgacact gaggcgcgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgccgtaacg atagtgctaa gtgttagagg 780

gtttccgccc tttagtgctg aagttaacgc attaagcact ccgcctgggg agtacggccg 840

caagggtgaa acttaaagga attgacgggg gcccgcacca gcgtggagct gtggtttaat 900

ttgaagcaac gggaagaacc ttaccaggtt ttgacatcct ttgacaaccc tagagatagg 960

ggttttcctt tgggagcaga gtgacaggtg gtgcatggtt gttgtcagcc gtgttggaga 1020

tgttgggtta agtcccgcaa cgagcgcaac ccttgatttt agttgccatc attaagttgg 1080

gcactttaag gtgactgccg gtgacaaacc ggaggaaggt ggggaagacg tcaaacatca 1140

tgcccttatg acctgggcta cccacgtggt acaatggacg gtacaaagag gtgcaagacc 1200

ccgaggggga gctaatttca taaaaccgtt ttcagtttgg attgtagggt gcaacttgcc 1260

tcatgaagcc gaatcgctag taatcgcgga tcagcctgcc gcggggaata cgttcccggg 1320

ccttgtacac ccccccccgtc acccccccgag agtttgtaac acccgaagtc ggtggggtaa 1380

ccttttttgag ccagccgcta aggtg 1405

<210> 250
<211> 725
<212> DNA
<213> Bacillus sp. zh168

<220>
<221> modified_base
<222> (105)..(106)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (112)..(112)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (134)..(135)
<223> a, c, t, g, unknown or other

<400> 250
cttcggctac cacttacaga tggacccgcg gcgcattagc tagttggtga ggtaacggct 60

caccaaggca acgatgcgta gccgacctga gagggtgatc ggccnnactg gnactgagac 120

acggcccaga ctcnnacggg aggcagcagt agggaatctt ccgcaatgga cgaaagtctg 180

acggagcaac gccgcgtgag tgatgaaggt tttcggatcg taaagctctg ttgttaggga 240

agaacaagta ccgttcgaat agggcggtac cttgacggta cctaaccaga aagccacggc 300

taactacgtg ccagcagccg cggtaatacg taggtggcaa gcgttgtccg gaattattgg 360

gcgtaaaggg ctcgcaggcg gtttcttaag tctgatgtga aagcccccgg ctcaaccggg 420

gagggtcatt ggaaactggg gaacttgagt gcagaagagg agagtggaat tccacgtgta 480

gcggtgaaat gcgtagagat gtggaggaac accagtggcg aaggcgactc tctggtctgt 540

aactgacgct gaggagcgaa agcgtgggga gcgaacagga ttagataccc tggtagtcca 600

cgccgtaaac gatgagtgct aagtgttagg gggtttccgc cccttagtgc tgcagctaac 660

gcattaagca ctccgcctgg ggagtacggt cgcaagactg aaactcaaag gaattgacgg 720

gggcc 725

<210> 251
<211> 1430
<212> DNA
<213> Bacillus sphaericus

<400> 251
taatacatgc aagtcgagcg aacagagaag gagcttgctc ctttgacgtt agcggcggac 60

gggtgagtaa cacgtgggca acctacctta tagtttggga taactccggg aaaccggggc 120

taataccgaa taatctgttt cacctcatgg tgaaatattg aaagacggtt tcggctgtcg 180

ctataggatg ggcccgcggc gcattagcta gttggtgagg taacggctca ccaaggcgac 240

gatgcgtagc cgacctgaga gggtgatcgg ccacactggg actgagacac ggcccagact 300

cctacgggag gcagcagtag ggaatcttcc acaatgggcg aaagcctgat ggagcaacgc 360

cgcgtgagtg aagaaggatt tcggttcgta aaactctgtt gtaagggaag aacaagtaca 420

gtagtaactg gctgtacctt gacggtacct tattagaaag ccacggctaa ctacgtgcca 480

gcagccgcgg taatacgtag gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc 540

gcaggtggtt tcttaagtct gatgtgaaag cccacggctc aaccgtggag ggtcattgga 600

aactgggaga cttgagtgca gaagaggata gtggaattcc aagtgtagcg gtgaaatgcg 660

tagagatttg gaggaacacc agtggcgaag gcgactatct ggtctgtaac tgacactgag 720

gcgcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 780

gagtgctaag tgttaggggg tttccgcccc ttagtgctgc agctaacgca ttaagcactc 840

cgcctgggga gtacggtcgc aagactgaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc 960

cgttgaccac tgtagagata tggtttcccc ttcgggggca acggtgacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 1080

atcttagttg ccatcattta gttgggcact ctaaggtgac tgccggtgac aaaccggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1200

atggacgata caaacggttg ccaactcgcg agagggagct aatccgataa agtcgttctc 1260

agttcggatt gtaggctgca actcgcctac atgaagccgg aatcgctagt aatcgcggat 1320

cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacgaga 1380

gtttgtaaca cccgaagtcg gtgaggtaac cttttggagc cagccgccga 1430

<210> 252
<211> 1497
<212> DNA
<213> Bacillus sporothermodurans

<400> 252
ctggcggcgt gcctaataca tgcaagtcga gcgaacttga tgggagcttg ctccctgaga 60

gttagcggcg gacgggtgag taacacgtgg gtaacctgcc tgtaagactg ggataactcc 120

gggaaaccgg ggctaatacc ggataacttt tttcttcgca tgaaggagaa ttgaaagacg 180

gctttaagct accacttaca gatggacccg cggcgcatta gctagttggt gaggtaacgg 240

ctcaccaagg cgacgatgcg tagccgactt gagagggtga tcggccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtagggaatc ttccgcaatg gacgaaagtc 360

tgacggagca acgccgcgtg agtgatgaag gttttcggat cgtaaaactc tgttgttagg 420

gaagaacaag tatcgttcga atagggcggt accttgacgg tacctaacca gaaagccacg 480

gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggaattatt 540

gggcgtaaag cgcgcgcagg cggtttctta agtctgatgt gaaagcccac ggctcaaccg 600

tggagggtca ttggaaactg ggagacttga gtgcagaaga gaagagcgga attccacgtg 660

tagcggtgaa atgcgtagag atgtggagga acaccagtgg cgaaggcggc tctttggtct 720

gtaactgacg ctgaggcgcg aaagcgtggg gagcgaacag gattagatac cctggtagtc 780

cacgccgtaa acgatgagtg ctaagtgtta gagggtttcc gccctttagt gctgcagcta 840

acgcattaag cactccgcct ggggagtacg gccgcaaggc tgaaactcaa aggaattgac 900

gggggcccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac 960

caggtcttga catcctcttg acctccctag agatagggat ttcccttcgg ggacaagagt 1020

gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttgacctt agttgccagc attcagttgg gcactctaag gtgactgccg 1140

gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgacctgggc 1200

tacacacgtg ctacaatgga tggtacaaag ggttgctaga ccgcgaggtt acgccaatcc 1260

cataaaacca ttctcagttc ggattgtagg ctgcaactcg cctacatgaa gccggaatcg 1320

ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcacacca cgagagtttg taacacccga agtcggtgag gtaacctttt ggagccagcc 1440

gccgaaggtg ggacagatga ttggggtgaa gtcgtaacaa ggtagccgta tcggaag 1497

<210> 253
<211> 965
<212> DNA
<213> Bacillus subtilis

<220>
<221> modified_base
<222> (857)..(857)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (919)..(919)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (929)..(929)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (938)..(938)
<223> a, c, t, g, unknown or other

<400> 253
ggagcttgct ccctgatgtt agcggcggac gggtgagtaa cacgtgggta acctgcctgt 60

aagactggga taactccggg aaaccggggc taataccgga tggttgtttg aaccgcatgg 120

ttcaaacata aaaggtggct tcggctacca cttacagatg gacccgcggc gcattagcta 180

gttggtgagg taacggctca ccaaggcaac gatgcgtagc cgacctgaga gggtgatcgg 240

ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag ggaatcttcc 300

gcaatggacg aaagtctgac ggagcaacgc cgcgtgagtg atgaaggttt tcggatcgta 360

aagctctgtt gttagggaag aacaagtacc gttcgaatag ggcggtacct tgacggtacc 420

taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc 480

gttgtccgga attattgggc gtaaagggct cgcaggcggt ttcttaagtc tgatgtgaaa 540

gcccccggct caaccgggga gggtcattgg aaactgggga acttgagtgc agaagaggag 600

agtggaattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac cagtggcgaa 660

ggcgactctc tggtctgtaa ctgacgctga ggagcgaaag cgtggggagc gaacaggatt 720

agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagggg gtttccgccc 780

cttagtgctg cagctaacgc attaagcact ccgcctgggg agtacggtcg caagactgaa 840

actcaaagga attgacnggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 900

acgcgaagaa cccttaccng gtcttgacnt cctctganat cctagagata ggacgtcccc 960

ttcgg 965

<210> 254
<211> 1412
<212> DNA
<213> Bacillus thermoamylovorans

<400> 254
tcgagcgaac caataagaag cttgcttttt gttggttagc ggcggacggg tgagtaacac 60

gtgggtaacc tgcctgtaag accgggataa ctccgggaaa ccggtgctaa taccggatag 120

attatctttc cgcctggaga gataaggaaa gatggctttt gccatcactt acagatgggc 180

ccgcggcgca ttagctagtt ggtgaggtaa cggctcacca aggcgacgat gcgtagccga 240

cctgagaggg tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtaggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagcgaag 360

aaggtcttcg gatcgtaaag ctctgttgtt agggaagaac aagtatcgga ggaaatgccg 420

gtaccttgac ggtacctgac gagaaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa agcgcgcgca ggcggtcctt 540

taagtctgat gtgaaatctt gcggctcaac cgcaagcggt cattggaaac tgggggactt 600

gagtgcagaa gaggaaagcg gaattccacg tgtagcggtg aaatgcgtag agatgtggag 660

gaacaccagt ggcgaaggcg gctttctggt ctgtaactga cgctgaggcg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaagtgt 780

tggagggttt ccgcccttca gtgctgcagc taacgcatta agcactccgc ctggggagta 840

cggtcgcaag actgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 900

ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatctcct gaccgccctg 960

gagacagggt cttcccttcg gggacaggat gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttggttct agttgccagc 1080

attcagttgg gcactctaga gcgactgccg gcgacaagtc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatgga tggtacaaag 1200

ggcagcgaag cggcgacgca tgagcgaatc ccagaaaacc attctcagtt cggattgcag 1260

gctgcaactc gcctgcatga agccggaatc gctagtaatc gcggatcagc atgccgcggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg 1380

aagtcggtga ggtaaccgta aggagccagc cg 1412

<210> 255
<211> 1554
<212> DNA
<213> Bacillus thuringiensis

<400> 255
ttattggaga gtttgatcct ggctcaggat gaacgctggc ggcgtgccta atacatgcaa 60

gtcgagcgaa tggattaaga gcttgctctt atgaagttag cggcggacgg gtgagtaaca 120

cgtgggtaac ctgcctataa gactgggata actccgggaa accggggcta ataccggata 180

acattttgaa ccgcatggtt cgaaattgaa aggcggcttc ggctgtcact tatggatgga 240

cccgcgtcgc attagctagt tggtgaggta acggctcacc aaggcaacga tgcgtagccg 300

acctgagagg gtgatcggcc acactgggac tgagacacgg cccagactcc tacgggaggc 360

agcagtaggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg cgtgagtgat 420

gaaggctttc gggtcgtaaa actctgttgt tagggaagaa caagtgctag ttgaataagc 480

tggcaccttg acggtaccta accagaaagc cacggctaac tacgtgccag cagccgcggt 540

aatacgtagg tggcaagcgt tatccggaat tattgggcgt aaagcgcgcg caggtggttt 600

cttaagtctg atgtgaaagc ccacggctca accgtggagg gtcattggaa actgggagac 660

ttgagtgcag aagaggaaag tggaattcca tgtgtagcgg tgaaatgcgt agagatatgg 720

aggaacacca gtggcgaagg cgactttctg gtctgtaact gacactgagg cgcgaaagcg 780

tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaagt 840

gttagagggt ttccgccctt tagtgctgaa gttaacgcat taagcactcc gcctggggag 900

tacggccgca aggctgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatcct ctgacaaccc 1020

tagagatagg gcttctcctt cgggagcaga gtgacaggtg gtgcatggtt gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgatc ttagttgcca 1140

tcatttagtt gggcactcta aggtgactgc cggtgacaaa ccggaggaag gtggggatga 1200

cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg gacggtacaa 1260

agagctgcaa gaccgcgagg tggagctaat ctcataaaac cgttctcagt tcggattgta 1320

ggctgcaact cgcctacatg aagctggaat cgctagtaat cgcggatcag catgccgcgg 1380

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc 1440

gaagtcggtg gggtaacctt tttggagcca gccgcctaag gtgggacaga tgattggggt 1500

gaagtcgtaa caaggtagcc gtatcggaag gtgcggctgg atcacctcct ttct 1554

<210> 256
<211> 1545
<212> DNA
<213> Bacillus weihenstephanensis

<400> 256
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggatggatta agagcttgct cttatgaagt tagcggcgga cgggtgagta acacgtgggt 120

aacctaccca taagactggg ataactccgg gaaaccgggg ctaataccgg ataatatttt 180

gaactgcata gttcgaaatt gaaaggcggc ttcggctgtc acttatggat ggacccgcgt 240

cgcattagct agttggtgag gtaacggctc accaaggcga cgatgcgtag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

ggggatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgagt gatgaaggct 420

ttcgggtcgt aaaactctgt tgttagggaa gaacaagtgc tagttgaata agctggcacc 480

ttgacggtac ctaaccagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtggcaag cgttatccgg aattattggg cgtaaagcgc gcgcaggtgg tttcttaagt 600

ctgatgtgaa agcccacggc tcaaccgtgg agggtcattg gaaactggga gacttgagtg 660

cagaagagga aagtggaatt ccatgtgtag cggtgaaatg cgtagagata tggaggaaca 720

ccagtggcga aggcgacttt ctggtctgta actgacactg aggcgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttagag 840

ggtttccgcc ctttagtgct gaagttaacg cattaagcac tccgcctggg gagtacggcc 900

gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgaagc aacgcgaaga accttaccag gtcttgacat cctctgaaaa ctctagagat 1020

agagcttctc cttcgggagc agagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg atcttagttg ccatcattaa 1140

gttgggcact ctaaggtgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1200

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggacggta caaagagctg 1260

caagaccgcg aggtggagct aatctcataa aaccgttctc agttcggatt gtaggctgca 1320

actcgcctac atgaagctgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg 1440

gtggggtaac ctttatggag ccagccgcct aaggtgggac agatgattgg ggtgaagtcg 1500

taacaaggta gccgtatcgg aaggtgcggc tggatcacct ccttt 1545

<210> 257
<211> 1388
<212> DNA
<213> Bacteroidales bacterium ph8

<400> 257
gcagcatgaa agtagcaata cttttgatgg cgaccggcgg acgggtgcgt aacgcgtatg 60

caacctaccc tttacagggg gataacactg agaaatcggt actaataccc cataatattc 120

cgggaggcat ctttcggagt tgaaagcttt ggtggtaaag gatgggcatg cgttgtatta 180

gctagttggt aaggtaacgg cttaccaagg cgacgataca taggggggact gagaggttaa 240

ccccccacat tggtactgag acacggacca aactcctacg ggaggcagca gtgaggaata 300

ttggtcaatg gacggaagtc tgaaccagcc atgccgcgtg caggaagacg gctctatgag 360

ttgtaaactg cttttgtacg agggtaaacg cagatacgtg tatctgcctg aaagtatcgt 420

acgaataagg atcggctaac tccgtgccag cagccgcggt aatacggagg atccaagcgt 480

tatccggatt tattgggttt aaagggtgcg taggcggttt agtaagtcag cggtgaaatt 540

ttggtgctta acaccaaacg tgccgttgat actgctgggc tagagagtag ttgcggtagg 600

cggaatgtat ggtgtagcgg tgaaatgctt agagatcata cagaacaccg attgcgaagg 660

cagcttacca aactatatct gacgttgagg cacgaaagcg tggggagcaa acaggattag 720

ataccctggt agtccacgca gtaaacgatg atagctcgtt gtcggcgata cacagtcggt 780

gactaagaga aatcgataag ctatccacct ggggagtacg ttcgcaagaa tgaaactcaa 840

aggaattgac gggggcccgc acaagcggag gaacatgtgg tttaattcga tgatacgcga 900

ggaaccttac ccgggcttga aagttactga cgattctgga aacaggattt cccttcgggg 960

caggaaacta ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc gggttaagtc 1020

ccataacgag cgcaacccct actgatagtt gccatcagag cgtttgagcg atcaaacaag 1080

ctgggcactc tatcgggact gccggtgtaa gccgagagga aggtggggat gacgtcaaat 1140

cagcacggcc cttacgtccg gggcgacaca cgtgttacaa tggtaggtac agagggcagc 1200

cacccagtga tggggagcga atctcgaaag cctatctcag ttcggattgg aggctgaaac 1260

tcgcctccat gaagttggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcaa gccatgggag ttgggggtgc ctgaagttcg 1380

tgaccgag 1388

<210> 258
<211> 1285
<212> DNA
<213> Bacteroidales genomosp. P1

<400> 258
atgaacgcta gcggcaggct taacacatgc aagtcgaggg accggcgtaa gggtgcgtaa 60

cgcgtgagca acctgcccgt atcaggggga taaccgatgg aaacgtcgcc taatacccca 120

taataaaagt cagatacgga tgggctcgcg tgacattagc tagttggtgt ggtaacggca 180

caccaaggca acgatgtcta ggggttctga gaggaagacc ccccacactg gaactgagac 240

acggtccaga ctcctacggg aggcagcagt gaggaatatt ggtcaatggg cggaagcctg 300

aaccagccat gccgcgtgaa ggaataaggt ctatggatcg taaacttctt ttgagcggga 360

gcatgagagt accgttcgaa taagcatcgg ctaactccgt gccagcagcc gcggtaatac 420

ggaggatgca agcgttatcc ggatttattg ggtttaaagg gtgcgtaggc cgttgtgcaa 480

gtcagaggtg aaatcgcggg gctcaacccc gtgtctgcct ttgatactgt atgacttgaa 540

tgttgttgcc gtgtgaggaa tgagtagtgt agcggtgaaa tgcatagata ttactcagaa 600

caccgattgc gaaggcatct cacgaaacaa attgacgctg aggcacgaaa gcgtgggtat 660

ccaacaggat tagataccct ggtagtccac gctgtaaacg atgataacta accgtcggcg 720

agtcggtggc caagcgaaag cgataagtta tccacctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcgatga 840

tacgcgagga accttacccg ggctcgaacg gtcgaggtgc tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttggctc aagtgccata acgagcgcaa cccttgtcat tagttgccat 960

cggccgggct ctctaatgag actgccaccg caaggtggag gaaggagtgg atgacgtcaa 1020

atcagcacgg cccttacgtc cggggcgaca cacgtgttac aatggtgacc agagggtagc 1080

cagccggcga cggcgcgcaa atctcagtca tctcagttcg gatggagtct gcaacccgac 1140

tccagaagct ggattcgcta gtaatcgcgc atcagccatg gtgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcaagccatg aaagccgagg gcgcctgaag tccggccggc 1260

ctaaggcgaa cttggtaatt ggggc 1285

<210> 259
<211> 1289
<212> DNA
<213> Bacteroidales genomosp. P2 oral clone MB1_G13

<400> 259
gatgaacgct agcggcaggc ttaacacatg caagtcgagg gaccggcgaa agggtgcgta 60

acgcgtgagt aacatacccg ttacagaggg atagtcgatg gaaacgtcgt ataatacctc 120

atagttaaat gaggtaacgg agtggctcgc gtcccattag ttagttggcg tggtaacggc 180

acaccaagac aacgatgggt aggggttctg agaggaaggt cccccacact ggaactgaga 240

cacggtccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcggaagcct 300

gaaccagcca tgccgcgtgc aggaatagat cctatgggac ataaactgct tttgatactg 360

agcatgagag taagtatcga ataagcatcg gctaactccg tgccagcagc cgcggtaata 420

cgggggatgc aagcgttatc cggaattatt gggtttaaag ggtgcgtagg ctgtgcggtg 480

cgtctgtggt taaaggcctc tgcttaacgg agcgtatgcc atagaaacgg ccgtgcttga 540

gagtgattgc cgtgggagga atgtgtggtg tagcggtgaa atgcatagat atcacacaga 600

acaccgattg cgaaggcatc tcacgaagtc atctgacgct gaagcacgaa agcgtgggaa 660

tcaaacagga ttagataccc tggtagtcca cgctgtaaac gatgataact aaccgccggc 720

gatcggtggc taagcgaaag cgataagtta tccacctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcgatga 840

tacgcgagga accttacccg ggctcgaacg gtcgaggtgc tgcatggttg tcgtcagctc 900

gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa cccttgcctg ctgttaccaa 960

cgtacgggga ctcagcaggg actgccaccg taaggtggag gaaggggggg atgacgtcaa 1020

atcagcacgg cccttacgtc cggggcgaca cacgtgtcac aatggcggtc agagagttgc 1080

ttgacagtga tgtttggcta atctataccg tctcagttcg gatggagtct gcaacccgac 1140

tccagaagct ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcaagccatg gaagtcattg gcgcctgaag cttgtccgag 1260

cgagcgaagg cgaaaatggt aactggggc 1289

<210> 260
<211> 1282
<212> DNA
<213> Bacteroidales genomosp. P3 oral clone MB1_G34

<220>

<221> modified_base
<222> (908)..(908)
<223> a, c, t, g, unknown or other

<400> 260
gatgaacgct tgcggcaggc ataatacatg caagtcgaac gagtggcgga tgggtgagta 60

acgcgtatgc aacctacctc acaccgagaa caagcgactg aaaagttgaa tatctcgtga 120

tgatagttgg tgtgagatgg gcatgcgtat cattagctag ttggcggggt aatagcccac 180

caaggcgacg atgattcggg ggcctgagag ggtggtcccc cacactggga ctgagacacg 240

gcccagactc ctacgggagg cagcagtagg gaatatcggt caatgggcgg aagcctgaac 300

cagccatgcc gcgtgatgga tgacggcctt agggttgtaa acatcttttc tactagagga 360

cgactgtata gtaggaataa ggatcggcta actccgtgcc agcagccgcg gtaatacgga 420

ggattcgagc gttatccgga tttactgggt ttgaagggtg cgcaggcggg ctcttaagtc 480

agcggtgaaa tgtccgggct taccctgggc cttgccgttg atactgggag tcttggataa 540

gataaggacg gcggaatgcg tagtgtagcg gtgaaatgct tagatattac gtagaagacc 600

gattgcgaag gcagctgtct gggtctatcg acgctcaagc acgaaagcgt gggtagcgaa 660

caggattaga taccctggta gtccacgccg taaacgatga tcactcgctc ttggcgtgtc 720

aggggctaag cgaaagcgtt aagtgatcca cctggggagt acgaccgcaa ggttgaaact 780

caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg 840

cgaggaacct tacctgggct agaacggtcg aggtgctgca tggttgtcgt cagctcgtgc 900

cgtgaggngt cgggttaagt cccataacga gcgcaaccct tatcgtcagt taccatcaat 960

tggggactct ggcgagactg ccggtgcaaa ccggaggaag gtggggatga cgtcaaatca 1020

gcacggccct tacgtccagg gcgacacacg tgttacaatg ggtagcggag agttgccagc 1080

cagcgatggt gagctaatct atctatcctc agttcggacg gagtctgcaa ctcgactccg 1140

gaagctggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc 1200

ttgtacacac cgcccgtcaa gccatgaaag tcatgggtgc ctgaagttcg tcgcaaccta 1260

gggcaaactt ggtgattagg gc 1282

<210> 261
<211> 1286
<212> DNA
<213> Bacteroidales genomosp. P4 oral clone MB2_G17

<400> 261
gatgaacgct tgcggcaggc ttaatacatg caagtcgaac gagtggcgga tgggtgagta 60

acgcgtatgc aacctacctc gtgtcgagaa aaagtcgact gaaaagtcga ttaaagtttc 120

gtagtgatag ttggcgcgag atgggcatgc gtatcattag ctagttggta gggtaacggc 180

ctaccaaggc gacgatgatt aggggttctg agagggaggt cccccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatat tggtcaatgg gcggaagcct 300

gaaccagcca tgccgcgtga tggacgacgg ccttcgggtt gtaaacatct tttctgctag 360

aggatgactg tatagcagga ataaggatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggatcc gagcgttatc cggatttact gggtttaaag ggtgcgcagg cgggctctta 480

agtcagtggt gaaaagccta ggcttaccct aggtcgtgcc attgatactg ggagtcttgg 540

ataagataag gaaggcggaa tgcgtagtgt agcggtgaaa tgcttagata ttacgtagaa 600

gaccgattgc gaaggcagct ttctgggtct atcgacgctc aagcacgaaa gcgtgggtag 660

cgaacaggat tagataccct ggtagtccac gccgtaaacg atgatcactc gctcttggcg 720

tgtcaggggc caagcgaaag cgttaagtga tccacctggg agtacggccg caaggctgaa 780

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 840

acgcgaggaa ccttacctgg gctagaactg cagaggtgct gcatggttgt cgtcagctcg 900

tgccgtgagg tgtcgggtta agtcccataa cgagcgcaac ccctatcgtc agttaccatc 960

agctggggac tctggcgaga ctgccggtgc aaaccggagg aaggtgggga tgacgtcaaa 1020

tcagcacggc ccttacgtcc agggcgacac acgtgttaca atgggtagca gcgagttgcc 1080

aaccagcaat ggtgcgctaa tctatactac cctcagttcg gacggagtct gcaactcgac 1140

tccggaagct ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcaagccatg aaagtcgtgg gtgcctgaag ttcgtagcga 1260

cctaaggcaa actcaatgat tagggc 1286

<210> 262
<211> 1265
<212> DNA
<213> Bacteroidales genomosp. P5 oral clone MB2_P04

<400> 262
gcataacaca tgcaagtcga gggaccggcg gatgggtgag tagcgcgtac gtaacctacc 60

ttgtacagtg ggataggcat tggaaacggt gtataatacc acgtaatgga agttggtata 120

agatgggcgt gcgtaggatt agatagatgg tagggtaaag gcttaccatg tctatgatct 180

ttaggggttc tgagaggaag gtcccccaca ttgcaactga gatacggtgc aaactcttac 240

gggaggcagc agtgaggaat attggtcaat gggcggaagc ttgaaccagc cataccgcgt 300

gcaggaaggc ggcctatggg ttgtaaactg cttttatatt tgaataggaa attagggtac 360

gaataagtat cggctaactc cgtgccagca gccgcggtaa tacggaggat acgagcgttg 420

tccggattta ttgggtttaa agggtgcgta ggcggttaat taggtctatg gtaaaatagt 480

tatgcttaac atgattatgc tgtggatacc ggttggctag aatataagtg gcgtaggcgg 540

aatgaagcga gtagaggtga cattcataga tatgctttgg aacaccgttc gcgtaggcgg 600

cttacgataa ttgacgctga ggcacgagag cgtgggtatc gaacagaatt agatactctg 660

gtagtccacg ctgtaaacga tgataactat atgtcggcgt gtcggtgtag gagtgaaagc 720

gataagttat ccacctgggg agtacgattg caaggttgaa actcaaagga attgacgggg 780

gcccgcacaa gcggaggagc atgtggttta attcgatgat acgcgaggaa ccttacccgg 840

gcttgaacgt gcgaggtgct gcatggttgt cgtcagctcg tgccgtgagg tgtcaggtta 900

agtcctataa cgagcgtaac ccttgttgat agttaccagc gcgtggggac tctattgata 960

ctgccggtgt aagccggagg aaggggggga tgacgtcaaa tcagcacggc ccttacgtcc 1020

ggggcgacac acgtgctaca atggttaaca gagggcagtt atacagagat gtaacacgaa 1080

tcttttttagt catagtacgg atggagtctg caactcgact tcagaagatg gattcgctag 1140

taatcgcaga tcagccatgc tgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1200

caagccatgg gagttggtgg tacctaaaga gcgtagcgtt taagggtaat gctaataact 1260

ggggc 1265

<210> 263
<211> 1287
<212> DNA
<213> Bacteroidales genomosp. P6 oral clone MB3_C19

<400> 263
gatgaacgct tgcggcaggc ttaatacatg caagtcgaac gagtggcgga tgggtgagta 60

acgcgtatgc aaccttcctc acaccgagaa aaagtcgact gaaaagttga ataaagtctc 120

gtgatgatag ttggtgtgag atgggcatgc gtatcattag ctagttggta gggtaacggc 180

ttaccaaggc gacgatgatt agggggcctg agagggtggt cccccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatat tggtcaatgg gcggaagcct 300

gaaccagcca tgccgcgtga tggatgacgg ccttagggtt gtaaacatct tttctgctag 360

aggacgactg tatagcagga ataaggatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggattc gagcgttatc cggatttact gggtttaaag ggtgcgcagg cgggctctta 480

agtcagcggt gaaatgtctg ggcttaccct aggaattgcc gttgatactg ggagtcttgg 540

ataagataag gacggcggaa tgcgtagtgt agcggtgaaa tgcttagata ttacgtagaa 600

gaccaattgc gaaggcagct atctgggtct atcgacgctc aagcacgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgatcactc gctcttggcg 720

tgtcaggggc caagcgaaag cgttaagtga tccacctggg gagtacggcc gcaaggctga 780

aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcgatga 840

tacgcgagga accttacctg ggctagaacg gtcgaggtgc tgcatggttg tcgtcagctc 900

gtgccgtgag gtgtcgggtt aagtcccata acgagcgcaa cccttatcgt cagttaccat 960

caattgggga ctctggcgag actgccggtg caaaccggag gaaggtgggg atgacgtcaa 1020

atcagcacgg cccttacgtc cagggcgaca cacgtgttac aatgggtagc agagagttgc 1080

cagccagcga tggtgagcta atctattcta ccctcagttc ggatggagtc tgcaactcga 1140

ctccagaagc tggattcgct agtaatcgcg catcagccat ggcgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccat gaaagtcgtg ggtgcctgaa gttcgtagcg 1260

acctaaggca aactcgatga ttagggc 1287

<210> 264

<211> 1267
<212> DNA
<213> Bacteroidales genomosp. P7 oral clone MB3_P19

<400> 264
gcttaacaca tgcaagtcga gggaccggcg gatgggtgag taacgcgtat gcaatctacc 60

ttttacccgg ggatagccca tggaaacgtg gattaatacc cgatgcataa agtcggtaag 120

agatgagcat gcgttccatt aggaagttgg taaggtaacg gcttaccaat ccgatgatgg 180

atgggggttc tgagaggaag gtcccccaca ctggaattga gatacggtcc agactcctac 240

gggaggcagc agtgaggaat attggtcaat ggtcgtaaga ctgaaccagc caagtcgcgt 300

gaaggaaact gcctatgggt tttcaacttc ttttgtcagg gaagatgccg gtacctgacg 360

aataaggatc ggctaacgcc gtgccagcag ccgcggtaat acggaggatc cgagcgttat 420

ccggatttat tgggtttaaa gggtgcttag gcggcatatt aagttagtgg tcaaatggtc 480

cggctcaacc ggatttcgcc attaaaactg atgtgctaga gattaaacga ggtaggcgga 540

ataagttaag tagcggtgaa atgcatagat ataacttaga actccgatag cgaaggcagc 600

ttaccaggct atctgacgct gaatcacgag agcgtgggta tcgaacagga ttagataccc 660

tggtagtcca cgccgtaaac gatgctcacc ggctctatgc gtgtatgggg ctaatagaaa 720

taattaagtg agccacctgg ggagtacgtc ggcaacgatg aaactcaaag gaattgacgg 780

gggcccgcac aagcggagga acatgtggtt taattcgatg atacgcgagg aaccttaccc 840

gggtttaaat gtacaaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcgggt 900

taagtcccat aacgagcgca acccttatga ttagttgcta acggccgagc actctattca 960

cactgccacc gtaaggtgga ggaaggaggg gatgatgtca aatcagcacg gcccttatat 1020

ccggggctac acacgtgtta caatggtcgg cagagggttg catttacgag agtaacagct 1080

aatcccttcg gtcacagttc ggatggagtc tgcgactcga ctccagaagt tggattcgct 1140

agtaatcgca catcagccat ggtgcggtga atacgttccc gggccttgta cacaccgccc 1200

gtcaagccat gggagctgag ggtgcctgaa gttcgtagcg acctagggca aacttggtaa 1260

ctggggc 1267

<210> 265
<211> 1292
<212> DNA
<213> Bacteroidales genomosp. P8 oral clone MB4_G15

<400> 265
gatgaacgct agcggcaggc ctaacacatg caagtcgagg gaccggcgaa cgggtgcgta 60

acgcgtgaac aacttgccgg acacaggggg ataatcgtcg gaaacgtcgt ctaatatccc 120

ataacgaaag gcggtgtctg ataggttcgc gtgacattag ctagtcggtg gggcaacggc 180

ccaccgaggc gacgatgtct aggggttctg agaggaaggc cccccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tgagggatat tggacaatgg gcggaagcct 300

gatccagcca tgccgcgtga aggaataagg cctatgggtc gtaaacttct tttgacgcag 360

agcatgagag tatgcgtcga ataagcatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggatgc gagcgttatc cggatttatt gggtttaaag ggtgcgtagg ctgttggata 480

agtcagcggt gaaatcacca cgcttaacgt gttgtgtgcc gttgaaactg tctggcttga 540

atgcgctcgt cgtgagagga atgtgtggtg tagcggtgaa atgcatagat atcacacaga 600

acaccgattg cgaaggcatc tcacgagagc gattgacgct gatgcacgaa agcgcgggta 660

tcgaacagga ttagataccc tggtagtccg cgctgtaaac gatgatgact aactgttggt 720

tgatcagtgg tcaagcgaaa gcgttaagtc atccacctgg ggagtacggc cgcaaagctg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggctcgaac ggtcgaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcggct taagtgccat aacgagcgca acccttgccg tcagttgcca 960

tcagctgggg actctgtcgg gactgccacc gcaaggtgga ggaaggggg gatgacgtca 1020

aatcagcacg gcccctacgt ccggggctac acacgtgtta caatggcgac cagaggggtg 1080

ccacccggtg acggggcgcc gatctccgtc gtctcagttc ggatggagtc tgcaacccga 1140

ctccagaagc tggattcgct agtaatcgca catcagccat ggtgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccat gagagccagg ggcgcctgaa gcgcgtaccg 1260

gagcgttcaa gggcgaacca ggtgattggg gc 1292

<210> 266
<211> 1495
<212> DNA
<213> Bacteroides acidifaciens

<400> 266
tatcatggct caagatgaac gctagctaca ggcttaacac atgcaagtcg aggggcagca 60

tgaaagtttg cttgcaaact tttgatggcg accggcgcac gggtgagtaa cacgtatcca 120

acctgcctca tactcgggga tagcctttcg aaagaaagat taatacccga tgtcatagtc 180

ctaccgcatg atgggattat taaagaattt cggtatggga tggggatgcg ttccattagt 240

tagttggcgg ggtaacggcc caccaagaca acgatggata ggggttctga gaggaaggtc 300

ccccacattg gaactgagac acggtccaaa ctctacggga ggcagcagtg aggaatattg 360

gtcaatggac gagagtctga accagccaag tagcgtgaag gatgactgcc ctatgggttg 420

taaacttctt ttatatggga ataaaatgtt ccacgtgtgg gattttgtat gtaccatatg 480

aataaggatc ggctaactcc gtgccagcag ccgcggtaat acggaggatc cgagcgttat 540

ccggatttat tgggtttaaa gggagcgtag gtggattgtt aagtcagttg tgaaagtttg 600

cggctcaacc gtaaaattgc agttgaaact ggcagtcttg agtacagtag aggtgggcgg 660

aattcgtggt gtagcggtga aatgcttaga tatcacgaag aactccgatt gcgaaggcag 720

ctcactggac tgcaactgac actgaggctc gaaagtgtgg gtatcaaaca ggattagata 780

ccctggtagt ccacacagta aacgatgaat actcgctgtt tgcgatatac ggcaagcggc 840

caagcgaaag cattaagtat tccacctggg gagtacgccg gcaacggtga aactcaaagg 900

aattgacggg ggccgcacaa gcggaggaac atgtggttta attcgatgat acgcgaggaa 960

ccttacccgg gcttaaattg cacctgaata atgtggaaac atgttagccg taaggcaggt 1020

gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata 1080

acgagcgcaa cccttatctt cagttactaa caggtcatgc tgaggactct ggagagactg 1140

ccgtcgtaag atgtgaggaa ggtggggatg acgtcaaatc agcacggccc ttacgtccgg 1200

ggctacacac gtgttacaat gggaggtaca gaaggccgct acctggcgac aggatgccaa 1260

tccccaaaac ctctctcagt tcggatcgaa gtctgcaacc cgacttcgtg aagctggatt 1320

cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct tgtacacacc 1380

gcccgtcaag ccatgaaagc cgggggtacc tgaagtacgt aaccgcaaga tcgtcctagg 1440

gtaaaactgg taattggggc taagtcgtaa caaggtagcc gtaccggaag gtgcg 1495

<210> 267
<211> 1456
<212> DNA
<213> Bacteroides barnesiae

<400> 267
tcaggatgaa cgctagctac aggcttaaca catgcaagtc gaggggcagc gggaagtcag 60

cttgctgact ttgccggcga ccggcgcacg ggtgagtaac acgtatccaa ccttccgcat 120

actctggaat agcctttcga aagaaagatt aatgcccgat ggtatcaaga gattgcatga 180

tatctcgaat aaagattcat cggtatgcga tggggatgcg ttccattagg cagttggcgg 240

ggtaacggcc caccaaaccg acgatggata ggggttctga gaggaaggtc ccccacattg 300

gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt ggtcaatggg 360

cgagagcctg aaccagccaa gtagcgtgaa ggatgactgc cctacgggtt gtaaacttct 420

tttataaggg aataaagttc tctacgtgta gagttttgta tgtaccttat gaataagcat 480

cggctaactc cgtgccagca gccgcggtaa tacggaggat gcgagcgtta tccggattta 540

ttgggtttaa agggagcgta gacggcggtt taagtcagct gtgaaatggt gcggctcaac 600

cgtagcactg cagttgaaac tggacggctt gagtgcagtt gaggcaggcg gaattcgtgg 660

tgtagcggtg aaatgcttag atatcacgaa gaaccccgat tgcgaaggca gcctgctaag 720

ctgcaactga cgttgaggct cgaaagtgtg ggtatcaaac aggattagat accctggtag 780

tccacacggt aaacgatgga tactcgctgt tggcgatata ctgtcagcgg ccaagtgaaa 840

acgttaagta tcccacctgg ggagtacgcc ggcaacggtg aaactcaaag gaattgacgg 900

gggcccgcac aagcggagga acatgtggtt taattcgatg atacgcgagg aaccttaccc 960

gggcttgaat tgcagacgaa tcatccggag acggatgagc cgcaaggcgt ctgtgaaggt 1020

gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc ttaagtgcca taacgagcgc 1080

aaccctttcc gccggttact aacaggtgat gctgaggact ccgacggtac tgccatcgta 1140

agatgtgagg aaggtgggga tgacgtcaaa tcagcacggc ccttacgtcc ggggctacac 1200

acgtgttaca atgggggta cagaaggcag cgaccgggcg accggaagcg aatccctaaa 1260

gcccctctca gttcggactg gagtctgcaa cccgactcca cgaagctgga ttcgctagta 1320

atcgcgcatc agccacggcg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

agccatgaaa gccgggggta cctgaagtgc gtaaccgcga ggagcgccct agggtaaaac 1440

cggtaattgg ggctaa 1456

<210> 268
<211> 1383
<212> DNA
<213> Bacteroides caccae

<400> 268
tcgaggggca tcagtttggt ttgcttgcaa accaaagctg gcgaccggcg cacgggtgag 60

taacacgtat ccaacctgcc tcatactcgg ggatagcctt tcgaaagaaa gattaatatc 120

cgatagcata tatttcccgc atgggtttta tattaaagaa attcggtatg agatggggat 180

gcgttccatt agtttgttgg cggggtaacg gcccaccaag actacgatgg ataggggttc 240

tgagaggaag gtcccccaca ttggaactga gacacggtcc aaactcctac gggaggcagc 300

agtgaggaat attggtcaat ggacgcgagt ctgaaccagc caagtagcgt gaaggatgac 360

tgccctatgg gttgtaaact tcttttatat gggaataaag tggtccacgt gtggattttt 420

gtatgtacca tatgaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag 480

gatccgagcg ttatccggat ttattgggtt taaagggagc gtaggcggat tgttaagtca 540

gttgtgaaag tttgcggctc aaccgtaaaa ttgcagttga tactggcagt cttgagtgca 600

gtagaggtgg gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaagaactcc 660

gattgcgaag gcagctcact ggagtgtaac tgacgctgat gctcgaaagt gtgggtatca 720

aacaggatta gataccctgg tagtccacac agtaaacgat gaatactcgc tgtttgcgat 780

atacagtaag cggccaagcg aaagcattaa gtattccacc tggggagtac gccggcaacg 840

gtgaaactca aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg 900

atgatacgcg aggaacctta cccgggctta aattgcaaat gaattatggg gaaacccata 960

cgccgcaagg catttgtggg tgaaatgctt agttgtcacc aagtcgtgcc gtgaggtgtc 1020

ggcttaagtg ccataacgag cgcaaccctt atcttcagtt actaacaggt catgctgagg 1080

actctggaga gactgccgtc gtaagatgtg aggaaggtgg ggatgacgtc aaatcagcac 1140

ggcccttacg tccggggcta cacacgtgtt acaatggggg gtacagaagg ccgctacctg 1200

gtgacaggat gccaatccca aaaacctctc tcagttcgga tcgaagtctg caacccgact 1260

tcgtgaagct ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcaagccatg aaagccgggg gtacctgaag tacgtaaccg 1380

caa 1383

<210> 269
<211> 1377

<212> DNA
<213> Bacteroides cellulosilyticus

<220>
<221> modified_base
<222> (24)..(24)
<223> a, c, t, g, unknown or other

<400> 269
tcgaggggca gcatgaccta gcantaggtt gatggcgacc ggcgcacggg tgagtaacac 60

gtatccaacc taccggttat tccgggatag cctttcgaaa gaaagattaa taccggatag 120

tataacgaga aggcatcttt ttgttattaa agaatttcga taaccgatgg ggatgcgttc 180

cattagtttg ttggcggggt aacggcccac caagacatcg atggataggg gttctgagag 240

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 300

gaatattggt caatggacga gagtctgaac cagccaagta gcgtgaagga tgactgccct 360

atgggttgta aattctttta tatgggaata aagtgagcca cgtgtggctt tttgtatgta 420

ccatacgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccga 480

gcgttatccg gatttattgg gtttaaaggg agcgtaggcg gactattaag tcagctgtga 540

aagtttgcgg ctcaaccgta aaattgcagt tgatactggt cgtcttgagt gcagtagagg 600

taggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac tccgattgcg 660

aaggcagctt actggactgt aactgacgct gatgctcgaa agtgtgggta tcaaacagga 720

ttagataccc tggtagtcca cacagtaaac gatgaatact cgctgtttgc gatatacagc 780

aagcggccaa gcgaaagcat taagtattcc acctggggag tacgccggca acggtgaaac 840

tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac 900

gcgaggaacc ttacccgggc ttaaattgca tctgaataat ttggaaacag attagccgta 960

aggcagatgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa 1020

gtgccataac gagcgcaacc cttatcttta gttactaaca ggtcatgctg aggactctag 1080

agagactgcc gtcgtaagat gtgaggaagg tggggatgac gtcaaatcag cacggccctt 1140

acgtccgggg ctacacacgt gttacaatgg ggggtacaga aggcagctac acagcgatgt 1200

gatgctaatc ccaaaagcct ctctcagttc ggattggagt ctgcaacccg actccatgaa 1260

gctggattcg ctagtaatcg cgcatcagcc acggcgcggt gaatacgttc ccgggccttg 1320

tacacaccgc ccgtcaagcc atgaaagccg ggggtacctg aagtccgtaa ccgcaag 1377

<210> 270
<211> 1531
<212> DNA
<213> Bacteroides clarus

<400> 270
ttacaatgaa gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcagcggggt tgaagcttgc ttcaaccgcc ggcgaccggc gcacgggtga 120

gtaacacgta tccaacctgc cgataactcc gggatagcct ttcgaaagaa agattaatac 180

cggatggcat agttttcccg catggaataa ctattaaaga atttcggtta tcgatgggga 240

tgcgttccat taggcagttg gcggggtaac ggcccaccaa accgacgatg gataggggtt 300

ctgagaggaa ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag 360

cagtgaggaa tattggtcaa tggacgagag tctgaaccag ccaagtagcg tgaaggatga 420

ctgccctatg ggttgtaaac ttcttttata cgggaataaa gttagccacg tgtggttttt 480

tgcatgtacc gtatgaataa ggatcggcta actccgtgcc agcagccgcg gtaatacgga 540

ggatccgagc gttatccgga tttattgggt ttaaagggag cgtaggcggg gtattaagtc 600

agttgtgaaa gtttgcggct caaccgtaaa attgcagttg atactggtat ccttgagtgc 660

agcagaggtg ggcggaattc gtggtgtagc ggtgaaatgc ttagatatca cgaagaactc 720

cgattgcgaa ggcagctcac tggagtgtaa ctgacgctga tgctcgaaag tgtgggtatc 780

aaacaggatt agataccctg gtagtccaca cagtaaacga tgaatactcg ctgttggcga 840

tacaatgtca gcggccaagc gaaagcatta agtattccac ctggggagta cgccggcaac 900

ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc 960

gatgatacgc gaggaacctt acccgggctt gaattgcaac tgacggaatt ggaaacagtt 1020

ctttcttcgg acagttgtga aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt 1080

cggcttaagt gccataacga gcgcaaccct tatcgatagt taccatcagg tcatgctggg 1140

gactctatcg agactgccgt cgtaagatgt gaggaaggtg gggatgacgt caaatcagca 1200

cggcccttac gtccggggct acacacgtgt tacaatgggg ggtacagaag gcagctacac 1260

ggcgacgtga tgctaatccc caaaacctct ctcagttcgg attggagtct gcaacccgac 1320

tccatgaagc tggattcgct agtaatcgcg catcagccac ggcgcggtga atacgttccc 1380

gggccttgta cacaccgccc gtcaagccat gaaagccggg ggtacctgaa gtacgtaacc 1440

gcaaggagcg tcctagggta aaactggtga ttggggctaa gtcgtaacaa ggtagccgta 1500

ccggaaggtg cggctggaac acctcctttc t 1531

<210> 271
<211> 1489
<212> DNA
<213> Bacteroides coagulans

<400> 271
ggctcaggac gaacgctggc ggcgtgctta acacatgcaa gtcgaacgat gaagaaaaga 60

atcgaagctt cggcagaaat tcatttcgga ttagtggcag acgggtgagt aacgcgtgag 120

caacctacct cttacaaagg gatagcctcg ggaaaccggg attaatacca tataacattg 180

cgacgaagca tttcgatgca atcaaagcta cggcggtaag agatgggctc gcgtcccatt 240

aaccagatgg tgaggtaacg gctcaccata gtaacgatgg gtaaccggcc tgagagggtg 300

aacggtcaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 360

attgcacaat ggagggaact ctgatgcagc gacgccgcgt gagtgatgaa ggaattcgtt 420

tcgtaaaact ctgttctatg ggaagaaaag gactgtacca taggagaaag ctccggctaa 480

atacgtgcca gcagccgcgg taatacgtat ggagcgagcg ttgtccggaa ttattgggcg 540

taaagggtgc gcaggcggct ttacaagttg gatgtgaaat attgtggctc aaccacaaac 600

gtgcatccaa aactgcaaag cttgagttaa ggagaggtaa gtggaattcc tggtgtagcg 660

gtggaatgcg tagatatcag gaggaatacc ggtggcgaag gcgacttact ggacttaaac 720

tgacgctcag gcacgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc 780

cgtaaacgat gagtgctagg tgttgggggt caaacctcgg tgccgcaagc aaacgcaata 840

agcactccgc ctggggagta cgtgcacaag catgaaactc aaaggaattg acggggaccc 900

gcacaagcag cggagcatgt ggtttaattc gtggctacgc gaagaacctt accagggctt 960

gacatatata tgaggggaca tagagatatg aaaccagtaa gagcttgctc ttaacatata 1020

tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttgcaatt agttactaac agatcatgct gaggactcta attggactgc 1140

cgatgataaa tcggaggaag gtggggatga cgtcaaatca tcatgccctt tatgtcctgg 1200

gctacacacg tgctacaatg gtcggaacaa agaggagcga aatggtgaca tcaagcaaat 1260

ctcaaaaaac cgatcccagt tcggattgta ctctgcaact cgagtacatg aagtcggagt 1320

tgctagtaat cgcggatcag aatgccgcgg tgaatgcgtt cccgggtctt gtacacaccg 1380

cccgtcacac catggaagtt ggcaataccc gaagccgatg gcctaaccgc aaggaaggag 1440

tcgtcgaagg tagggtcaat gactggggtg aagtcgtaac aaggtaacc 1489

<210> 272
<211> 1532
<212> DNA
<213> Bacteroides coprocola

<400> 272
ttacaatgaa gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcagcatgaa cttagcttgc taagtttgat ggcgaccggc gcacgggtga 120

gtaacacgta tccaaccttc cgtttactca gggatagcct ttcgaaagaa agattaatac 180

ctgatagtat ggtgagattg catgatggca ccattaaaga tttattggta aacgatgggg 240

atgcgttcca ttaggtagta ggcggggtaa cggcccacct agcctgcgat ggataggggt 300

tctgagagga aggtccccca cattggaact gagacacggt ccaaactcct acgggaggca 360

gcagtgagga atattggtca atgggcgaga gcctgaacca gccaagtagc gtgaaggatg 420

aaggtcctac ggattgtaaa cttcttttat acgggaataa agtttcctac gtgtaggatt 480

ttgtatgtac cgtatgaata agcatcggct aactccgtgc cagcagccgc ggtaatacgg 540

aggatgcgag cgttatccgg atttattggg tttaaaggga gcgcagacgg gagattaagt 600

cagttgtgaa agtttgcggc tcaaccgtaa aattgcagtt gatactggtt tccttgagtg 660

cagttgaggc aggcggaatt cgtggtgtag cggtgaaatg cttagatatc acgaagaacc 720

ccgattgcga aggcagcttg ctaaactgta actgacgttc atgctcgaaa gtgtgggtat 780

caaacaggat tagataccct ggtagtccac acggtaaacg atggatactc gctgttggcg 840

atatactgtc agcggccaag cgaaagcatt aagtatccca cctggggagt acgccggcaa 900

cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt 960

cgatgatacg cgaggaacct tacccgggct taaattgcag acgaattacg aggaaacttg 1020

taagccgcaa ggcgtctgtg aaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg 1080

tcggcttaag tgccataacg agcgcaaccc tcgtggtcag ttactaacag gttaagctga 1140

gggctctggc cagactgcca tcgtaagatg tgaggaaggt ggggatgacg tcaaatcagc 1200

acggccctta cgtccggggc tacacacgtg ttacaatggg aggtacagaa ggccgctacc 1260

cggcaacggg atgccaatcc ccaaaacctc tctcagttcg gactggagtc tgcaacccga 1320

ctccacgaag ctggattcgc tagtaatcgc gcatcagcca cggcgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcaagcca tgaaagccgg gggtacctga agtgcgtaac 1440

cgcaaggagc gccctagggt aaaaccggta attggggcta agtcgtaaca aggtagccgt 1500

accggaaggt gcggctggaa cacctccttt ct 1532

<210> 273
<211> 1535
<212> DNA
<213> Bacteroides coprophilus

<400> 273
ttacaatgaa gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcagcgggat tgaagcttgc ttcaattgcc ggcgaccggc gcacgggtga 120

gtaacgcgta tccaaccttc cgcttactcg gggatagcct ttcgaaagaa agattaatac 180

ccgatggtat cttaagcacg catgagatta agattaaaga tttatcggta agcgatgggg 240

atgcgttcca ttaggcagtt ggcggggtaa cggcccacca aacctacgat ggataggggt 300

tctgagagga aggtccccca cattggaact gagacacggt ccaaactcct acgggaggca 360

gcagtgagga atattggtca atgggcgaga gcctgaacca gccaagtagc gtgaaggatg 420

acggccctac gggttgtaaa cttcttttgt gcgggaataa aggaacctac gtgtaggttt 480

ttgcatgtac cgtaacgaat aagcatcggc taactccgtg ccagcagccg cggtaatacg 540

gaggatgcga gcgttatccg gatttattgg gtttaaaggg agcgtagacg ggtttttaag 600

tcagctgtga aagtttgggg ctcaacctta aaattgcagt tgaaactgga gaccttgagt 660

acggttgagg caggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac 720

cccgattgcg aaggcagcct gctaagccgc cactgacgtt gaggctcgaa agtgcgggta 780

tcaaacagga ttagataccc tggtagtccg cacggtaaac gatggatact cgctgttggc 840

gatagacagt cagcggccaa gcgaaagcgt taagtatccc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttgaactgca gtggaattat ccggaaacgg 1020

ataagcgagc aatcgccgct gtggaggtgc tgcatggttg tcgtcagctc gtgccgtgag 1080

gtgtcggctt aagtgccata acgagcgcaa cccttgctgc cagttactaa caggtcatgc 1140

tgaggactct ggcaggactg ccatcgtaag atgcgaggaa ggtggggatg acgtcaaatc 1200

agcacggccc ttacgtccgg ggctacacac gtgttacaat ggggagtaca gagggcagct 1260

accgggcgac cggatgcgaa tcccgaaagc tcctctcagt tcggactgga gtctgcaacc 1320

cgactccacg aagctggatt cgctagtaat cgcgcatcag ccacggcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc cgggggtacc tgaagtacgt 1440

aaccgcgagg atcgtcctag ggtaaaaccg gtaattgggg ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gaacacctcc tttct 1535

<210> 274
<211> 1384
<212> DNA
<213> Bacteroides dorei

<400> 274
gaggggcagc atggtcttag cttgctaagg ctgatggcga ccggcgcacg ggtgagtaac 60

acgtatccaa cctgccgtct actcttggcc agccttctga aaggaagatt aatccaggat 120

ggcatcatga gttcacatgt ccgcatgatt aaaggtattt tccggtagac gatggggatg 180

cgttccatta gatagtaggc ggggtaacgg cccacctagt caacgatgga taggggttct 240

gagaggaagg tcccccacat tggaactgag acacggtcca aactcctacg ggaggcagca 300

gtgaggaata ttggtcaatg ggcgatggcc tgaaccagcc aagtagcgtg aaggatgact 360

gccctatggg ttgtaaactt cttttataaa ggaataaagt cgggtatgca tacccgtttg 420

catgtacttt atgaataagg atcggctaac tccgtgccag cagccgcggt aatacggagg 480

atccgagcgt tatccggatt tattgggttt aaagggagcg tagatggatg tttaagtcag 540

ttgtgaaagt ttgcggctca accgtaaaat tgcagttgat actggatgtc ttgagtgcag 600

ttgaggcagg cggaattcgt ggtgtagcgg tgaaatgctt agatatcacg aagaactccg 660

attgcgaagg cagcctgcta agctgcaact gacattgagg ctcgaaagtg tgggtatcaa 720

acaggattag ataccctggt agtccacacg gtaaacgatg aatactcgct gtttgcgata 780

tacggcaagc ggccaagcga aagcgttaag tattccacct ggggagtacg ccggcaacgg 840

tgaaactcaa aggaattgac gggggcccgc acaagcggag gaacatgtgg tttaattcga 900

tgatacgcga ggaaccttac ccgggcttaa attgcactcg aatgatccgg aaacggttca 960

gctagcaata gcgagtgtga aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt 1020

cggcttaagt gccataacga gcgcaaccct tgttgtcagt tactaacagg tgatgctgag 1080

gactctgaca agactgccat cgtaagatgt gaggaaggtg gggatgacgt caaatcagca 1140

cggcccttac gtccggggct acacacgtgt tacaatgggg ggtacagagg gccgctacca 1200

cgcgagtgga tgccaatccc taaaacccct ctcagttcgg actggagtct gcaacccgac 1260

tccacgaagc tggattcgct agtaatcgcg catcagccac ggcgcggtga atacgttccc 1320

gggccttgta cacaccgccc gtcaagccat gggagccggg ggtacctgaa gtgcgtaacc 1380

gcga 1384

<210> 275
<211> 1382
<212> DNA
<213> Bacteroides eggerthii

<400> 275
tcgaggggca gcatgattga agctgtgctt caattgatgg cgaccggcgc acgggtgagt 60

aacacgtatc caacctgccg ataactcggg gatagccttt cgaaagaaag attaataccc 120

gatagtatag tatttccgca tggtttcact attaaagaat ttcggttatc gatggggatg 180

cgttccatta gatagttggc ggggtaacgg cccaccaagt caacgatgga taggggttct 240

gagaggaagg tcccccacat tggaactgag acacggtcca aactcctacg ggaggcagca 300

gtgaggaata ttggtcaatg gacgagagtc tgaaccagcc aagtagcgtg aaggatgact 360

gccctatggg ttgtaaactt cttttatacg ggaataaagt ggagtatgca tactcctttg 420

tatgtaccgt atgaataagg atcggctaac tccgtgccag cagccgcggt aatacggagg 480

atccgagcgt tatccggatt tattgggttt aaagggagcg taggcgggtg cttaagtcag 540

ttgtgaaagt ttgcggctca accgtaaaat tgcagttgat actgggcgcc ttgagtgcag 600

cataggtagg cggaattcgt ggtgtagcgg tgaaatgctt agatatcacg aagaactccg 660

attgcgaagg cagcttactg gactgtaact gacgctgatg ctcgaaagtg tgggtatcaa 720

acaggattag ataccctggt agtccacaca gtaaacgatg aatactcgct gttggcgata 780

cacagtcagc ggccaagcga aagcattaag tattccacct ggggagtacg ccggcaacgg 840

tgaaactcaa aggaattgac gggggcccgc acaagcggag gaacatgtgg tttaattcga 900

tgatacgcga ggaaccttac ccgggcttaa gttgtgaagg tttgcggctc aaccgtaaca 960

tcgcactgga tactgggcgg cttgagtgta gtatacgtag gcggaagccg tgaggtgtcg 1020

gcttaagtgc cataacgagc gcaaccctta tctatagtta ctatcaggtc atgctgagga 1080

ctctatggag actgccgtcg taagatgtga ggaaggtggg gatgacgtca aatcagcacg 1140

gcccttacgt ccggggctac acacgtgtta caatgggggg tacagaaggc agctacctgg 1200

cgacaggatg ctaatcccta aaacctctct cagttcggat tggagtctgc aacccgactc 1260

catgaagctg gattcgctag taatcgcgca tcagccacgg cgcggtgaat acgttcccgg 1320

gccttgtaca caccgcccgt caagccatga aagccggggg tacctgaagt acgtaaccgc 1380

aa 1382

<210> 276
<211> 1383
<212> DNA
<213> Bacteroides faecis

<400> 276
tcgaggggca gcattccagt ttgcttgcaa actggagatg gcgaccggcg cacgggtgag 60

taacacgtat ccaacctgcc gataactcgg ggatagcctt tcgaaagaaa gattaatacc 120

cgatggcata atagaaccgc atggtttgat tattaaagaa tttcggttat cgatggggat 180

gcgttccatt aggcagttgg tggggtaacg gcccaccaaa ccttcgatgg ataggggttc 240

tgagaggaag gtcccccaca ttggaactga gacacggtcc aaactcctac gggaggcagc 300

agtgaggaat attggtcaat ggacgagagt ctgaaccagc caagtagcgt gaaggatgac 360

tgccctatgg gttgtaaact tcttttatat gggaataaag tgatccacgt gtggattttt 420

gtatgtacca tatgaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag 480

gatccgagcg ttatccggat ttattgggtt taaagggagc gtaggtggac agttaagtca 540

gttgtgaaag tttgcggctc aaccgtaaaa ttgcagttga tactggctgt cttgagtaca 600

gtagaggtgg gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaagaactcc 660

gattgcgaag gcagctcact ggactgcaac tgacactgat gctcgaaagt gtgggtatca 720

aacaggatta gataccctgg tagtccacac agtaaacgat gaatactcgc tgtttgcgat 780

atacagtaag cggccaagcg aaagcattaa gtattccacc tggggagtac gccggcaacg 840

gtgaaactca aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg 900

atgatacgcg aggaacctta cccgggctta aattgcattt gaatatattg gaaacagtat 960

agtcgtaaga cgaatgtgac tgtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc 1020

ggcttaagtg ccataacgag cgcaaccctt atcttcagtt actaacaggt catgctgagg 1080

actctggaga gactgccgtc gtaagatgtg aggaaggtgg ggatgacgtc aaatcagcac 1140

ggcccttacg tccggggcta cacacgtgtt acaatggggg gtacagaagg ccgctacctg 1200

gtgacaggat gctaatccca aaagcctctc tcagttcgga tcgaagtctg caacccgact 1260

tcgtgaagct ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcaagccatg aaagccgggg gtacctgaag tacgtaaccg 1380

caa 1383

<210> 277
<211> 1306
<212> DNA
<213> Bacteroides finegoldii

<220>
<221> modified_base
<222> (1029)..(1029)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1125)..(1125)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1261)..(1261)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1281)..(1281)
<223> a, c, t, g, unknown or other

<400> 277
aagatggcga ccggcgcacg ggtgagtaac acgtgtccaa cctgccgata actcagggat 60

agcctttcga aagaaagatt aatacctgat ggcataggat tgtcgcatga taatcctatt 120

aaagaatttc ggttatcgat ggggatgcgt tccattaggc agttggtgag gtaacggctc 180

accaaacctt cgatggatag gggttctgag aggaaggtcc cccacattgg aactgagaca 240

cggtccaaac tcctacggga ggcagcagtg aggaatattg gtcaatggac gggagtctga 300

accagccaag tagcgtgaag gatgactgcc ctatgggttg taaacttctt ttatacggga 360

ataaagtgat ccacgggttt ttgtatgtac cgtatgaata aggatcggct aactccgtgc 420

cagcagccgc ggtaatacgg aggatccgag cgttatccgg atttttgggt ttaaagggag 480

cgtagtggat tgttaagtca gttgtgaaag tttgcggctc aaccgtaaaa ttgcagttga 540

tactggcagt cttgatacag taaggtgggc ggaattcgtg gtgtacggtg aaatgcttaa 600

tatcacgaaa actccgattg cgaaggcagc tcactggact gcaactgaca ctgatgctcg 660

aaagtgtggg tatcaaacag gattaatacc ctggtagtcc acacagtaaa cgatgaatac 720

tcgctgtttg cgatatacgg taagcggcca agcgaaagcg ttaagtattc cacctgggga 780

gtacgccggc aacggtgaaa ctcagaggaa ttgacggggg cccgcacaag cggaggaaca 840

tgtggtttaa ttgtatgata ctcgaggaac cttacccggg cttaaattac ctttgaatta 900

tctggaaaca ggttaaccgt aaggcacagt gaaggttgct gcatggttgt cgtcagctcg 960

tgccgtgagg tgtcggctta agttccataa cgagcgcaac ccttatcttc agttactaac 1020

aggtcatgnt gaggactctg gagagactgc cgtcgtaaga tgtgaggaag gtggggatga 1080

cgtcaaatca gcacggccct tacgtccggg gctacacacg tgttncaatg gggggtacag 1140

aaggcagcta cctggtgaca ggatgctaat cccaaaaacc tctctcagtt cggatcgaag 1200

tctgcaaccc gacttcgtga agctggattc gttagtaatc gcgcatcacc catggcgcgg 1260

ngaatacgtt cccgggcctt nccaccccgc ccctcaagcc atgaaa 1306

<210> 278
<211> 1529
<212> DNA
<213> Bacteroides fluxus

<400> 278
ttacaatgaa gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcagcatttt tatagcaata taaaagatgg cgaccggcgc acgggtgagt 120

aacacgtatc caacctgccg ataactcggg gataaccctt cgaaagaagg cctaataccc 180

gatggcatat cccttccgcc tggttgggat attaaagaac ttcggttatc gatggggatg 240

cgttccatta gcttgttggc ggggtaacgg cccaccaagg cttcgatgga taggggttct 300

gagaggaagg tcccccacat tggaactgag acacggtcca aactcctacg ggaggcagca 360

gtgaggaata ttggtcaatg gacgagagtc tgaaccagcc aagtagcgtg aaggatgaag 420

gtcctatgga ttgtaaactt cttttatacg ggaataaagt gcagtatgca tactgttttg 480

tatgtaccgt atgaataagg atcggctaac tccgtgccag cagccgcggt aatacggagg 540

atccgagcgt tatccggatt tattgggttt aaagggagcg taggcggatg cttaagtcag 600

ttgtgaaagt ttgcggctca accgtaaaat tgcagttgat actgggcgtc ttgagtacag 660

tagaggcagg cggaattcgt ggtgtagcgg tgaaatgctt agatatcacg aagaactccg 720

attgcgaagg cagcctgctg gactgtcact gacgctgatg ctcgaaagtg tgggtatcaa 780

acaggattag ataccctggt agtccacaca gtaaacgatg aatactcgct gttggcgata 840

cacagtcagc ggccaagcga aagcgttaag tattccacct ggggagtacg ccggcaacgg 900

tgaaactcaa aggaattgac gggggcccgc acaagcggag gaacatgtgg tttaattcga 960

tgatacgcga ggaaccttac ccgggcttga attgcatatg agttatccgg agacggataa 1020

gccgcaaggc atatgtgaag gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtcg 1080

gcttaagtgc cataacgagc gcaaccctta tcgatagtta ccatcaggtc atgctgggga 1140

ctctgtcgag actgccgtcg taagatgcga ggaaggtggg gatgacgtca aatcagcacg 1200

gcccttacgt ccggggccac acacgtgtta caatgggggg tacagaaggc cgctacacag 1260

cgatgtgatg ccaatcccca aaacccctct cagttcggat tggagtctgc aacccgactc 1320

catgaagctg gattcgctag taatcgcgca tcagccacgg cgcggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt caagccatga aagccggggg tacctgaagt gcgtaaccgc 1440

gaggagcgcc ctagggtaaa actggtgatt ggggctaagt cgtaacaagg tagccgtacc 1500

ggaaggtgcg gctggaacac ctccttttct 1529

<210> 279
<211> 1383
<212> DNA
<213> Bacteroides fragilis

<220>
<221> modified_base
<222> (23)..(23)
<223> a, c, t, g, unknown or other

<400> 279
tcgaggggca tcaggaagaa agnttgcttt ctttgctggc gaccggcgca cgggtgagta 60

acacgtatcc aacctgccct ttactcgggg atagcctttc gaaagaaaga ttaatacccg 120

atggcataat gattccgcat ggtttcatta ttaaaggatt ccggtaaagg atggggatgc 180

gttccattag gttgttggtg aggtaacggc tcaccaagcc ttcgatggat aggggttctg 240

agaggaaggt cccccacatt ggaactgaga cacggtccaa actcctacgg gaggcagcag 300

tgaggaatat tggtcaatgg gcgctagcct gaaccagcca agtagcgtga aggatgaagg 360

ctctatgggt cgtaaacttc ttttatataa gaataaagtg cagtatgtat actgttttgt 420

atgtattata tgaataagga tcggctaact ccgtgccagc agccgcggta atacggagga 480

tccgagcgtt atccggattt attgggttta aagggagcgt aggtggactg gtaagtcagt 540

tgtgaaagtt tgcggctcaa ccgtaaaatt gcagttgata ctgtcagtct tgagtacagt 600

agaggtgggc ggaattcgtg gtgtagcggt gaaatgctta gatatcacga agaactccga 660

ttgcgaaggc agctcactgg actgcaactg acactgatgc tcgaaagtgt gggtatcaaa 720

caggattaga taccctggta gtccacacag taaacgatga atactcgctg tttgcgatat 780

acagtaagcg gccaagcgaa agcattaagt attccacctg gggagtacgc cggcaacggt 840

gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat 900

gatacgcgag gaaccttacc cgggcttaaa ttgcagtggt atgatgtggg aacatgtcag 960

tgagcaatca ccgctgtgaa ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc 1020

ggcttaagtg ccataacgag cgcaaccctt atctttagtt actaacaggt tatgctgagg 1080

actctagaga gactgccgtc gtaagatgtg aggaaggtgg ggatgacgtc aaatcagcac 1140

ggcccttacg tccggggcta cacacgtgtt acaatggggg gtacagaagg cagctagcgg 1200

gtgaccgtat gctaatccca aaagcctctc tcagttcgga tcgaagtctg caacccgact 1260

tcgtgaagct ggattcgcta gtaatcgcgc atcagccacg gcgcggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcaagccatg ggagccgggg gtacctgaag tacgtaaccg 1380

caa 1383

<210> 280
<211> 1431
<212> DNA
<213> Bacteroides galacturonicus

<220>
<221> modified_base
<222> (786)..(786)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1402)..(1402)
<223> a, c, t, g, unknown or other

<400> 280
tgcaagtcga acgaagcatt taagacagat tacttcggtt tgaagtcttt tatgactgag 60

tggcggacgg gtgagtaacg cgtgggtaac ctgcctcata cagggggata gcagctggaa 120

acggctggta ataccgcata agcgcacagt accacatggt acagtgtgaa aaactccggt 180

ggtatgagat ggacccgcgt ctgattagct tgttggcggg gtaacggccc accaaggcga 240

cgatcagtag ccgacctgag agggtgaccg gccacattgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg cacaatggag gaaactctga tgcagcgacg 360

ccgcgtgagt gaagaagtag ttcgctatgt aaagctctat cagcagggaa gatagtgacg 420

gtacctgact aagaagctcc ggctaaatac gtgccagcag ccgcggtaat acgtatggag 480

caagcgttat ccggatttac tgggtgtaaa gggagtgtag gtggccaggc aagtcagaag 540

tgaaagcccg gggctcaacc ccgggactgc ttttgaaact gcagggctag agtgcaggag 600

gggcaagtgg aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg 660

gcgaaggcgg cttgctggac tgtaactgac actgaggctc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgaat actaggtgtc ggggcacata 780

agtgcnccgg tgccgcagca aacgcaataa gtattccacc tggggagtac gttcgcaaga 840

atgaaactca aaggaattga cggggacccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg aagaacctta ccaagtcttg acatcctctt gaccggtcag taatgtgacc 960

ttttcttcgg aacaagagtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttatcctta gtagccagca gtccggctgg 1080

gcactctagg gagactgcca gggataacct ggaggaaggt ggggatgacg tcaaatcatc 1140

atgcccctta tgacttgggc tacacacgtg ctacaatggc gtaaacaaag tgaagcgaga 1200

gtgtgagctt aagcaaatca caaaaataac gtctcagttc ggattgtagt ctgcaactcg 1260

actacatgaa gctggaatcg ctagtaatcg cagatcagaa tgctgcggtg aatacgttcc 1320

cgggtcttgt acacaccgcc cgtcacacca tgggagtcgg aaatgcccga agtcggtgac 1380

ctaacgtaag aaggagccgc cnaaggcagg tctgataact ggggtgaagt c 1431

<210> 281
<211> 1513
<212> DNA
<213> Bacteroides helcogenes

<400> 281
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcagcattg tcatagcaat atgacagatg gcgaccggcg cacgggtgag taacacgtat 120

ccaacctgcc ttccactcgg gaatagcctt tcgaaagaaa gattaatgcc cgatggcact 180

gaaagaggtc atccttttc agttaaagaa tttcggtgga agatggggat gcgttccatt 240

agcttgttgg cggggtaacg gcccaccaag gcatcgatgg atagggggttc tgagaggaag 300

gtcccccaca ttggaactga gacacggtcc aaactcctac gggaggcagc agtgaggaat 360

attggtcaat gggcgggagc ctgaaccagc caagtagcgt gaaggatgac tgccctatgg 420

gttgtaaact tcttttataa gggaataaaa cgggccacgt gtggcctttt gcatgtacct 480

tatgaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag gatccgagcg 540

ttatccggat ttattgggtt taaagggagc gcagacgggg tcttaagtca gttgtgaaag 600

tttgcggctc aaccgtaaaa ttgcagttga tactggggct cttgagtgca gtataggcag 660

gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaagaactcc gattgcgaag 720

gcagcctgct ggactgtaac tgacgttcat gctcgaaagt gcgggtatca aacaggatta 780

gataccctgg tagtccgcac agtaaacgat gaatactcgc tgttggcgat acacagtcag 840

cggccaagcg aaagcgttaa gtattccacc tggggagtac gccggcaacg gtgaaactca 900

aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg atgatacgcg 960

aggaacctta cccgggcttg aattgctaat gaatatggcg gaaacgtcat agccgcaagg 1020

cattagtgaa ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc ggcttaagtg 1080

ccataacgag cgcaaccctt atctatagtt accatcaggc aatgctgggg actctatgga 1140

gactgccgtc gtaagatgtg aggaaggttg ggatgacgtc aaatcagcac ggcccttacg 1200

tccggggcta cacacgtgtt acaatggggg gtacagaagg cagctacaca gcgatgtgat 1260

gctaatccca aaaacctctc tcagttcgga ctggagtctg caacccgact ccacgaagct 1320

ggattcgcta gtaatcgcgc atcagccacg gcgcggtgaa tacgttcccg ggccttgtac 1380

acaccgcccg tcaagccatg aaagccgggg gtacctgaag tgcgtaaccg cgaggagcgc 1440

cctagggtaa aactggtgat tggggctaag tcgtaacaag gtagccgtac cggaaggtgc 1500

ggctggaaca cct 1513

<210> 282
<211> 1262
<212> DNA
<213> Bacteroides heparinolyticus

<400> 282
tcaggatgaa cgctagctac aggcttaaca catgcaagtc gagggaccgg cgcacgggtg 60

agtaacacgt atccaacctt ccggtaactc cggtatagcc tttcgaaaga aagattaatc 120

ccggatagtt aaagccggtt accgatgggg atgcgttcca ttaggcagtt ggcggggtaa 180

cggcccacca aacctacgat ggatagggGT tctgagagga aggtccccca cattggaact 240

gagacacggt ccaaactcct acgggaggca gcagtgagga atattggtca atgggcggaa 300

gcctgaacca gccaagtagc gtgaaggatg actgcctatg ggttgtaaac ttcttttata 360

agggaatatg catgtacctt atgaataagg atcggctaac tccgtgccag cagccgcggt 420

aatacggagg atccgagcgt tatccggatt tattgggttt aaagggagcg taggcgggcg 480

cttaagtcag ctgtgaaagt ttggggctca accttaaaat tgcagttgat actgggtgcc 540

ttgagtgcag tataggcagg cggaattcgt ggtgtagcgg tgaaatgctt agatatcacg 600

aagaactcct attgcgaagg cagcttgctg gagtgactga cgctgatgct cgaaagtgtg 660

ggtatcaaac aggattagat accctggtag tccacacagt aaacgatgaa tactcgctgt 720

ttgcgtgcaa gcggccaagc gaaagcgtta agtattccac ctggggagta cgccggcaac 780

ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc 840

gatgatacgc gaggaacctt acccgggctt gaattgtgaa ggtgctgcat ggttgtcgtc 900

agctcgtgcc gtgaggtgtc ggcttaagtg ccataacgag cgcaaccctt atccacagtt 960

accatcagct ggggactctg tggagactgc cgtcgtaaga tggaggaagg gggggatgac 1020

gtcaaatcag cacggccctt acgtccgggg ctacacacgt gttacaatgg ggggcagcag 1080

gcagctcggc ggcgacgccc ggccaatccc tcccctctca gttcggatgg agtctgcaac 1140

ccgactccag aagctggatt cgctagtaat cgcgcatcag ccacggcgcg gtgaatacgt 1200

tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc cgggggtacc tgaagtgcgt 1260

ag 1262

<210> 283
<211> 1301
<212> DNA
<213> Bacteroides intestinalis

<400> 283
ttattccggg atagcctttc gaaagaaaga ttaatactgg atagcataac gagaaggcat 60

cttcttgtta ttaaagaatt tcgataatcg atggggatgc gttccattag tttgttggcg 120

gggtaacggc ccaccaagac atcgatggat aggggttctg agaggaaggt cccccacatt 180

ggaactgaga cacggtccaa actcctacgg gaggcagcag tgaggaatat tggtcaatgg 240

acgagagtct gaaccagcca agtagcgtga aggatgactg ccctatgggt tgtaaacttc 300

ttttatatgg gaataaagtg cagtatgtat actgttttgt atgtaccata cgaataagga 360

tcggctaact ccgtgccagc agccgcggta atacggagga tccgagcgtt atccggattt 420

attgggttta aagggagcgt aggcggatta ttaagtcagt tgtgaaagtt tgcggctcaa 480

ccgtaaaatt gcagttgata ctggtagtct tgagtgcagc agaggtaggc ggaattcgtg 540

gtgtagcggt gaaatgctta gatatcacga agaactccga ttgcgaaggc agcttactgg 600

actgtaactg acgctgatgc tcgaaagtgt gggtatcaaa caggattaga taccctggta 660

gtccacacag taaacgatga atactcgctg tttgcgatat acagcaagcg gccaagcgaa 720

agcattaagt attccacctg gggagtacgc cggcaacggt gaaactcaaa ggaattgacg 780

ggggcccgca caagcggagg aacatgtggt ttaattcgat gatacgcgag gaaccttacc 840

cgggcttaaa ttgcaactga cggatttgga aacagatctt ccttcgggca gttgtgaatt 900

gcgaaggcgg tttactgcag ctcgtgccgt gaggtgtcgg cttaagtgcc ataacgagcg 960

caacccttat ctttagttac taacaggtca tgctgaggac tctagagaga ctgccgtcgt 1020

aagatgtgag gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca 1080

cacgtgttac aatggggggt acagaaggca gctacacagc gatgtgatgc taatcccaaa 1140

agcctctctc agttcggatt ggagtctgca acccgactcc atgaagctgg attcgctagt 1200

aatcgcgcat cagccacggc gcggtgaata cgttcccggg ccttgtacac accgcccgtc 1260

aagccatgaa agccgggggt acctgaagta cgtaaccgca a 1301

<210> 284
<211> 1281
<212> DNA
<213> Bacteroides massiliensis

<400> 284
catgcaagtc gagggaccgg cgcacgggtg agtaacgcgt atccaacctg ccttacactc 60

ttggacagcc ttctgaaagg gagattaata caagatgttt aaagccggtg taagatgggg 120

atgcgttcca ttagatagta ggcggggtaa cggcccacct agtcttcgat ggataggggt 180

tctgagagga aggtccccca cattggaact gagacacggt ccaaactcct acgggaggca 240

gcagtgagga atattggtca atggacgaga gtctgaacca gccaagtagc gtgaaggatg 300

aaggtttatg gattgtaaac ttcttttata cgggaatatg catgtaccgt atgaataagg 360

atcggctaac tccgtgccag cagccgcggt aatacggagg atccgagcgt tatccggatt 420

tattgggttt aaagggagcg tagatgggtt gttaagtcag ttgtgaaagt ttgcggctca 480

accgtaaaat tgcaattgat actggcagtc ttgagtacag ttgaggtagg cggaattcgt 540

ggtgtagcgg tgaaatgctt agatatcacg aagaactccg attgcgaagg cagcttacta 600

acctgactga cattgatgct cgaaagtgtg ggtatcaaac aggattagat accctggtag 660

tccacacggt aaacgatgaa tactcgctgt aggcgagtct gcggccaagc gaaagcatta 720

agtattccac ctggggagta cgccggcaac ggtgaaactc aaaggaattg acgggggccc 780

gcacaagcgg aggaacatgt ggtttaattc gatgatacgc gaggaacctt acccgggctt 840

aaattgtgaa ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc ggcttaagtg 900

ccataacgag cgcaaccctt gccgatagtt actaacagct gaggactctg tcgggactgc 960

catcgtaaga tggaggaagg tggggatgac gtcaaatcag cacggcccttt acgtccgggg 1020

ctacacacgt gttacaatgg ggggcagagg gctgctacca cgcaagtgga tgccaatccc 1080

acctctctca gttcggatga agtctgcaac ccgacttcag aagctggatt cgctagtaat 1140

cgcgcatcag ccacggcgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaag 1200

ccatgggagc cgggggtacc tgaagtgcgt agcgccctag ggtaaaactg gtgactgggg 1260

ctaagtcgta acaaggtaac c 1281

<210> 285
<211> 1377
<212> DNA
<213> Bacteroides nordii

<220>
<221> modified_base
<222> (12)..(13)
<223> a, c, t, g, unknown or other

<400> 285
tcgaggggca gnnggatgta gcaatacatt gctggcgacc ggcgcacggg tgagtaacac 60

gtatccaacc tgcctttttac tcggggatag gctttcgaaa gaaagattaa tacccgatgg 120

tataatattt ccgcatggga ttattattaa agaatttcgg taaaagatgg ggatgcgttc 180

cattaggcag ttggcggggt aacggcccac caaaccttcg atggataggg gttctgagag 240

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 300

gaatattggt caatgggcga aagcctgaac cagccaagta gcgtgaagga tgactgccct 360

atgggttgta aacttctttt ataggggaat aaaatgagcc acgtgtggct ttttgtatgt 420

accctatgaa taaggatcgg ctaactccgt gccagcagcc gcggtaatac ggaggatccg 480

agcgttatcc ggatttattg ggtttaaagg gagcgtaggt ggacatgtaa gtcagttgtg 540

aaagtttgcg gctcaaccgt aaaattgcag ttgatactgt gtgtcttgag tacagtagag 600

gtgggcggaa ttcgtggtgt agcggtgaaa tgcttagata tcacgaagaa ctccgattgc 660

gaaggcagct cactggactg ttactgacac tgaggctcga aagtgtgggt atcaaacagg 720

attagatacc ctggtagtcc acacagtaaa cgatgaatac tcgctgtttg cgatatacag 780

caagcggcca agcgaaagca ttaagtattc cacctgggga gtacgccggc aacggtgaaa 840

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 900

cgcgaggaac cttacccggg cttaaattgc atttgaatgt tggggaaacc caacagccgt 960

aaggcaaatg tgagcaggct gcatggtggt cgtcagctcg tgccgtgagg tgtcggctta 1020

agtgccataa cgagcgcaac ccttatcttt agttactaac aggttatgct gaggactcta 1080

gagagactgc cgtcgtaaga tgtgaggaag gtggggatga cgtcaaatca gcacggccct 1140

tacgtccggg gctacacacg tgttacaatg gggggtacag aaggcagcta cctggtgaca 1200

ggatgctaat cccaaaagcc tctctcagtt cggatcgaag tctgcaaccc gacttcgtga 1260

agctggattc gctagtaatc gcgcatcagc cacggcgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcaagc catgggagcc gggggtacct gaagtacgta accgcaa 1377

<210> 286
<211> 1485
<212> DNA
<213> Bacteroides oleiciplenus

<400> 286
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcatcagga tgtagcaata cattgctggc gaccggcgca cgggtgagta acacgtatcc 120

aacctaccga ttattccggg atagcctttc gaaagaaaga ttaatactgg atagtataac 180

gagaaggcat ctttttgtta ttaaagaatt tcgataatcg atggggatgc gttccattag 240

tttgttggcg gggtaacggc ccaccaagac ttcgatggat aggggttctg agaggaaggt 300

cccccacatt ggaactgaga cacggtccaa actcctacgg gaggcagcag tgaggaatat 360

tggtcaatgg gcgagagcct gaaccagcca agtagcgtga aggatgactg ccctatgggt 420

tgtaaacttc ttttatatgg gaataaagtg cagtatgtat actgttttgt atgtaccata 480

tgaataagga tcggctaact ccgtgccagc agccgcggta atacggagga tccgagcgtt 540

atccggattt attgggttta aagggagcgt aggcggaagc ttaagtcagt tgtgaaagtt 600

tgcggctcaa ccgtaaaatt gcagttgata ctgggtttct tgagtgcagt agaggtaggc 660

ggaattcgtg gtgtagcggt gaaatgctta gatatcacga agaactccga ttgcgaaggc 720

agcttactgg actgtaactg acgctgatgc tcgaaagtgt gggtatcaaa caggattaga 780

taccctggta gtccacacag taaacgatga atactcgctg tttgcgatat acagcaagcg 840

gccaagcgaa agcattaagt attccacctg gggagtacgc cggcaacggt gaaactcaaa 900

ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat gatacgcgag 960

gaaccttacc cgggcttaaa ttgcaactga cgtaggtgga aacatctatt ccttcgggca 1020

gttgtgaagg tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg cttaagtgcc 1080

ataacgagcg caacccttat ctttagttac taacaggtta tgctgaggac tctagagaga 1140

ctgccgtcgt aagatgtgag gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc 1200

cggggctaca cacgtgttac aatgggggt acagaaggca gctacacggc gacgtgatgc 1260

taatcccaaa aacctctctc agttcggatt ggagtctgca actcgactcc atgaagctgg 1320

attcgctagt aatcgcgcat cagccacggc gcggtgaata cgttcccggg ccttgtacac 1380

accgcccgtc aagccatgaa agccgggggt acctgaagtc cgtaaccgtt aaggagcggc 1440

ctagggtaaa actggtaatt ggggctaagt cgtaacaagg taacc 1485

<210> 287
<211> 1381
<212> DNA
<213> Bacteroides ovatus

<220>
<221> modified_base
<222> (25)..(25)
<223> a, c, t, g, unknown or other

<400> 287
tcgaggggca gcattttagt ttgcnttgca aactaaagat ggcgaccggc gcacgggtga 60

gtaacacgta tccaacctgc cgataactcg gggatagcct ttcgaaagaa agattaatat 120

ccgatagtat attaaaaccg catggtttta ctattaaaga atttcggtta tcgatgggga 180

tgcgttccat tagtttgttg gcggggtaac ggcccaccaa gactacgatg gataggggtt 240

ctgagaggaa ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag 300

cagtgaggaa tattggtcaa tggacgagag tctgaaccag ccaagtagcg tgaaggatga 360

ctgccctatg ggttgtaaac ttcttttata tgggaataaa gtattccacg tgtggaattt 420

tgtatgtacc atatgaataa ggatcggcta actccgtgcc agcagccgcg gtaatacgga 480

gccgagcgtt atccggattt attgggttta aagggagcgt aggtggattg ttaagtcagt 540

tgtgaaagtt tgcggctcaa ccgtaaaatt gcagttgaaa ctggcagtct tgagtacagt 600

agaggtgggc ggaattcgtg gtgtagcggt gaaatgctta gatatcacga agaactccga 660

ttgcgaaggc agctcactag actgcaactg acactgatgc tcgaaagtgt gggtatcaaa 720

caggattaga taccctggta gtccacacag taaacgatga atactcgctg tttgcgatat 780

acagtaagcg gccaagcgaa agcattaagt attccacctg gggagtacgc cggcaacggt 840

gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat 900

gatacgcgag gaaccttacc cgggcttaaa ttgcatttga ataatctgga aacaggttag 960

ccgcaaggca aatgtgaatt ggctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg 1020

cttaagtgcc ataacgagcg caacccttat ctttagttac taacaggtta tgctgaggac 1080

tctagagaga ctgccgtcgt aagatgtgag gaaggtgggg atgacgtcaa atcagcacgg 1140

cccttacgtc cggggctaca cacgtgttac aatgggggt acagaaggca gctacctggt 1200

gacaggatgc taatcccaaa aacctctctc agttcggatc gaagtctgca acccgacttc 1260

gtgaagctgg attcgctagt aatcgcgcat cagccatggc gcggtgaata cgttcccggg 1320

ccttgtacac accgcccgtc aagccatgaa agccgggggt acctgaagta cgtaaccgca 1380

a 1381

<210> 288
<211> 1531
<212> DNA
<213> Bacteroides pectinophilus

<400> 288
atgagagttt gatcctggct caggatgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgaagcac ttaatgagat ttcttcggat tgattatttt gtgactgagt ggcggacggg 120

tgagtaacgc gtgggtaacc tgccccagac cgggggataa cagtcggaaa cgactgctaa 180

taccgcataa gcgcacagtg ccgcatggca cagtgtgaaa aactccggtg gtctgggatg 240

gacccgcgtc cgattagtta gttggcgggg taacggccca ccaagaccgc gatcggtagc 300

cgacctgaga gggtgaccgg ccacattggg actgagacac ggcccagact cctacgggag 360

gcagcagtgg ggaatattgc acaatggagg aaactctgat gcagcgacgc cgcgtgagcg 420

aagaagtatt tcggtatgta aagctctgtc agcagggaag ataatgacgg tacctgacca 480

agaagccccg gctaactacg tgccagcagc cgcggtaata cgtaggggc aagcgttatc 540

cggatttact gggtgtaaag ggagtgtagg tggctgtgca agtcaggagt gaaagcccgg 600

ggctcaaccc cgggactgct cttgaaactg cgcagcttga gtgcaggagg ggcaggcgga 660

attcctagtg tagcggtgaa atgcgtagat attaggagga acaccggtgg cgaaggcggc 720

ctgctggact gtaactgaca ctgaggctcg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgccgtaa acgatgaata ctaggtgtcg gggctcataa gagcttcggt 840

gccgcagcaa acgcaataag tattccacct ggggagtacg ttcgcaagaa tgaaactcaa 900

aggaattgac ggggacccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 960

agaaccttac caggtcttga catcctcctg aacggaaggt aatgcttccg gtccttcggg 1020

acaggagaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1080

tcccgcaacg agcgcaaccc ctatcctcag tagccagcag tccggctggg cactctgtgg 1140

agactgccgg ggataacccg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1200

gacctgggct acacacgtgc tacaatggcg ctcaacaaag ggaagcaatg ccgcgaggcc 1260

gagcaaatcc caaaaacagc gtcccagttc ggactgtagt ctgcaacccg actacacgaa 1320

gctggaatcg ctagtaatcg cgaatcagaa tgtcgcggtg aatacgttcc cgggtcttgt 1380

acacaccgcc cgtcacacca tgggagtcgg aaatgcccga agtcagtgac ccaaccgcaa 1440

ggagggagct gccgaaggca ggtctggtaa ctggggtgaa gtcgtaacaa ggtagccgta 1500

tcggaaggtg cggctggatc acctcctttc t 1531

<210> 289
<211> 1326
<212> DNA
<213> Bacteroides plebeius

<400> 289
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgagtaa cgcgtatcca accttccgta cactcaggga tagcctttcg 120

aaagaaagat taatacctga tggttaaagt cggtgtacga tggggatgcg ttccattagg 180

tagtaggcgg ggtaacggcc cacctagcct acgatggata ggggttctga gaggaaggtc 240

ccccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatgga cgagagtctg aaccagccaa gtagcgtgaa ggatgaaggt ctacggattg 360

taaacttctt ttataaggga atatgtatgt accttatgaa taagcatcgg ctaactccgt 420

gccagcagcc gcggtaatac ggaggatgcg agcgttatcc ggatttattg ggtttaaagg 480

gagcgcagac gggtcgttaa gtcagctgtg aaagtttggg gctcaacctt aaaattgcag 540

ttgatactgg cgtccttgag tgcggttgag gtgtgcggaa ttcgtggtgt agcggtgaaa 600

tgcttagata tcacgaagaa ctccgattgc gaaggcagca cactaagccg actgacgttc 660

atgctcgaaa gtgtgggtat caaacaggat tagataccct ggtagtccac acggtaaacg 720

atggatactc gctgttggcg agtcagcggc ttagcgaaag cgttaagtat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttaaatt gtgaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

ccctcgccgc cagttactaa cagctgagga ctctggcggg actgccatcg taagatggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatgggcggc agaaggcagc tacctggcga caggatgcca atcccgccgc tctcagttcg 1140

gatggagtct gcaacccgac tccagaagct ggattcgcta gtaatcgcgc atcagccacg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gtacctgaag tgcgtagcgc cctagggtaa aaccggtaat tggggctaag tcgtaacaag 1320

gtaacc 1326

<210> 290
<211> 1458
<212> DNA
<213> Bacteroides pyogenes

<400> 290
ttagagtttg atcctggctc aggatgaacg ctagctacag gcttaacaca tgcaagtcga 60

ggggcagcat gaatattggc ttgccaatat ttgatggcga ccggcgcacg ggtgagtaac 120

acgtatccaa ccttccggtt actcggggat aggctttcga aagaaagatt aatacccgat 180

gttgtgtatc tttctcctga ttgatacgcc aaaggattcc ggtaaccgat ggggatgcgt 240

tccattaggc agttggcggg gtaacggccc accaaacctt cgatggatag gggttctgag 300

aggaaggtcc cccacattgg aactgagaca cggtccaaac tcctacggga ggcagcagtg 360

aggaatattg gtcaatggac ggaagtctga accagccaag tagcgtgaag gatgactgcc 420

ctctgggttg taaacttctt ttatacggga ataacatgag gtacgggtac cttattgcat 480

gtaccgttat gaataagcat cggctaactc cgtgccagca gccgcggtaa tacggaggat 540

gcgagcgtta tccggattta ttgggtttaa agggagcgta ggtgggatat taagtcagct 600

gtgaaagttt ggggctcaac cttaaaattg cagttgatac tggttttctt gagtacggta 660

taggtgggcg gaattcgtgg tgtagcggtg aaatgcttag atatcacgaa gaactcctat 720

tgcgaaggca gctcactgga ccggcactga cactgatgct cgaaagtgcg ggtatcaaac 780

aggattagat accctggtag tccgcacagt aaacgatgaa tactcgctgt ttgcgataca 840

cagtaagcgg ccaagcgaaa gcgttaagta ttccacctgg ggagtacgcc ggcaacggtg 900

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 960

atacgcgagg aaccttaccc gggcttaaat tgcgctggct tttaccggaa acggtatttt 1020

cttcggacca gcgtgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aacccttatc tttagttgcc atcaggtttt gctggggact 1140

ctaaagagac tgccgtcgta agatgcgagg aaggtgggga tgacgtcaaa tcagcacggc 1200

ccttacgtcc ggggctacac acgtgttaca atggggagca cagcaggttg ctacacggcg 1260

acgtgatgcc aatccgtaaa actcctctca gttcggatcg aagtctgcaa cccgacttcg 1320

tgaagctgga ttcgctagta atcgcgcatc agccacggcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatgaaa gccgggggta cctgaagtac gtaaccgcaa 1440

ggatcgtcct tagtaaac 1458

<210> 291
<211> 1521
<212> DNA
<213> Bacteroides salanitronis

<400> 291
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgcgg 60

ggcagcggga gcctagcttg ctaggcttgc cggcgaccgg cgcacgggtg agtaacgcgt 120

atccgacctt ccgcacactc cgggccagcc ttccgaaagg aagattaatc ccggatggta 180

tggcgtggct gcatggcagc gccattaaag gagcgatccg gtgtgcgatg ggggtgcgtt 240

ccattagctt gttggcgggg taacggccca ccaaggcgac gatggatagg ggttctgaga 300

ggaaggcccc ccacattggg actgagacac ggcccaaaac tcctacggga ggcagcagtg 360

aggaatattg gtcaatgggc gagagcctga accagccaag tagcgtggag gatgaccgcc 420

ctacgggttg taaactcctt ttataaggga ataaaacctc ccacgtgtgg gagcttgtat 480

gtaccttatg aataagcatc ggctaactcc gtgccagcag ccgcggtaat acggaggatg 540

cgagcgttat ccggatttat tgggtttaaa gggagcgtag acgggatgtc aagtcagctg 600

tgaaagtttg cggctcaacc gtaaaattgc agttgaaact ggctttcttg agtgcgttcg 660

aggcaggcgg aattcgtggt gtagcggtga aatgcataga tatcacgaag aaccccgatt 720

gcgaaggcag cctgctaggc cgcaactgac gttgatgctc gaaagtgcgg gtatcaaaca 780

ggattagata ccctggtagt ccgcacggta aacgatgggc actcgctgcc ggcgatatac 840

tgccggcggc ttagcgaaag cgttaagtgc cccacctggg gagtacgccg gcaacggtga 900

aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcgatga 960

tacgcgagga accttacccg ggcttgaact gcggatgcat tgcgcggaaa cgcgcaagtg 1020

ggcaaccaca tccgtggagg tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg 1080

cttaagtgcc ataacgagcg caacccccttc cgccagttgc catcaggtta tgctggggac 1140

tctggcggta ctgccatcgt aagatgcgag gaaggtgggg atgacgtcaa atcagcacgg 1200

cccttacgtc cggggctaca cacgtgttac aatgggggggt acagagggcc gccatccggc 1260

gacggagcgc caatccctaa agcccctccc agttcggact ggagcctgca acccggctcc 1320

acgaagctgg attcgctagt aatcgcgcat cagccacggc gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc aagccatgaa agccgggggt gcctgaagtg cgtaaccgaa 1440

aggggcgccc tagggtaaaa ccggtgattg gggctaagtc gtaacaaggt agccgtaccg 1500

gaaggtgcgg ctggaacacc t 1521

<210> 292
<211> 970
<212> DNA
<213> Bacteroides salyersiae

<220>
<221> modified_base
<222> (946)..(946)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (948)..(948)
<223> a, c, t, g, unknown or other

<400> 292
tcgaggggca tcagggtgta gcaatacgcc gctggcgacc ggcgcacggg tgagtaacac 60

gtatccaacc tgcccttttac tcggggatag cctttcgaaa gaaagattaa tacccgatgg 120

tataacatga cctcctggtt ttgttattaa agaatttcgg tagaggatgg ggatgcgttc 180

cattaggcag ttggcggggt aacggcccac caaaccttcg atggataggg gttctgagag 240

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 300

gaatattggt caatgggcga gagcctgaac cagccaagta gcgtgaagga tgaccgccct 360

atgggttgta aacttctttt atatgggaat aaagtctgcc acgtgtggca ttttgtatgt 420

accatatgaa taaggatcgg ctaactccgt gccagcagcc gcggtaatac ggaggatccg 480

agcgttatcc ggatttattg ggtttaaagg gagcgtaggt ggacatgtaa gtcagttgtg 540

aaagtttgcg gctcaaccgt aaaattgcag ttgatactgc gtgtcttgag tacagtagag 600

gtgggcggaa ttcgtggtgt agcggtgaaa tgcttagata tcacgaagaa ctccgattgc 660

gaaggcagct cactggactg caactgacac tgatgctcga aagtgtgggt atcaaacagg 720

attagatacc ctggtagtcc acacagtaaa cgatgaatac tcgctgtttg cgatatacag 780

taagcggcca agcgaaagca ttaagtattc cacctgggga gtacgccggc aacggtgaaa 840

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 900

cgcgaggaac cttacccggg cttaaattgc aaatgaatat gccggnancg gcatagccgc 960

aaggcatttg 970

<210> 293
<211> 1533
<212> DNA
<213> Bacteroides sp. 1_1_14

<400> 293
ttacaatgaa gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcagcatttc agtttgcttg caaactggag atggcgaccg gcgcacgggt 120

gagtaacacg tatccaacct gccgataact cggggatagc ctttcgaaag aaagattaat 180

acccgatggt ataatcagac cgcatggtct tgttattaaa gaatttcggt tatcgatggg 240

gatgcgttcc attaggcagt tggtgaggta acggctcacc aaaccttcga tggatagggg 300

ttctgagagg aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc 360

agcagtgagg aatattggtc aatgggcgca ggcctgaacc agccaagtag cgtgaaggat 420

gactgcccta tgggttgtaa acttctttta tatgggaata aagttttcca cgtgtggaat 480

tttgtatgta ccatatgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg 540

gaggatccga gcgttatccg gatttattgg gtttaaaggg agcgtaggtg gacagttaag 600

tcagttgtga aagtttgcgg ctcaaccgta aaattgcagt tgatactggc tgtcttgagt 660

acagtagagg tgggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac 720

tccgattgcg aaggcagctc actggactgc aactgacact gatgctcgaa agtgtgggta 780

tcaaacagga ttagataccc tggtagtcca cacagtaaac gatgaatact cgctgtttgc 840

gatatacagt aagcggccaa gcgaaagcat taagtattcc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttaaattgca tttgaatata ttggaaacag 1020

tatagccgta aggcaaatgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt 1080

gtcggcttaa gtgccataac gagcgcaacc cttatcttta gttactaaca ggtcatgctg 1140

aggactctag agagactgcc gtcgtaagat gtgaggaagg tggggatgac gtcaaatcag 1200

cacggccctt acgtccgggg ctacacacgt gttacaatgg ggggtacaga aggcagctac 1260

ctggtgacag gatgctaatc ccaaaagcct ctctcagttc ggatcgaagt ctgcaacccg 1320

acttcgtgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcaagcc atgaaagccg ggggtacctg aagtacgtaa 1440

ccgcaaggag cgtcctaggg taaaactggt aattggggct aagtcgtaac aaggtagccg 1500

taccggaagg tgcggctgga acacctcctt tct 1533

<210> 294
<211> 1345
<212> DNA
<213> Bacteroides sp. 1_1_30

<400> 294
tggcgaccgg cgcacgggtg agtaacacgt atccaacctg ccgataactc ggggatagcc 60

tttcgaaaga aagattaata tccgatagta tattaaaacc gcatggtttt actattaaag 120

aatttcggtt atcgatgggg atgcgttcca ttagtttgtt ggcggggtaa cggcccacca 180

agactacgat ggataggggt tctgagagga aggtccccca cattggaact gagacacggt 240

ccaaactcct acgggaggca gcagtgagga atattggtca atggacgaga gtctgaacca 300

gccaagtagc gtgaaggatg actgccctat gggttgtaaa cttcttttat atgggaataa 360

agtattccac gtgtggaatt ttgtatgtac catatgaata aggatcggct aactccgtgc 420

cagcagccgc ggtaatacgg aggatccgag cgttatccgg atttattggg tttaaaggga 480

gcgtaggtgg attgttaagt cagttgtgaa agtttgcggc tcaaccgtaa aattgcagtt 540

gaaactggca gtcttgagta cagtagaggt gggcggaatt cgtggtgtag cggtgaaatg 600

cttagatatc acgaagaact ccgattgcga aggcagctca ctagactgca actgacactg 660

atgctcgaaa gtgtgggtat caaacaggat tagataccct ggtagtccac acagtaaacg 720

atgaatactc gctgtttgcg atatacagta agcggccaag cgaaagcatt aagtattcca 780

cctggggagt acgccggcaa cggtgaaact caaaggaatt gacgggggcc cgcacaagcg 840

gaggaacatg tggtttaatt cgatgatacg cgaggaacct tacccgggct taaattgcat 900

ttgaataatc tggaaacagg ttagccgcaa ggcaaatgtg aaggcagctc acgagactgc 960

aactgacgtg ccgtgaggtg tcggcttaag tgccataacg agcgcaaccc ttatctttag 1020

ttactaacag gttatgctga ggactctaga gagactgccg tcgtaagatg tgaggaaggt 1080

ggggatgacg tcaaatcagc acggccctta cgtccggggc tacacacgtg ttacaatggg 1140

gggtacagaa ggcagctacc tggtgacagg atgctaatcc caaaaacctc tctcagttcg 1200

gatcgaagtc tgcaacccga cttcgtgaag ctggattcgc tagtaatcgc gcatcagcca 1260

tggcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagcca tgaaagccgg 1320

gggtacctga agtacgtaac cgcaa 1345

<210> 295

<211> 1381
<212> DNA
<213> Bacteroides sp. 1_1_6

<220>
<221> modified_base
<222> (1333)..(1333)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1337)..(1338)
<223> a, c, t, g, unknown or other

<400> 295
aggggcagca tttcagtttg cttgcaaact ggagatggcg accggcgcac gggtgagtaa 60

cacgtatcca acctgccgat aactcgggga tagcctttcg aaagaaagat taatacccga 120

tggtataatg aaaccgcatg gtcttattat taaagaattt cggttatcga tggggatgcg 180

ttccattagg cagttggtga ggtaacggct caccaaacct tcgatggata ggggttctga 240

gaggaaggtc ccccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt 300

gaggaatatt ggtcaatggg cgcaggcctg aaccagccaa gtagcgtgaa ggatgactgc 360

cctatgggtt gtaaacttct tttatatggg aataaagttt tccacgtgtg gaattttgta 420

tgtaccatat gaataaggat cggctaactc cgtgccagca gccgcggtaa tacggaggat 480

ccgagcgtta tccggattta ttgggtttaa agggagcgta ggtggacagt taagtcagtt 540

gtgaaagttt gcggctcaac cgtaaaattg cagttgatac tggctgtctt gagtacagta 600

gaggtgggcg gaattcgtgg tgtagcggtg aaatgcttag atatcacgaa gaactccgat 660

tgcgaaggca gctcactgga ctgcaactga cactgatgct cgaaagtgtg ggtatcaaac 720

aggattagat accctggtag tccacacagt aaacgatgaa tactcgctgt ttgcgatata 780

cagtaagcgg ccaagcgaaa gcattaagta ttccacctgg ggagtacgcc ggcaacggtg 840

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 900

atacgcgagg aaccttaccc gggcttaaat tgcatttgaa tatattggaa acagtatagc 960

cgtaaggcaa atgtgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1020

ttaagtgcca taacgagcgc aacccttatc tttagttact aacaggtcat gctgaggact 1080

ctagagagac tgccgtcgta agatgtgagg aaggtgggga tgacgtcaaa tcagcacggc 1140

ccttacgtcc ggggctacac acgtgttaca atgggggtta cagaaggcag ctacctggtg 1200

acaggatgct aatcccaaaa gcctctctca gttcggatcg aagtctgcaa cccgacttcg 1260

tgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc 1320

cttgtacaca ccncggnntc aagccatgaa agccgggggt acctgaagta cgtaaccgca 1380

a 1381

<210> 296
<211> 1385
<212> DNA

<213> Bacteroides sp. 20_3

<220>
<221> modified_base
<222> (7)..(7)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (19)..(24)
<223> a, c, t, g, unknown or other

<400> 296
tcgaggnggc agcacaggnn nnnntaccgg gtggcgaccg gcgcacgggt gagtaacgcg 60

tatgcaactt gcctatcaga gggggataac ccggcgaaag tcggactaat accgcatgaa 120

gcaggggccc cgcatgggga tatttgctaa agattcatcg ctgatagata ggcatgcgtt 180

ccattaggca gttggcgggg taacggccca ccaaaccgac gatggatagg ggttctgaga 240

ggaaggtccc ccacattggt actgagacac ggaccaaact cctacgggag gcagcagtga 300

ggaatattgg tcaatgggcg taagcctgaa ccagccaagt cgcgtgaggg atgaaggttc 360

tatggatcgt aaacctcttt tataagggaa taaagtgcgg gacgtgtccc gttttgtatg 420

taccttatga ataaggatcg gctaactccg tgccagcagc cgcggtaata cggaggatcc 480

gagcgttatc cggatttatt gggtttaaag ggtgcgtagg cggcctttta agtcagcggt 540

gaaagtctgt ggctcaacca tagaattgcc gttgaaactg ggaggcttga gtatgtttga 600

ggcaggcgga atgcgtggtg tagcggtgaa atgcttagat atcacgcaga accccgattg 660

cgaaggcagc ctgccaagcc atgactgacg ctgatgcacg aaagcgtggg gatcaaacag 720

gattagatac cctggtagtc cacgcagtaa acgatgatca ctagctgttt gcgatacaca 780

gtaagcggca cagcgaaagc gttaagtgat ccacctgggg agtacgccgg caacggtgaa 840

actcaaagga attgacgggg gcccgcacaa gcggacgaac atgtggttta attcgatgat 900

acgcgaggaa ccttacccgg gtttgaacgc attcggaccg aggtggaaac acctttcta 960

gcaatagccg tttgcgaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1020

ttaagtgcca taacgagcgc aacccttgcc actagttact aacaggtgat gctgaggact 1080

ctggtgggac tgccagcgta agctgcgagg aaggcgggga tgacgtcaaa tcagcacggc 1140

ccttacatcc ggggcgacac acgtgttaca atggcgtgga caaagggaag ccacctggcg 1200

acagggagcg aatccccaaa ccacgtctca gttcggatcg gagtctgcaa cccgactccg 1260

tgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc 1320

cttgtacaca ccgcccgtca agccatggga gccgggggta cctgaagtcc gtaaccgcga 1380

ggatc 1385

<210> 297
<211> 1382
<212> DNA
<213> Bacteroides sp. 2_1_22

<400> 297
tcgaggggca gcattttagt ttgcttgcaa actgaagatg gcgaccggcg cacgggtgag 60

taacacgtat ccaacctgcc gataactccg ggatagcctt tcgaaagaaa gattaatacc 120

ggatggcata ctaatatcgc atgatatttt tattaaagaa tttcggttat cgatggggat 180

gcgttccatt agtttgttgg cggggtaacg gcccaccaag actacgatgg ataggggttc 240

tgagaggaag gtcccccaca ttggaactga gacacggtcc aaactcctac gggaggcagc 300

agtgaggaat attggtcaat ggacgagagt ctgaaccagc caagtagcgt gaaggatgac 360

tgccctatgg gttgtaaact tcttttatat gggaataaag tattccacgt gtggaatttt 420

gtatgtacca tatgaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag 480

gatccgagcg ttatccggat ttattgggtt taaagggagc gtaggtggat tgttaagtca 540

gttgtgaaag tttgcggctc aaccgtaaaa ttgcagttga aactggcagt cttgagtaca 600

gtagaggtgg gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaagaactcc 660

gattgcgaag gcagctcact agactgcact gacactgatg ctcgaaagtg tgggtatcaa 720

acaggattag ataccctggt agtccacaca gtaaacgatg aatactcgct gtttgcgata 780

tacagtaagc ggccaagcga aagcattaag tattccacct ggggagtacg ccggcaacgg 840

tgaaactcaa aggaattgac gggggcccgc acaagcggag gaacatgtgg tttaattcga 900

tgatacgcga ggaaccttac ccgggcttaa attgcatttg aataatctgg aaacaggtta 960

gccgcaaggc aaatgtgaag gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtcg 1020

gcttaagtgc cataacgagc gcaaccctta tctttagtta ctaacaggtc atgctgagga 1080

ctctagagag actgccgtcg taagatgtga ggaaggtggg gatgacgtca aatcagcacg 1140

gcccttacgt ccggggctac acacgtgtta caatgggggg tacagaaggc agctacctgg 1200

tgacaggatg ctaatcccaa aaacctctct cagttcggat cgaagtctgc aacccgactt 1260

cgtgaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1320

gccttgtaca caccgcccgt caagccatga aagccggggg tacctgaagt acgtaaccgc 1380

aa 1382

<210> 298
<211> 945
<212> DNA
<213> Bacteroides sp. 2_1_56FAA

<220>
<221> modified_base
<222> (490)..(490)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (760)..(760)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (775)..(775)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (784)..(785)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (848)..(848)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (867)..(867)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (887)..(888)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (902)..(902)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (909)..(909)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (919)..(919)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (934)..(935)
<223> a, c, t, g, unknown or other

<400> 298
ttgctggcga ccggcgcacg ggtgagtaac acgtatccaa cctgcccttt actcggggat 60

agcctttcga aagaaagatt aatacccgat agcataatga ttccgcatgg tttcattatt 120

aaaggattcc ggtaaaggat ggggatgcgt tccattaggt tgttggtgag gtaacggccc 180

accaagcctt cgatggatag gggttctgag aggaaggtcc cccacattgg aactgagaca 240

cggtccaaac tcctacggga ggcagcagtg aggaatattg gtcaatgggc gttagcctga 300

accagccaag tagcgtgaag gatgaaggct ctatgggtcg taaacttctt ttatataaga 360

ataaagtgca gtatgtatac tgttttgtat gtattatatg aataaggatc ggctaactcc 420

gtgccagcag ccgcggtaat acggaggatc cgagcgttat ccggatttat tgggtttaaa 480

gggagcgtan gtggactggt aagtcagttg tgaaagtttg cggctcaacc gtaaaattgc 540

agttgatact gtcagtcttg agtacagtag aggtgggcgg aattcgtggt gtagcggtga 600

aatgcttaga tatcacgaag aactccgatt gcgaaggcag ctcactggac tgcaactgac 660

actgatgctc gaaagtgtgg gtatcaaaca ggattagata ccctggtagt ccacacagta 720

aacgatgaat actcgctgtt tgcgatatac agtaagcggn caagcgaaag cattnaagta 780

ttcnncctgg ggagtacgcc ggcaacggtg aaactcaaag gaattgacgg gggcccgcac 840

aagcgganga acatgtggtt taattcnatg atacgcgagg aaccttnncc cgggcttaaa 900

tngcagtgna atgatgtgna aacatgtcag tganncatca ccact 945

<210> 299
<211> 1525
<212> DNA
<213> Bacteroides sp. 2_2_4

<400> 299
tacaatgaag agtttgatcc tggctcagga tgaacgctag ctacaggctt aacacatgca 60

agtcgagggg cagcatttcg ctagcaatag tgaagatggc gaccggcgca cgggtgagta 120

acacgtatcc aacctgccga taactcgggg atagcctttc gaaagaaaga ttaatatccg 180

atagtatatt aaaaccgcat ggttttacta ttaaagaatt tcggttatcg atggggatgc 240

gttccattag tttgttggcg gggtaacggc ccaccaagac tacgatggat aggggttctg 300

agaggaaggt cccccacatt ggaactgaga cacggtccaa actcctacgg gaggcagcag 360

tgaggaatat tggtcaatgg acgagagtct gaaccagcca agtagcgtga aggatgactg 420

ccctatgggt tgtaaacttc ttttatatgg gaataaagta ttccacgtgt gggattttgt 480

atgtaccata tgaataagga tcggctaact ccgtgccagc agccgcggta atacggagga 540

tccgagcgtt atccggattt attgggttta aagggagcgt aggtggattg ttaagtcagt 600

tgtgaaagtt tgcggctcaa ccgtaaaatt gcagttgaaa ctgggagtct tgagtacagt 660

agaggtgggc ggaattcgtg gtgtagcggt gaaatgctta gatatcacga agaactccga 720

ttgcgaaggc agctcactag actgtcactg acactgatgc tcgaaagtgt gggtatcaaa 780

caggattaga taccctggta gtccacacag taaacgatga atactcgctg tttgcgatat 840

acagtaagcg gccaagcgaa agcattaagt attccacctg gggagtacgc cggcaacggt 900

gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat 960

gatacgcgag gaaccttacc cgggcttaaa ttgcaaatga ataatctgga aacaggttag 1020

ccgcaaggca tttgtgaagg tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg 1080

cttaagtgcc ataacgagcg caacccttat ctttagttac taacaggtta tgctgaggac 1140

tctagagaga ctgccgtcgt aagatgtgag gaaggtgggg atgacgtcaa atcagcacgg 1200

cccttacgtc cggggctaca cacgtgttac aatggggggt acagaaggca gctacctggt 1260

gacaggatgc taatcccaaa aacctctctc agttcggatc gaagtctgca acccgacttc 1320

gtgaagctgg attcgctagt aatcgcgcat cagccatggc gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc aagccatgaa agccgggggt acctgaagta cgtaaccgca 1440

aggagcgtcc tagggtaaaa ctggtaattg gggctaagtc gtaacaaggt agccgtaccg 1500

gaaggtgcgg ctggaacacc tcctt 1525

<210> 300
<211> 1362
<212> DNA
<213> Bacteroides sp. 315-5

<400> 300
taggcttaac acatgcaagt cgaggggcag cattatctta gcttgctaag atagatggcg 60

accggcgcac gggtgagtaa cacgtatcca accttccggt tactcgggga taggctttcg 120

aaagaaagat taatacccga tgttgcgtat ctttctcctg aaagatacgc caaaggattc 180

cggtaaccga tggggatgcg ttccattagg cagttggcgg ggtaacggcc caccaaacct 240

tcgatggata ggggttctga gaggaaggtc ccccacattg gaactgagac acggtccaaa 300

ctcctacggg aggcagcagt gaggaatatt ggtcaatgga cggaagtctg aaccagccaa 360

gtagcgtgaa ggatgactgc cctctgggtt gtaaacttct tttatacggg aataacatga 420

ggtacgcgta ccttattgca tgtaccgtta tgaataagca tcggctaact ccgtgccagc 480

agccgcggta atacggagga tgcgagcgtt atccggattt attgggttta aagggagcgt 540

aggtgggata ttaagtcagc tgtgaaagtt tggggctcaa ccttaaaatt gcagttgata 600

ctggtttcct tgagtacggt acaggtgggc ggaattcgtg gtgtagcggt gaaatgctta 660

gatatcacga agaactccga tcgcgaaggc agctcaccgg gccggaactg acactgatgc 720

tcgaaagtgc gggtatcaaa caggattaga taccctggta gtccgcacag taaacgatga 780

atactcgctg tttgcgatac acagtaagcg gccaagcgaa agcgttaagt attccacctg 840

gggagtacgc cggcaacggt gaaactcaaa ggaattgacg ggggcccgca caagcggagg 900

aacatgtggt ttaattcgat gatacgcgag gaaccttacc cgggcttaaa ttgcgctggc 960

ttttaccgga aacggtattt tcttcggacc agcgtgaagg tgctgcatgg ttgtcgtcag 1020

ctcgtgccgt gaggtgtcgg cttaagtgcc ataacgagcg caacccttat ctttagttac 1080

taacagtttt gctgaggact ctaaagagac tgccgtcgta agatgcgagg aaggtgggga 1140

tgacgtcaaa tcagcacggc ccttacgtcc ggggctacac acgtgttaca atggggagca 1200

cagcaggttg ctacacggcg acgtgatgcc aatccgtaaa actcctctca gttcggatcg 1260

aagtctgcaa cccgacttcg tgaagctgga ttcgctagta atcgcgcatc agccacggcg 1320

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca ag 1362

<210> 301
<211> 1243
<212> DNA
<213> Bacteroides sp. 31SF15

<400> 301
taacacatgc acgtcgaggg accggcgcac gggtgagtaa cacgtatcca acctaccggt 60

tattccggga tagcctttcg aaagaaagat taataccgga tagttaaagt cgataaccga 120

tggggatgcg ttccattagt ttgttggcgg ggtaacggcc caccaagaca tcgatggata 180

ggggttctga gaggaaggtc ccccacattg gaactgagac acggtccaaa ctcctacggg 240

aggcagcagt gaggaatatt ggtcaatgga cgagagtctg aacgagccaa gtagcgtgaa 300

ggatgactgc ctatgggttg taaacttctt ttatatggga atatgtatgt accatacgaa 360

taaggatcgg ctaactccgt gccagcagcc gcggtaatac ggaggatccg agcgttatcc 420

ggatttattg ggtttaaagg gagcgtaggc ggactattaa gtcagctgtg aaagtttgcg 480

gctcaaccgt aaaattgcag ttgatactgg tcgtcttgag tgcagtagag gtaggcggaa 540

ttcgtggtgt agcggtgaaa tgcttagata tcacgaagaa ctccgattgc gaaggcagct 600

tactggactg actgacgctg atgctcgaaa gtgtgggtat caaacaggat tagataccct 660

ggtagtccac acagtaaacg atgaatactc gctgtttgcg agcaagcggc caagcgaaag 720

cattaagtat tccacctggg gagtacgccg gcaacggtga aactcaaagg aattgacggg 780

ggcccgcaca agcggaggaa catgtggttt aattcgatga tacgcgagga accttacccg 840

ggcttaaatt gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt 900

aagtgccata acgagcgcaa cccttatctt tagttactta cagctgagga ctctagagag 960

actgccgtcg tatgatggag gaaggtgggg atgacgtcaa atcagcacgg tcctatcgtc 1020

cggggataca cacgtgttac aatgggggggc agaaggcagc tacacagcga tgtgatgcta 1080

atcccacctc tagcagttcg gatggagtct gcaacccgac tccagaagct ggattcgcta 1140

gtaatcgcgc atcagcacgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1200

caagccatga aagccggggg tacctgaagt ccgacggcct agg 1243

<210> 302
<211> 1207
<212> DNA
<213> Bacteroides sp. 31SF18

<400> 302
acacatgcaa gtcgagggac cggcgcacgg gtgagtaaca cgtatccaac ctaccggtta 60

ttctgggata gcctttcgaa agaaagatta ataccggata gttaaagtcg ataaccgatg 120

gggatgcgtt ccattagttt gttggcgggg taacggccca ccaagacatc gatggatagg 180

ggttctgaga ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag 240

gcagcagtga ggaatattgg tcaatggacg agagtctgaa ccagccaagt agcgtgaagg 300

atgactgcct atgggttgta aacttctttt atatgggaat atgtatgtac catacgaata 360

aggatcggct aactccgtgc cagcagccgc ggtaatacgg aggatccgag cgttatccgg 420

atttattggg tttaaaggga gcgtaggcgg actattaagt cagctgtgaa agtttgcggc 480

tcaaccgtaa aattgcagtt gatactggtc gtcttgagtg cagtagaggt aggcggaatt 540

actggtgtag cggtgaaatg cttagatatc acgaagaact ccgattgcga aggcagctta 600

ctggactgac tgacgctgat gctcgaaagt gtgggtatca aacaggatta gataccctgg 660

tagtccacac agtaaacgat gaatactcgc tgtttgcgag caagcggcca agcgaaagca 720

ttaagtattc cacctgggga gtacgccggc aacggtgaaa ctcaaaggaa ttgacggggg 780

cccgcacaag cggaggaaca tgtggtttaa ttcgatgata cgcgaggaac cttacccggg 840

cttaaattgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa 900

gtgccataac gagcgcaacc cttatcttta gttactaaca gctgaggact ctagagagac 960

tgccgtcgta agatggagga aggtggggat gacgtcaaat cagcacggcc cttacgtccg 1020

gggctacaca cgtgttacaa tgggggggcag aaggcagcta cacagcgatg tgatgctaat 1080

cccacctctc tcagttcgga tggagtctgc aacccgactc cagaagctgg attcgctagt 1140

aatcgcgcat cagccacggc gcggtgaata cgttcccggg ccttgtacac accgcccgtc 1200

aagccat 1207

<210> 303
<211> 1254
<212> DNA
<213> Bacteroides sp. 35AE31

<400> 303
caggcttaac acatgcaagt cgagggaccg gcgcacgggt gagtaacacg tatccaacct 60

accggttatt ctgggatagc ctttcgaaag aaagattaat accggatagt taaagtcgat 120

aaccgatggg gatgcgttcc attagtttgt tggcggggta acggcccacc aagacatcga 180

tggatagggg ttctgagagg aaggtccccc acattggaac tgagacacgg tccaaactcc 240

tacgggaggc agcagtgagg aatattggtc aatggacgag agtctgaacc agccaagtag 300

cgtgaaggat gactgcctat gggttgtaaa cttcttttat atgggaatat gtatgtacca 360

tacgaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag gatccgagcg 420

ttatccggat ttattgggtt taaagggagc gtaggcggac tattaagtca gctgtgaaag 480

tttgcggctc aaccgtaaaa ttgcagttga tactggtcgt cttgagtgca gtagaggtag 540

gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaagaactcc gattgcgaag 600

gcagcttact ggactgactg acgctgatgc tcgaaagtgt gggtatcaaa caggattaga 660

taccctggta gtccacacag taaacgatga atactcgctg tttgcgagca agcggccaag 720

cgaaagcatt aagtattcca cctggggagt acgccggcaa cggtgaaact caaaggaatt 780

gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg cgaggaacct 840

tacccgggct taaattgtga aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt 900

cggcttaagt gccataacga gcgcaaccct tatctttagt tactaacagc tgaggactct 960

agagagactg ccgtcgtaag atggaggaag gtggggatga cgtcaaatca gcacggccct 1020

tacgtccggg gctacacacg tgttacaatg gggggcagaa ggcagctaca cagcgatgtg 1080

atgctaatcc cacctctctc agttcggatg gagtctgcaa cccgactcca gaagctggat 1140

tcgctagtaa tcgcgcatca gccaggcgcg gtgaatacgt tcccgggcct tgtacacacc 1200

gcccgtcaag ccatgaaagc cgggggtacc tgaagtccgt agcggcctag ggta 1254

<210> 304
<211> 1238
<212> DNA
<213> Bacteroides sp. 35AE37

<400> 304
gcttaacaca tgcaagtcga gggaccggcg cacgggtgag taacacgtat ccaacctacc 60

ggttattccg ggatagcctt tcgaaagaaa gattaatacc ggatagttaa agtcgataac 120

cgatggggat gcgttccatt agtttgttgg cggggtaacg gcccaccaag acatcgatgg 180

ataggggttc tgagaggaag gtcccccaca ttggaactga gacacggtcc aaactcctac 240

gggaggcagc agtgaggaat attggtcaat ggacgagagt ctgacccagc caagtagcgt 300

gaaggatgac tgcctatggg ttgtaaactt cttttatatg ggaatatgta tgtaccatac 360

gaataaggat cggctaactc cgtgccagca gccgcggtaa tacggaggat ccgagcgtta 420

tccggattta ttgggtttaa agggagcgta ggcggactat taagtcagct gtgaaagttt 480

gcggctcaac cgtaaaattg cagttgatac tggtcgtctt gagtgcagta gaggtaggcg 540

gaattcgtgg tgtagcggtg aaatgcttag atatcacgaa gaactccgat tgcgaaggca 600

gcttactgga ctgactgacg ctgatgctcg aaagtgtggg tatcaaacag gattagatac 660

cctggtagtc cacacagtaa acgatgaata ctcgctgttt gcgagcaagc ggccaagcga 720

aagcattaag tattccacct ggggagtacg ccggcaacgg tgaaactcaa aggaattgac 780

gggggcccgc acaagcggag gaacatgtgg tttaattcga tgatacgcga ggaaccttac 840

ccgggcttaa attgtgaagg tgctgcatgg ttgtcgtcag ctcgagccgt gaggtgtcgg 900

cttaagtgcc ataacgagcg caacccttat ctttagttac taacagctga ggactctaga 960

gagactgccg tcgtaagatg gaggaaggtg gggatgacgt caaatcagca cggcccttac 1020

gtccggggct acacacgtgt tacaatgggg ggcagaaggc agctacacag cgatgtgatg 1080

ctaatcccac ctctctcagt tcggatggag tctgcaaccc gactccagaa gctggattcg 1140

ctagtaatcg cgcatcagcc acggcgcggt gaatacgttc ccgggccttg tacacaccgc 1200

ccgtcaagcc atgaaagccg ggggtacctg aagtccga 1238

<210> 305
<211> 1229
<212> DNA
<213> Bacteroides sp. 35BE34

<400> 305
tcgagggacc ggcgcacggg tgagtaacac gtatccaacc taccggttat tctgggatag 60

cctttcgaaa gaaagattaa taccggatag ttaaagtcga taaccgatgg ggatgcgttc 120

cattagtttg ttggcggggt aacggcccac caagacatcg atggataggg gttctgagag 180

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 240

gaatattggt caatggacga gagtctgaac cagccaagta gcgtgaagga tgactgccta 300

tgggttgtaa acttctttta tatgggaata tgtatgtacc atacgaataa ggatcggcta 360

actccgtgcc agcagccgcg gtaatacgga ggatccgagc gttatccgga tttattgggt 420

ttaaagggag cgtaggcgga ctattaagtc agctgtgaaa gtttgcggct caaccgtaaa 480

attgcagttg atactggtcg tcttgagtgc agtagaggta ggcggaattc gtggtgtagc 540

ggtgaaatgc ttagatatca cgaagaactc cgattgcgaa ggcagcttac tggactgact 600

gacgctgatg ctcgaaagtg tgggtatcaa acaggattag ataccctggt agtccacaca 660

gtaaacgatg aatactcgct gtttgcgagc aagcggccaa gcgaaagcat taagtattcc 720

acctggggag tacgccggca acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc 780

ggaggaacat gtggtttaat tcgatgatac gcgaggaacc ttacccgggc ttaaattgtg 840

aaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg tcggcttaag tgcctaaacg 900

agcgcaaccc ttatctttag ttactaacag ctgaggactc tagagagact gccgtcgtaa 960

gatggaggaa ggtggggatg acgtcaaatc agcacggccc ttacgtccgg ggctacacac 1020

gtgttacaat gggggggcaga aggcagctac acagcgatgt gatgctaatc ccacctctct 1080

cagttcggat ggagtctgca acccgactcc agaagctgga ttcgctagta atcgtgcatc 1140

agccacggcg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca agccatgaaa 1200

gccgggggta cctgaagtcc gacggccta 1229

<210> 306
<211> 1250
<212> DNA
<213> Bacteroides sp. 35BE35

<400> 306
acacatgcaa gtcgagggac cggcgcacgg gtgagtaaca cgtatccaac ctaccggtta 60

ttccgggata gcctttcgaa agaaagatta ataccggata gttaaagtcg ataaccgatg 120

gggatgcgtt ccattagttt gttggcgggg taacggccca ccaagacatc gatggatagg 180

ggttctgaga ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag 240

gcagcagtga ggaatattgg tcaatggacg agagtctgaa ccagccaagt agcgtgaagg 300

atgactgcct atgggttgta aacttctttt atatgggaat atgtatgtac catacgaata 360

aggatcggct aactccgtgc cagcagccgc ggtaatacgg aggatccgag cgttatccgg 420

atttattggg tttaaaggga gcgtaggcgg actattaagt cagctgtgaa agtttgcggc 480

tcaaccgtaa aattgcagtt gatactggtc gtcttgagtg cagtagaggt aggcggaatt 540

cgtggtgtag cggtgaaatg cttagatatc acgaagaact ccgattgcga aggcagctta 600

ctggactgac tgacgctgat gctcgaaagt gtgggtatca aacatgatta gataccctgg 660

tagtccacac agtaaacgat gaatactcgc tgtttgcgag caagcggcca agcgaaagca 720

ttaagtattc cacctgggga gtacgccggc actggcgaaa ctcaaaggaa ttgacggggg 780

cccgcacaag cggaggaaca tgtggtttaa ttcgatgata cgcgaggaac cttacccggg 840

cttaaattgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa 900

gtgccataac gagcgcaacc cttatcttta gttactaaca gctgaggact ctagagagac 960

tgccgtcgta agatggagga aggtggggat gacgtcaaat cagcacggcc cttacgtccg 1020

gggctacaca cgtgttacaa tgggggggcag aaggcagcta catagcgatg tgatgctaat 1080

cccacctctc tcagttcgga tggagtctgc aacccgactc cagaagctgg attcgctagt 1140

aatcgcgcat cagccacggc gcggtgaata cgttcccggg ccttgtacac accgcccgtc 1200

aagccaataa agccgggggt acttgaagtc cgagcggcct agggtaaaac 1250

<210> 307
<211> 1351
<212> DNA
<213> Bacteroides sp. 3_1_19

<220>
<221> modified_base
<222> (301)..(301)
<223> a, c, t, g, unknown or other

<400> 307
taccgggtgg cgaccggcgc acgggtgagt aacgcgtatg caacttgcct atcagagggg 60

gataacccgg cgaaagtcgg actaataccg catgaagcag gggccccgca tggggatatt 120

tgctaaagat tcatcgctga tagataggca tgcgttccat taggcagttg gcggggtaac 180

ggcccaccaa accgacgatg gatagggggtt ctgagaggaa ggtcccccac attggtactg 240

agacacggac caaactccta cgggaggcag cagtgaggaa tattggtcaa tggccgtaag 300

nctgaaccag ccaagtcgcg tgagggatga aggttctatg gatcgtaaac ctcttttata 360

agggaataaa gtgcgggacg tgtcccgttt tgtatgtacc ttatgaataa ggcggctaac 420

tccgtgccag cagccgcggt aatacggagg ccagcgttat ccggatttat tgggtttaaa 480

gggtgcgtag gcggcctttt aagtcagcgg tgaaagtctg tggctcaacc atagaattgc 540

cgttgaaact ggggggcttg agtatgtttg aggcaggcgg aatgcgtggt gtagcggtga 600

aatgcataga tatcacgcag aaccccgatt gcgaaggcag cctgccaagc cattactgac 660

gctgatgcac gaaagcgtgg ggatcaaaca ggattagata ccctggtagt ccacgcagta 720

aacgatgatc actagctgtt tgcgatacac tgtaagcggc acagcgaaag cgttaagtga 780

tccacctggg gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca 840

agcggaggaa catgtggttt aattcgatga tacgcgagga accttacccg ggtttgaacg 900

cattcggacc gaggtggaaa caccttttct agcaatagcc gtttgcgagg tgctgcatgg 960

ttgtcgtcag ctcgtgccgt gaggtgtcgg cttaagtgcc ataacgagcg caacccttgc 1020

cactagttac taacaggtga tgctgaggac tctggtggga ctgccagcgt aagctgcgag 1080

gaaggcgggg atgacgtcaa atcagcacgg cccttacatc cggggcgaca cacgtgttac 1140

aatggcgtgg acaaagggag gccacctggc gacagggagc gaatccccaa accacgtctc 1200

agttcggatc ggagtctgca acccgactcc gtgaagctgg attcgctagt aatcgcgcat 1260

cagccatggc gcggtgaata cgttcccggg ccttgtacac accgcccgtc aagccatggg 1320

agccgggggt acctgaagtc cgtaaccgaa a 1351

<210> 308
<211> 1362

<212> DNA
<213> Bacteroides sp. 3_1_23

<400> 308
gtcgaggggc agcattttag tttgcttgca aactgaagat ggcgaccggc gcacgggtga 60

gtaacacgta tccaacctgc cgataactcc ggaatagcct ttcgaaagaa agattaatac 120

cggatggtat acgaatatcg catgatattt ttattaaaga atttcggtta tcgatgggga 180

tgcgttccat tagtttgttg gcggggtaac ggcccaccaa gactacgatg gataggggtt 240

ctgagaggaa ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag 300

cagtgaggaa tattggtcaa tggggcctga acagccaagt acgtgaaggc ttgggaactt 360

cttttatatg ggaataaagt tttccacgtg tggaattttg tatgtaccat atgaataagg 420

atcggctaac tccgtgccag cagccgcggt aatacggagg atccgagcgt tatccggatt 480

tattgggttt aaagggagcg taggtggatt gttaagtcag ttgtgaaagt ttgcggctca 540

accgtaaaat tgcagttgaa actggcagtc ttgagtacag tagaggtggg cggaattcgt 600

ggtgtagcgg tgaaatgctt agatatcacg aagaactccg attgcgaagg cagctcacta 660

gactgtcact gacactgatg ctcgaaagtg tgggtatcaa acaggattag ataccctggt 720

agtccacaca gtaaacgatg aatactcgct gtttgcgata tacagtaagc ggccaagcga 780

aagcattaag tattccacct ggggagtacg ccggcaacgg tgaaactcaa aggaattgac 840

gggggcccgc acaagcggag gaacatgtgg tttaattcga tgatacgcga ggaaccttac 900

ccgggcttaa attgcaacag aatatattgg aaacagtata gccgtgaagc tgttgtgaat 960

gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtcg gcttaagtgc cataacgagc 1020

gcaaccctta tctttagtta ctaacaggtc atgctgagga ctctagagag actgccgtcg 1080

taagatgtga ggaaggtggg gatgacgtca aatcagcacg gcccttacgt ccggggctac 1140

acacgtgtta caatgggggg tacagaaggc ggctacctgg tgacaggatg ctaatcccaa 1200

aaacctctct cagttcggat cgaagtctgc aacccgactt cgtgaagctg gattcgctag 1260

taatcgcgca tcagccatgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1320

caagccatga aagccggggg tacctgaagt acgtaaccgc aa 1362

<210> 309
<211> 1532
<212> DNA
<213> Bacteroides sp. 3_1_33FAA

<400> 309
tacaatgaag agtttgatcc tggctcagga tgaacgctag ctacaggctt aacacatgca 60

agtcgagggg cagcatggtc ttagcttgct aaggctgatg gcgaccggcg cacgggtgag 120

taacacgtat ccaacctgcc gtctactctt ggccagcctt ctgaaaggaa gattaatcca 180

ggatgggatc atgagttcac atgtccgcat gattaaaggt attttccggt agacgatggg 240

gatgcgttcc attagatagt aggcggggta acggcccacc tagtcaacga tggatagggg 300

ttctgagagg aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc 360

agcagtgagg aatattggtc aatgggcgat ggcctgaacc agccaagtag cgtgaaggat 420

gactgcccta tgggttgtaa acttctttta taaaggaata aagtcgggta tgcatacccg 480

tttgcatgta ctttatgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg 540

gaggatccga gcgttatccg gatttattgg gtttaaaggg agcgtagatg gatgtttaag 600

tcagttgtga aagtttgcgg ctcaaccgta aaattgcagt tgatactgga tgtcttgagt 660

gcagttgagg caggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac 720

tccgattgcg aaggcagcct gctaagctgc aactgacatt gaggctcgaa agtgtgggta 780

tcaaacagga ttagataccc tggtagtcca cacggtaaac gatgaatact cgctgtttgc 840

gatatacggc aagcggccaa gcgaaagcgt taagtattcc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttaaattgca ctcgaatgat ccggaaacgg 1020

ttcagctagc aatagcgagt gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag 1080

gtgtcggctt aagtgccata acgagcgcaa cccttgttgt cagttactaa caggtgatgc 1140

tgaggactct gacaagactg ccatcgtaag atgtgaggaa ggtggggatg acgtcaaatc 1200

agcacggccc ttacgtccgg ggctacacac gtgttacaat gggggggtaca gagggccgct 1260

accacgcgag tggatgccaa tccctaaaac ccctctcagt tcggactgga gtctgcaacc 1320

cgactccacg aagctggatt cgctagtaat cgcgcatcag ccacggcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaag ccatgggagc cgggggtacc tgaagtgcgt 1440

aaccgcgagg atcgccctag ggtaaaactg gtgactgggg ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gaacacctcc tt 1532

<210> 310
<211> 1045
<212> DNA
<213> Bacteroides sp. 3_1_40A

<220>
<221> modified_base
<222> (23)..(23)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (33)..(33)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (41)..(41)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (730)..(730)
<223> a, c, t, g, unknown or other

<400> 310
caagtagcgt gaaggatgac tgncctatgg ntntaaactt ntttataaag gaataaagtc 60

gggtatgcat acccgtttgc atgtacttta tgaataagga tcggctaact ccgtgccagc 120

agccgcggta atacggagga tccgagcgtt atccggattt attgggttta aagggagcgt 180

agatggatgt ttaagtcagt tgtgaaagtt tgcggctcaa ccgtaaaatt gcagttgata 240

ctggatatct tgagtgcagt tgaggcaggc ggaattcgtg gtgtagcggt gaaatgctta 300

gatatcacga agaactccga ttgcgaaggc agcctgctaa gctgcaactg acattgaggc 360

tcgaaagtgt gggtatcaaa caggattaga taccctggta gtccacacgg taaacgatga 420

atactcgctg tttgcgatat acggcaagcg gccaagcgaa agcgttaagt attccacctg 480

gggagtacgc cggcaacggt gaaactcaaa ggaattgacg gggcccgca caagcggagg 540

aacatgtggt ttaattcgat gatacgcgag gaaccttacc cgggcttaaa ttgcagatga 600

attacggtga aagccgtaag ccgcaaggca tctgtgaagg tgctgcatgg ttgtcgtcag 660

ctcgtgccgt gaggtgtcgg cttaagtgcc ataacgagcg caacccttgt tgtcagttac 720

taacaggttn tgctgaggac tctgacaaga ctgccatcgt aagatgtgag gaaggtgggg 780

atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac aatgggggt 840

acagagggcc gctaccacgc gagtggatgc caatcccaaa aacctctctc agttcggact 900

ggagtctgca acccgactcc acgaagctgg attcgctagt aatcgcgcat cagccacggc 960

gcggtgaata cgttcccggg ccttgtacac accgcccgtc aagccatggg agccgggggt 1020

acctgaagtg cgtaaccgcg aggag 1045

<210> 311
<211> 1367
<212> DNA
<213> Bacteroides sp. 3_2_5

<220>
<221> modified_base
<222> (1270)..(1270)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1355)..(1355)
<223> a, c, t, g, unknown or other

<400> 311
tcgaggggca gcacaggtag caataccggg tggcgaccgg cgcacgggtg agtaacgcgt 60

atgcaacttg cctatcagag ggggataacc cggcgaaagt cggactaata ccgcatgaag 120

caggggcccc gcatggggat atttgctaaa gattcatcgc tgatagatag gcatgcgttc 180

cattaggcag ttggcggggt aacggcccac caaaccgacg atggataggg gttctgagag 240

gaaggtcccc cacattggta ctgacacacg gaccaaactc ctacgggagg cagcagtgag 300

gaatattggt caatgggcga aaggctgaac cagccaagtc gcgtgaggga tgaaggttct 360

atggatcgta aacctctttt ataagggaat aaagtgcggg acgtgtcccg ttttgtatgt 420

accttatgaa taaggatcgg ctaactccgt gccagcagcc gcggtaatac ggaggatccg 480

agcgttatcc ggatttattg ggtttaaagg gtgcgtagcg gccttttaag tcacggtgaa 540

agtctgtggc tcaccataaa ttgccgttga aactgggggg cttgagtatg tttgaggcag 600

cggaatgcgt ggtgtacggt gaaatgcata gatatcacgc agaaccccga ttggaaggca 660

gcctgccaag ccattactga cgtgatgcac gaaagcgtgg ggatcaaaca ggattagata 720

ccctggtagt ccacgcataa acgatgatca ctatgtttgc gatacactgt aagcggcaca 780

gcgaaagcgt taagtgatcc acctggggag tacgccggca acggtgaaac tcaaggaatt 840

gacgggggcc cgcacaagcg gagaacatgt ggtttaattg atgatacgcg aggaacctta 900

cccgggtttg aacgcattcg gaccgaggtg gaaacacctt ttctagcaat agccgtttgc 960

gaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg tcggcttaag tgccataacg 1020

agcgcaaccc ttgccactag ttactaacag gtgatgctga ggactctggt gggactgcca 1080

gcgtaagctg cgaggaaggc ggggatgacg tcaaatcagc acggccctta catccggggc 1140

gacacacgtg ttacaatggc gtggacaaag ggaggccacc tggcgacagg gagcgaatcc 1200

ccaaaccacg tctcagttcg gatcggagtc tgcaacccga ctccgtgaag ctggattcgc 1260

tagtaatcgn gcatcagcca tggcgcggtg aatacgttcc cgggccttgt acacaccgcc 1320

cgtcaagcca tgggagccgg gggtacctga agtcngtaac cgaaagg 1367

<210> 312
<211> 1386
<212> DNA
<213> Bacteroides sp. 4_1_36

<400> 312
tcgaggggca gcatgaactt agcttgctaa gtttgatggc gaccggcgca cgggtgagta 60

acacgtatcc aacctgccga tgactcgggg atagcctttc gaaagaaaga ttaatacccg 120

atggcatagt tcttccgcat ggtggaacta ttaaagaatt tcggtcatcg atggggatgc 180

gttccattag gttgttggcg gggtaacggc ccaccaagcc ttcgatggat aggggttctg 240

agaggaaggt cccccacatt ggaactgaga cacggtccaa actcctacgg gaggcagcag 300

tgaggaatat tggtcaatgg acgagagtct gaaccagcca agtagcgtga aggatgactg 360

ccctatgggt tgtaaacttc ttttatacgg gaataaagtg aggcacgtgt gccttttgt 420

atgtaccgta tgaataagga tcggctaact ccgtgccagc agccgcggta atacggagga 480

tccgagcgtt atccggattt attgggttta aagggagcgt aggcggacgc ttaagtcagt 540

tgtgaaagtt tgcggctcaa ccgtaaaatt gcagttgata ctgggtgtct tgagtacagt 600

agaggcaggc ggaattcgtg gtgtagcggt gaaatgctta gatatcacga agaactccga 660

ttgcgaaggc agcttgctgg actgtaactg acgctgatgc tcgaaagtgt gggtatcaaa 720

caggattaga taccctggta gtccacacag taaacgatga atactcgctg tttgcgatat 780

acagtaagcg gccaagcgaa agcgttaagt attccacctg gggagtacgc cggcaacggt 840

gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat 900

gatacgcgag gaaccttacc cgggcttgaa ttgcaactga atgatgtgga gacttgtcag 960

ccgcaaggca gttgtgaaga tatcacgagg tactgcgatt gcgaagccag ctggctgggc 1020

tttaagtgac actaatggcg caacccttat cgatagttac catcaggtta tgctggggac 1080

tctgtcgaga ctgccgtcgt aagatgtgag gaaggtgggg atgacgtcaa atcagcacgg 1140

cccttacgtc cggggctaca cacgtgttac aatggggggt acagaaggca gctacacggt 1200

gacgtgatgc taatcccgaa agcctctctc agttcggatt ggagtctgca acccgactcc 1260

atgaagctgg attcgctagt aatcgcgcat cagccacggc gcggtgaata cgttcccggg 1320

ccttgtacac accgcccgtc aagccatgaa agccgggggt acctgaagtg cgtaaccgca 1380

aggagc 1386

<210> 313
<211> 1515
<212> DNA
<213> Bacteroides sp. 4_3_47FAA

<400> 313
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcagcatgg tcttagcttg ctaaggccga tggcgaccgg cgcacgggtg agtaacacgt 120

atccaacctg ccgtctactc ttggacagcc ttctgaaagg aagattaata caagatggca 180

tcatgagtcc gcatgttcac atgattaaag gtattccggt agacgatggg gatgcgttcc 240

attagatagt aggcggggta acggcccacc tagtcttcga tggatagggg ttctgagagg 300

aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg 360

aatattggtc aatgggcgca ggcctgaacc agccaagtag cgtgaaggat gactgcccta 420

tgggttgtaa acttctttta taaaggaata aagtcgggta tgtatacccg tttgcatgta 480

ctttatgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccga 540

gcgttatccg gatttattgg gtttaaaggg agcgtagatg gatgtttaag tcagttgtga 600

aagtttgcgg ctcaaccgta aaattgcagt tgatactgga tatcttgagt gcagttgagg 660

caggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac tccgattgcg 720

aaggcagcct gctaagctgc aactgacatt gaggctcgaa agtgtgggta tcaaacagga 780

ttagataccc tggtagtcca cacggtaaac gatgaatact cgctgtttgc gatatacagc 840

aagcggccaa gcgaaagcgt taagtattcc acctggggag tacgccggca acggtgaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac 960

gcgaggaacc ttacccgggc ttaaattgca gatgaattac ggtgaaagcc gtaagccgca 1020

aggcatctgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa 1080

gtgccataac gagcgcaacc cttgttgtca gttactaaca ggttcgctga ggactctgac 1140

aagactgcca tcgtaagatg tgaggaaggt ggggatgacg tcaaatcagc acggcccttа 1200

cgtccggggc tacacacgtg ttacaatggg gggtacagag ggccgctacc acgcgagtgg 1260

atgccaatcc caaaaacctc tctcagttcg gactggagtc tgcaacccga ctccacgaag 1320

ctggattcgc tagtaatcgc gcatcagcca cggcgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcaagcca tgggagccgg gggtacctga agtgcgtaac cgcgaggagc 1440

gccctagggt aaaactggtg actggggcta agtcgtaaca aggtagccgt accggaaggt 1500

gcggctggaa cacct 1515

<210> 314
<211> 1533
<212> DNA
<213> Bacteroides sp. 9_1_42FAA

<400> 314
tacaatgaag agtttgatcc tggctcagga tgaacgctag ctacaggctt aacacatgca 60

agtcgagggg cagcatggtc ttagcttgct aaggctgatg gcgaccggcg cacgggtgag 120

taacacgtat ccaacctgcc gtctactctt ggccagcctt ctgaaaggaa gattaatcca 180

ggatgggatc atgagttcac atgtccgcat gattaaaggt attttccggt agacgatggg 240

gatgcgttcc attagatagt aggcggggta acggcccacc tagtcaacga tggatagggg 300

ttctgagagg aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc 360

agcagtgagg aatattggtc aatgggcgat ggcctgaacc agccaagtag cgtgaaggat 420

gactgcccta tgggttgtaa acttctttta taaaggaata aagtcgggta tgcatacccg 480

tttgcatgta ctttatgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg 540

gaggatccga gcgttatccg gatttattgg gtttaaaggg agcgtagatg gatgtttaag 600

tcagttgtga aagtttgcgg ctcaaccgta aaattgcagt tgatactgga tgtcttgagt 660

gcagttgagg caggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac 720

tccgattgcg aaggcagcct gctaagctgc aactgacatt gaggctcgaa agtgtgggta 780

tcaaacagga ttagataccc tggtagtcca cacggtaaac gatgaatact cgctgtttgc 840

gatatacggc aagcggccaa gcgaaagcgt taagtattcc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttaaattgca ctcgaatgat ccggaaacgg 1020

ttcagctagc aatagcgagt gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag 1080

gtgtcggctt aagtgccata acgagcgcaa cccttgttgt cagttactaa caggtgatgc 1140

tgaggactct gacaagactg ccatcgtaag atgtgaggaa ggtggggatg acgtcaaatc 1200

agcacggccc ttacgtccgg ggctacacac gtgttacaat gggggggtac agagggccgc 1260

taccacgcga gtggatgcca atccctaaaa cccctctcag ttcggactgg agtctgcaac 1320

ccgactccac gaagctggat tcgctagtaa tcgcgcatca gccacggcgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcaa gccatgggag ccgggggtac ctgaagtgcg 1440

taaccgcgag gatcgcccta gggtaaaact ggtgactggg gctaagtcgt aacaaggtag 1500

ccgtaccgga aggtgcggct ggaacacctc ctt 1533

<210> 315
<211> 1489
<212> DNA
<213> Bacteroides sp. AR20

<400> 315
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

gcagcatgaa cttagcttgc taagtttgat ggcgaccggc gcacgggtga gtaacacgta 120

tccaacctgc cgatgactcg gggatagcct ttcgaaagaa agattaatac ccgatggcat 180

agttcttccg catggtagaa ctattaaaga atttcggtca tcgatgggga tgcgttccat 240

taggttgttg gcggggtaac ggcccaccaa gccttcgatg gatagggggtt ctgagaggaa 300

ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag cagtgaggaa 360

tattggtcaa tggacgagag tctgaaccag ccaagtagcg tgaaggatga ctgccctatg 420

ggttgtaaac ttcttttata cgggaataaa gtgaggcacg cgtgcctttt tgtatgtacc 480

gtatgaataa ggatcggcta actccgtgcc agcagccgcg gtaatacgga ggatccgagc 540

gttatccgga tttattgggt ttaaagggag cgtaggcgga cgcttaagtc agttgtgaaa 600

gtttgcggct caaccgtaaa attgcagttg atactgggtg tcttgagtac agtagaggca 660

ggcggaattc gtggtgtagc ggtgaaatgc ttagatatca cgaagaactc cgattgcgaa 720

ggcagcctgc tggactgtaa ctgacgctga tgctcgaaag tgtgggtatc aaacaggatt 780

agataccctg gtagtccaca cagtaaacga tgaatactcg ctgtttgcga tatacagtaa 840

gcggccaagc gaaagcgtta agtattccac ctggggagta cgccggcaac ggtgaaactc 900

aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc gatgatacgc 960

gaggaacctt acccgggctt gaattgcaac tgaatgatgt ggagacatgt cagccgcaag 1020

gcagttgtga aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt cggcttaagt 1080

gccataacga gcgcaaccct tatcgatagt taccatcagg ttatgctggg gactctgtcg 1140

agactgccgt cgtaagatgt gaggaaggtg gggatgacgt caaatcagca cggcccttac 1200

gtccggggct acacacgtgt tacaatgggg ggtacagaag gcagctacac ggcgacgtga 1260

tgctaatccc taaagcctct ctcagttcgg attggagtct gcaacccgac tccatgaagc 1320

tggattcgct agtaatcgcg catcagccac ggcgcggtga atacgttccc gggccttgta 1380

cacaccgccc gtcaagccat gaaagccggg ggtacctgaa gtgcgtaacc gcaaggagcg 1440

ccctagggta aaactggtga ttggggctaa gtcgtaacaa ggtagccgt 1489

<210> 316
<211> 1502
<212> DNA

<213> Bacteroides sp. AR29

<220>
<221> modified_base
<222> (11)..(12)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (57)..(57)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1000)..(1000)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1008)..(1009)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1023)..(1023)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1026)..(1027)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1033)..(1033)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1038)..(1038)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1045)..(1045)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1057)..(1057)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1060)..(1060)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1068)..(1068)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1091)..(1092)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1097)..(1097)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1125)..(1125)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1127)..(1127)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1135)..(1135)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1137)..(1137)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1144)..(1144)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1155)..(1156)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1306)..(1306)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1350)..(1350)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1435)..(1435)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1480)..(1480)
<223> a, c, t, g, unknown or other

<400> 316
aataaagttt nnacgtgtgg aattttgtat gtaccatatg aataaggatc ggctaantcc 60

gtgccagcag ccgcggtaat acggaggatc cgagcgttat ccggatttat tgggtttaaa 120

gggagcgtag gtggacagtt aagtcagttg tgaaagtttg cggctcaacc gtaaaattgc 180

agttgatact ggctgtcttg agtacagtag aggtgggcgg aattcgtggt gtagcggtga 240

aatgcttaga tatcacgaag aactccgatt gcgaaggcag ctcactggac tgcaactgac 300

actgatgctc gaaagtgtgg gtatcaaaca ggattagata ccctggtagt ccacacagta 360

aacgatgaat actcgctgtt tgcgatatac agtaagcggc caagcgaaag cattaagtat 420

tccacctggg gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca 480

agcggaggaa catgtggttt aattcgatga tacgcgagga accttacccg ggcttaaatt 540

gcatttgaat attttggaaa cagtatagcc gtaaggcaaa tgtgaaggtg ctgcatggtt 600

gtcgtcagct cgtgccgtga ggtgtcggct taagtgccat aacgagcgca acccttatct 660

ttagttacta acaggtcatg ctgaggactc tagagagact gccgtcgtaa gatgtgagga 720

aggtggggat gacgtcaaat cagcacggcc cttacgtccg gggctacaca cgtgttacaa 780

tgggggggtac agaaggcagc tacctggtga caggatgcta atcccaaaag cctctctcag 840

ttcggatcga agtctgcaac ccgacttcgt gaagctggat tcgctagtaa tcgcgcatca 900

gccatggcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcaa gccatgaaag 960

ccgggggtac ctgaagtacg taaccgcaag aaggcggctn tctggacnnt aactgacgct 1020

gangcnngaa agngtggnga gcaancagga ttagatnccn tggtagtnca cgccgtaaac 1080

gatgagtagt nngtgtnggg gggttacccc cctcggtgcc gcaantnaag cattnantac 1140

tccncctggg aaatnngctc gcaagagtga aaatcaaaag aattgacggg gagccccaca 1200

agtagcggag catgtggttt aatttgaagc aacgcggaaa accttaccta agtttgacat 1260

tccattgacc tttccataat cgaaaatttc ccttcgggga cagtgntaac aggtggggca 1320

tggtttttgt cagctcgtct cgtgaaatgn ggggttaatt cccccaacgc gcccacccct 1380

ttccttttttt tcccaccatt aagttgggca ctctagagag actgccgagg ataantcgga 1440

ggaaggtggg gatgacgtca aatcatcatg ccccttatgn ccagggctac acacgtgcta 1500

ca 1502

<210> 317
<211> 715
<212> DNA
<213> Bacteroides sp. B2

<220>
<221> modified_base
<222> (650)..(650)
<223> a, c, t, g, unknown or other

<400> 317
taggggttct gagaggaagg tcccccacat tggaactgag acacggtcca aactcctacg 60

ggaggcagca gtgaggaata ttggtcaatg ggcgcaggcc tgaaccagcc aagtagcgtg 120

aaggatgact gccctatggg ttgtaaactt cttttatatg ggaataaagt tttccacgtg 180

tggaattttg tatgtaccat atgaataagg atcggctaac tccgtgccag cagccgcggt 240

aatacggagg atccgagcgt tatccggatt tattgggttt aaagggagcg taggtggaca 300

gttaagtcag ttgtgaaagt ttgcggctca accgtaaaat tgcagttgat actggctgtc 360

ttgagtacag tagaggtggg cggaattcgt ggtgtagcgg tgaaatgctt agatatcacg 420

aagaactccg attgcgaagg cagctcactg gactgcaact gacactgatg ctcgaaagtg 480

tgggtatcaa acaggattag ataccctggt agtccacaca gtaaacgatg aatactcgct 540

gtttgcgata tacagtaagc ggccaagcga aagcattaag tattccacct ggggagtacg 600

ccggcaacgg tgaaactcaa aggaattgac gggggcccgc acaagcggan gaacatgtgg 660

tttaattcga tgatacgcga ggaaccttac ccgggcttaa attgcatttg aatat 715

<210> 318
<211> 1517
<212> DNA
<213> Bacteroides sp. D1

<400> 318
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcagcattt tagtttgctt gcaaactaaa gatggcgacc ggcgcacggg tgagtaacac 120

gtatccaacc tgccgataac tcggggatag cctttcgaaa gaaagattaa tatccgatgg 180

tatattaaaa ccgcatggtt ttactattaa agaatttcgg ttatcgatgg ggatgcgttc 240

cattagtttg ttggcggggt aacggcccac caagactacg atggataggg gttctgagag 300

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 360

gaatattggt caatggacga gagtctgaac cagccaagta gcgtgaagga tgactgccct 420

atgggttgta aacttctttt atatgggaat aaagtattcc acgtgtggaa ttttgtatgt 480

accatatgaa taaggatcgg ctaactccgt gccagcagcc gcggtaatac ggaggatccg 540

agcgttatcc ggatttattg ggtttaaagg gagcgtaggt ggattgttaa gtcagttgtg 600

aaagtttgcg gctcaaccgt aaaattgcag ttgaaactgg cagtcttgag tacagtagag 660

gtgggcggaa ttcgtggtgt agcggtgaaa tgcttagata tcacgaagaa ctccgattgc 720

gaaggcagct cactagactg caactgacac tgatgctcga aagtgtgggt atcaaacagg 780

attagatacc ctggtagtcc acacagtaaa cgatgaatac tcgctgtttg cgatatacag 840

taagcggcca agcgaaagca ttaagtattc cacctgggga gtacgccggc aacggtgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 960

cgcgaggaac cttacccggg cttaaattgc atttgaataa tctggaaaca ggttagccgc 1020

aaggcaaatg tgaaggtgct gcatggttgt cgtcagctcg tgccgtgagg tgtcggctta 1080

agtgccataa cgagcgcaac ccttatcttt agttactaac aggtcatgct gaggactcta 1140

gagagactgc cgtcgtaaga tgtgaggaag gtggggatga cgtcaaatca gcacggccct 1200

tacgtccggg gctacacacg tgttacaatg gggggtacag aaggcagcta cctggcgaca 1260

ggatgctaat cccaaaaacc tctctcagtt cggatcgaag tctgcaaccc gacttcgtga 1320

agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt cccgggcctt 1380

gtacacaccg cccgtcaagc catgaaagcc gggggtacct gaagtacgta accgcaagga 1440

gcgtcctagg gtaaaactgg taattggggc taagtcgtaa caaggtagcc gtaccggaag 1500

gtgcggctgg aacacct 1517

<210> 319
<211> 1380
<212> DNA
<213> Bacteroides sp. D20

<220>
<221> modified_base
<222> (8)..(9)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (12)..(12)
<223> a, c, t, g, unknown or other

<400> 319
ggggcagnnt gnactgtagc ttgctaagtt tgatggcgac cggcgcacgg gtgagtaaca 60

cgtatccaac ctgccgatga ctcggggata gcctttcgaa agaaagatta atacccgatg 120

gcataattct tccgcatggt agaactatta aagaatttcg gtcatcgatg gggatgcgtt 180

ccattaggtt gttggcgggg taacggccca ccaagccttc gatggatagg ggttctgaga 240

ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag gcagcagtga 300

ggaatattgg tcaatggacg agagtctgaa ccagccaagt agcgtgaagg atgactgccc 360

tatgggttgt aaacttcttt tatacgggaa taaagtgagg cacgtgtgcc tttttgtatg 420

taccgtatga ataaggatcg gctaactccg tgccagcagc cgcggtaata cggaggatcc 480

gagcgttatc cggatttatt gggtttaaag ggagcgtagg cggacgctta agtcagttgt 540

gaaagtttgc ggctcaaccg taaaattgca gttgatactg ggtgtcttga gtacagtaga 600

ggcaggcgga attcgtggtg tagcggtgaa atgcttagat atcacgaaga actccgattg 660

cgaaggcagc ctgctggact gtaactgacg ctgatgctcg aaagtgtggg tatcaaacag 720

gattagatac cctggtagtc cacacagtaa acgatgaata ctcgctgttt gcgatataca 780

gtaagcggcc aagcgaaagc gttaagtatt ccacctgggg agtacgccgg caacggtgaa 840

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 900

acgcgaggaa ccttacccgg gcttgaattg caactgaatg atgtggagac atgtcagccg 960

caaggcagtt gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt 1020

aagtgccata acgagcgcaa cccttatcga tagttaccat caggttatgc tggggactct 1080

gtcgagactg ccgtcgtaag atgtgaggaa ggtggggatg acgtcaaatc agcacggccc 1140

ttacgtccgg ggctacacac gtgttacaat gggggggtaca gaaggcagct acacggtgac 1200

gtgatgctaa tccctaaagc ctctctcagt tcggattgga gtctgcaacc cgactccatg 1260

aagctggatt cgctagtaat cgcgcatcag ccacggcgcg gtgaatacgt tcccgggcct 1320

tgtacacacc gcccgtcaag ccatgaaagc cgggggtacc tgaagtgcgt aaccgcaagg 1380

<210> 320
<211> 1533
<212> DNA

<213> Bacteroides sp. D22

<400> 320
ttacaatgaa gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcagcatttt agtttgcttg caaactgaag atggcgaccg gcgcacgggt 120

gagtaacacg tatccaacct gccgataact cggggatagc ctttcgaaag aaagattaat 180

atccgatggt atattaaaac cgcatggttt tactattaaa gaatttcggt tatcgatggg 240

gatgcgttcc attagtttgt tggcggggta acggcccacc aagactacga tggatagggg 300

ttctgagagg aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc 360

agcagtgagg aatattggtc aatggacgag agtctgaacc agccaagtag cgtgaaggat 420

gactgcccta tgggttgtaa acttctttta tatgggaata aagtattcca cgtgtgggat 480

tttgtatgta ccatatgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg 540

gaggatccga gcgttatccg gatttattgg gtttaaaggg agcgtaggtg gattgttaag 600

tcagttgtga aagtttgcgg ctcaaccgta aaattgcagt tgaaactggc agtcttgagt 660

acagtagagg tgggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac 720

tccgattgcg aaggcagctc actagactgc aactgacact gatgctcgaa agtgtgggta 780

tcaaacagga ttagataccc tggtagtcca cacagtaaac gatgaatact cgctgtttgc 840

gatatacagt aagcggccaa gcgaaagcat taagtattcc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttaaattgca aatgaataat ctggaaacag 1020

gttagccgca aggcatttgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt 1080

gtcggcttaa gtgccataac gagcgcaacc cttatcttta gttactaaca ggtcatgctg 1140

aggactctag agagactgcc gtcgtaagat gtgaggaagg tggggatgac gtcaaatcag 1200

cacggccctt acgtccgggg ctacacacgt gttacaatgg ggggtacaga aggcagctac 1260

ctggcgacag gatgctaatc ccaaaaacct ctctcagttc ggatcgaagt ctgcaacccg 1320

acttcgtgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcaagcc atgaaagccg ggggtacctg aagtacgtaa 1440

ccgcaaggag cgtcctaggg taaaactggt aattggggct aagtcgtaac aaggtagccg 1500

taccggaagg tgcggctgga acacctcctt tct 1533

<210> 321
<211> 1040
<212> DNA
<213> Bacteroides sp. D2

<220>
<221> modified_base
<222> (15)..(15)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (17)..(19)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (33)..(33)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (35)..(36)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (42)..(42)
<223> a, c, t, g, unknown or other

<400> 321
gcgtgaagga tgaangnnnt atgggtcgta aantnntttt anatgggaat aaagttttcc 60

acgtgtggaa tttgtatgta ccatatgaat aaggatcggc taactccgtg ccagcagccg 120

cggtaatacg gaggatccga gcgttatccg gatttattgg gtttaaaggg agcgtaggtg 180

gattgttaag tcagttgtga aagtttgcgg ctcaaccgta aaattgcagt tgaaactggc 240

agtcttgagt acagtagagg tgggcggaat tcgtggtgta gcggtgaaat gcttagatat 300

cacgaagaac tccgattgcg aaggcagctc actagactgt tactgacact gatgctcgaa 360

agtgtgggta tcaaacagga ttagataccc tggtagtcca cacagtaaac gatgaatact 420

cgctgtttgc gatatacagt aagcggccaa gcgaaagcat taagtattcc acctggggag 480

tacgccggca acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat 540

gtggtttaat tcgatgatac gcgaggaacc ttacccgggc ttaaattgca acagaatata 600

ttggaaacag tatagccgca aggcagttgt gaaggtgctg catggttgtc gtcagctcgt 660

gccgtgaggt gtcggcttaa gtgccataac gagcgcaacc cttatcttta gttactaaca 720

ggttatgctg aggactctag agagactgcc gtcgtaagat gtgaggaagg tggggatgac 780

gtcaaatcag cacggccctt acgtccgggg ctacacacgt gttacaatgg ggggtacaga 840

aggcagctac ccggcgacag gatgctaatc ccaaaaacct ctctcagttc ggatcgaagt 900

ctgcaacccg acttcgtgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt 960

gaatacgttc ccgggccttg tacacaccgc ccgtcaagcc atgaaagccg ggggtacctg 1020

aagtacgtaa ccgcaaggag 1040

<210> 322
<211> 1048
<212> DNA
<213> Bacteroides sp. F-4

<220>
<221> modified_base
<222> (33)..(33)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (42)..(42)
<223> a, c, t, g, unknown or other

<400> 322
caagtagcgt gaaggatgac tgccctatgg gtngtaaact tntttttatac gggaataaag 60

tgaggcacgt gtgccttttt gtatgtaccg tatgaataag gatcggctaa ctccgtgcca 120

gcagccgcgg taatacggag gatccgagcg ttatccggat ttattgggtt taaagggagc 180

gtaggcggac gcttaagtca gttgtgaaag tttgcggctc aaccgtaaaa ttgcagttga 240

tactgggtgt cttgagtaca gtagaggcag gcggaattcg tggtgtagcg gtgaaatgct 300

tagatatcac gaagaactcc gattgcgaag gcagcttgct ggactgtaac tgacgctgat 360

gctcgaaagt gtgggtatca aacaggatta gataccctgg tagtccacac agtaaacgat 420

gaatactcgc tgtttgcgat atacagtaag cggccaagcg aaagcgttaa gtattccacc 480

tggggagtac gccggcaacg gtgaaactca aaggaattga cgggggcccg cacaagcgga 540

ggaacatgtg gtttaattcg atgatacgcg aggaacctta cccgggcttg aattgcaact 600

gaatgatgtg gagacatgtc agccgcaagg cagttgtgaa ggtgctgcat ggttgtcgtc 660

agctcgtgcc gtgaggtgtc ggcttaagtg ccataacgag cgcaaccctt atcgatagtt 720

accatcaggt tatgctgggg actctgtcga gactgccgtc gtaagatgtg aggaaggtgg 780

ggatgacgtc aaatcagcac ggcccttacg tccggggcta cacacgtgtt acaatggggg 840

gtacagaagg cagctacacg gtgacgtgat gctaatcccg aaagcctctc tcagttcgga 900

ttggagtctg caacccgact ccatgaagct ggattcgcta gtaatcgcgc atcagccacg 960

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1020

gtacctgaag tgcgtaaccg caaggagc 1048

<210> 323
<211> 627
<212> DNA
<213> Bacteroides sp. NB-8

<220>
<221> modified_base
<222> (407)..(407)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (490)..(490)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (512)..(512)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (515)..(515)
<223> a, c, t, g, unknown or other

<400> 323
gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt ggtcaatgga 60

cgagagtctg aaccagccaa gtagcgtgaa ggatgaaggt tctatggatt gtaaacttct 120

tttatacggg aataaacgga tccacgtgtg gatttttgca tgtaccgtat gaataaggat 180

cggctaactc cgtgccagca gccgcggtaa tacggaggat ccgagcgtta tccggattta 240

ttgggtttaa agggagcgta gatgggttgt taagtcagtt gtgaaagttt gcggctcaac 300

cgtaaaattg caattgatac tggcagtctt gagtacagtt gaggtaggcg gaattcgtgg 360

tgtagcggtg aaatgcttag atatcacgaa gaactccgat tgcgaangca gcttactaac 420

ctgtaactga cattgatgct cgaaagtgtg ggtatcaaac aggattagat accctggtag 480

tccacacggn aaacgatgaa tactcgctgt angcnatata cagtctgcgg ccaagcgaaa 540

gcattaagta ttccacctgg ggagtacgcc cggcacggtg aaactcaaag gaattgacgg 600

gggcccgcac aagcggagga acatgtg 627

<210> 324
<211> 1361
<212> DNA
<213> Bacteroides sp. WH2

<400> 324
agtcgagggg cagcatgacc tagcaatagg gttgatgggg cgaccggcgc acggtgtgag 60

taacacgtat ccaacctacc ggttattccg ggatagcctt tcgaaagaaa gattaatacc 120

ggatagtata acgagaaggc atcttcttgt tattaaagaa tttcgataac cgatggggat 180

gcgttccatt agtttgttgg cggggtaacg gcccaccaag acatcgatgg ataggggttc 240

tgagaggaag gtcccccaca ttggaactga gacacggtcc aaactcctac gggaggcagc 300

agtgaggaat attggtcaat ggacgagagt ctgaaccagc caagtagcgt gaaggatgac 360

tgccctatgg gttgtaaact tcttttatat gggaataaag tgagccacgt gtggcttttt 420

gtatgtacca tacgaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag 480

gatccgagcg ttatccggat ttattgggtt taaagggagc gtaggcggac tattaagtca 540

gctgtgaaag tttgcggctc aaccgtaaaa ttgcagttga tactggtcgt cttgagtgca 600

gtagaggtag gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaagaactcc 660

gattgcgaag gcagcttact ggactgtaac tgacgctgat gctcgaaagt gtgggtatca 720

aacaggatta gataccctgg tagtccacac agtaaacgat gaatactcgc tgtttgcgat 780

atacggcaag cggccaagcg aaagcattaa gtattccacc tggggagtac gccggcaacg 840

gtgaaactca aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg 900

atgatacgcg aggaacctta cccgggctta aattgcatat gaatattgtg gaaacagaat 960

agccgcaagg cagatgtgaa ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc 1020

ggcttaagtg ccataacgag cgcaaccctt atctttagtt actaacaggt catgctgagg 1080

actctagaga gactgccgtc gtaagatgtg aggaaggtgg ggatgacgtc aaatcagcac 1140

ggcccttacg tccggggcta cacacgtgtt acaatggggg gtacagaagg cagctacaca 1200

gcgatgtgat gctaatccca aaagcctctc tcagttcgga ttggagtctg caacccgact 1260

ccatgaagct ggattcgcta gtaatcgcgc atcagccacg gcgcggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcaagccatg aaagccgggg g 1361

<210> 325
<211> 1357
<212> DNA
<213> Bacteroides sp. XB12B

<400> 325
cgaggggcag catgacctag caataggttg atggcgaccg gcgcacgggt gagtaacacg 60

tatccaacct accggttatt ccgggatagc ctttcgaaag aaagattaat accggatagt 120

ataacgagaa ggcatctttt tgttattaaa gaatttcgat aaccgatggg gatgcgttcc 180

attagtttgt tggcggggta acggcccacc aagacatcga tggatagggg ttctgagagg 240

aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg 300

aatattggtc aatggacgag agtctgaacc agccaagtag cgtgaaggat gactgcccta 360

tgggttgtaa acttctttta tatgggaata aagtgagcca cgtgtggctt tttgtatgta 420

ccatacgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccga 480

gcgttatccg gatttattgg gtttaaaggg agcgtaggcg gactattaag tcagctgtga 540

aagtttgcgg ctcaaccgta aaattgcagt tgatactggt cgtcttgagt gcagtagagg 600

taggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac tccgattgcg 660

aaggcagctt actggactgt aactgacgct gatgctcgaa agtgtgggta tcaaacagga 720

ttagataccc tggtagtcca cacagtaaac gatgaatact cgctgtttgc gatatacagc 780

aagcggccaa gcgaaagcat taagtattcc acctggggag tacgccggca acggtgaaac 840

tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac 900

gcgaggaacc ttacccgggc ttaaattgca tctgaataat ttggaaacag attagccgca 960

aggcagatgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa 1020

gtgccataac gagcgcaacc cttatcttta gttactaaca ggtcatgctg aggactctag 1080

agagactgcc gtcgtaagat gtgaggaagg tggggatgac gtcaaatcag cacggccctt 1140

acgtccgggg ctacacacgt gttacaatgg ggggtacaga aggcagctac acagcgatgt 1200

gatgctaatc ccaaaagcct ctctcagttc ggattggagt ctgcaacccg actccatgaa 1260

gctggattcg ctagtaatcg cgcatcagcc acggcgcggt gaatacgttc ccgggccttg 1320

tacacaccgc ccgtcaagcc atgaaagccg ggggtac 1357

<210> 326
<211> 1407
<212> DNA
<213> Bacteroides sp. XB44A

<220>
<221> modified_base
<222> (42)..(42)
<223> a, c, t, g, unknown or other

<400> 326
gctcaggctt agccatgcaa gtcgaggggc agcatgactt ancaataggt tgatggcgac 60

cggcgcacgg gtgagtaaca cgtatccaac ctgccgatta ttccgggata gcctttcgaa 120

agaaagatta atactggata gcataacgag aaggcatctt cttgttatta aagaatttcg 180

ataatcgatg gggatgcgtt ccattagttt gttggcgggg taacggccca ccaagacatc 240

gatggatagg ggttctgaga ggaaggtccc ccacattgga actgagacac ggtccaaact 300

cctacgggag gcagcagtga ggaatattgg tcaatggacg agagtctgaa ccagccaagt 360

agcgtgaagg atgactgccc tatgggttgt aaacttcttt tgtatgggaa taaagtgagc 420

cacgtgtggc tttttgtatg taccatacga ataaggatcg gctaactccg tgccagcagc 480

cgcggtaata cggaggatcc gagcgttatc cggatttatt gggtttaaag ggagcgtagg 540

cggattatta agtcagttgt gaaagtttgc ggctcaaccg taaaattgca gttgatactg 600

gtagtcttga gtgcagcaga ggtaggcgga attcgtggtg tagcggtgaa atgcttagat 660

atcacgaaga actccgattg cgaaggcagc ttactggact gtaactgacg ctgatgctcg 720

aaagtgtggg tatcaaacag gattagatac cctggtagtc cacacagtaa acgatgaata 780

ctcgctgttt gcgatataca gcaagcggcc aagcgaaagc attaagtatt ccacctgggg 840

agtacgccgg caacggtgaa actcaaagga attgacgggg gcccgcacaa gcggaggaac 900

atgtggttta attcgatgat acgcgaggaa ccttacccgg gcttaaattg caactgacgg 960

atttggaaac agatcttcct tcgggcagtt gtgaaggtgc tgcatggttg tcgtcagctc 1020

gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa cccttatctt tagttactaa 1080

caggtcatgc tgaggactct agagagactg ccgtcgtaag atgtgaggaa ggtggggatg 1140

acgtcaaatc agcacggccc ttacgtccgg ggctacacac gtgttacaat gggggggtaca 1200

gaaggcagct acacagcgat gtgatgctaa tcccaaaagc ctctctcagt tcggattgga 1260

gtctgcaacc cgactccatg aagctggatt cgctagtaat cgcgcatcag ccacggcgcg 1320

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc cgggggtact 1380

tgaagtacgt aaccgcaagg agcgtct 1407

<210> 327
<211> 1261
<212> DNA
<213> Bacteroides stercoris

<400> 327
atggtatagt tttcccgcat gggataatta ttaaagaatt tcggttgtcg atggggatgc 60

gttccattag gcagttggcg gggtaacggc ccaccaaacc tacgatggat aggggttctg 120

agaggaaggt cccccacatt ggaactgaga cacggtccaa actcatacgg gaggcagcag 180

tgaggaatat tggtcaatgg acgagagtct gaaccagcca agtagcgtga aggatgactg 240

ccctatgggt tgtaaacttc ttttatacgg gaataaagtt agccacgtgt ggtttttgt 300

atgtaccgta tgaataagga tcggctaact ccgtgccagc agccgcggta atacggagga 360

tccgagcgtt atccggattt attgggttta aagggagcgt aggcgggttg ttaagtcagt 420

tgtgaaagtt tgcggctcaa ccgtaaaatt gcagttgata ctggcgacct tgagtgcaac 480

agaggtaggc ggaattcgtg gtgtagcggt gaaatgctta gatatcacga agaactccga 540

ttgcgaaggc agcttactgg attgtaactg acgctgatgc tcgaaagtgt gggtatcaaa 600

caggattaga taccctggta gtccacacag taaacgatga atactcgctg ttggcgatat 660

acggtcagcg gccaagcgaa agcattaagt attccacctg gggagtacgc cggcagcggt 720

gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat 780

gatacgcgag gaaccttacc cgggcttaaa ttgcaactga cggaatcgga aacggttctt 840

tcttcggaca gttgtgaagg tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg 900

cttaagtgcc ataacgagcg caacccttac gggtagttac catcaggtta tgctggggac 960

tctacccgga ctgccgtcgt aagatgtgag gaaggtgggg atgacgtcaa atcagcacgg 1020

cccttacgtc cggggctaca cacgtgttac aatgggggt acagaaggca gctacacggc 1080

gacgtggtgc taatcccaaa agcctctctc agttcggatt ggagtctgca acccgactcc 1140

atgaagctgg attcgctagt aatcgcgcat cagccacggc gcggtgaata cgttcccggg 1200

ccttgtacac accgcccgtc aagccatgaa agccgggggt acctgaagta cgtaaccgcg 1260

a 1261

<210> 328
<211> 962
<212> DNA
<213> Bacteroides thetaiotaomicron

<220>
<221> modified_base
<222> (754)..(755)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (946)..(948)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (951)..(951)
<223> a, c, t, g, unknown or other

<400> 328
tcgaggggca gcatttcagt ttgcttgcaa actggagatg gcgaccggcg cacgggtgag 60

taacacgtat ccaacctgcc gataactcgg ggatagcctt tcgaaagaaa gattaatacc 120

cgatggtata atgaaaccgc atggtcttat tattaaagaa tttcggttat cgatggggat 180

gcgttccatt aggcagttgg tgaggtaacg gctcaccaaa ccttcgatgg atagggggttc 240

tgagaggaag gtcccccaca ttggaactga gacacggtcc aaactcctac gggaggcagc 300

agtgaggaat attggtcaat gggcgcaggc ctgaaccagc caagtagcgt gaaggatgac 360

tgccctatgg gttgtaaact tcttttatat gggaataaag ttttccacgt gtggaatttt 420

gtatgtacca tatgaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag 480

gatccgagcg ttatccggat ttattgggtt taaagggagc gtaggtggac agttaagtca 540

gttgtgaaag tttgcggctc aaccgtaaaa ttgcagttga tactggctgt cttgagtaca 600

gtagaggtgg gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaagaactcc 660

gattgcgaag gcagctcact ggactgcaac tgacactgat gctcgaaagt gtgggtatca 720

aacaggatta gataccctgg tagtccacac agtnncgatg aatactcgct gtttgcgata 780

tacagtaagc ggccaagcga aagcattaag tattccacct ggggagtacg ccggcaacgg 840

tgaaactcaa aggaattgac gggggcccgc acaagcggag gaacatgtgg tttaattcga 900

tgatacgcga ggaaccttac ccgggcttaa attgcatttg aatatnnntg naacagtata 960

gc 962

<210> 329
<211> 1382
<212> DNA
<213> Bacteroides uniformis

<400> 329
cgaggggcag catgaactta gcttgctaag tttgatggcg accggcgcac gggtgagtaa 60

cacgtatcca acctgccgat gactcgggga tagcctttcg aaagaaagat taatacccga 120

tggcatagtt cttccgcatg gtggaactat taaagaattt cggtcatcga tggggatgcg 180

ttccattagg ttgttggcgg ggtaacggcc caccaagcct tcgatggata ggggttctga 240

gaggaaggtc ccccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt 300

gaggaatatt ggtcaatgga cgagagtctg aaccagccaa gtagcgtgaa ggatgactgc 360

cctatgggtt gtaaacttct tttatacggg aataaagtga ggcacgtgtg ccttttttgta 420

tgtaccgtat gaataaggat cggctaactc cgtgccagca gccgcggtaa tacggaggat 480

ccgagcgtta tccggattta ttgggtttaa agggagcgta ggcggacgct taagtcagtt 540

gtgaaagttt gcggctcaac cgtaaaattg cagttgatac tgggtgtctt gagtacagta 600

gaggcaggcg gaattcgtgg tgtagcggtg aaatgcttag atatcacgaa gaactccgat 660

tgcgaaggca gcttgctgga ctgtaactga cgctgatgct cgaaagtgtg ggtatcaaac 720

aggattagat accctggtag tccacacagt aaacgatgaa tactcgctgt ttgcgatata 780

cagtaagcgg ccaagcgaaa gcgttaagta ttccacctgg ggagtacgcc ggcaacggtg 840

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 900

atacgcgagg aaccttaccc gggtttgaat tgcaactgaa tgatgtgagt acagtagagc 960

cgcaaggcag ttgtgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1020

ttaagtgcca taacgagcgc aacccttatc gatagttacc atcaggttat gctggggact 1080

ctgtcgagac tgccgtcgta agatgtgagg aaggtgggga tgacgtcaaa tcagcacggc 1140

ccttacgtcc ggggctacac acgtgttaca atgggggggta cagaaggcag ctacacggtg 1200

acgtgatgct aatcccgaaa gcctctctca gttcggattg gagtctgcaa cccgactcca 1260

tgaagctgga ttcgctagta atcgcgcatc agccacggcg cggtgaatac gttcccgggc 1320

cttgtacaca ccgcccgtca agccatgaaa gccgggggta cctgaagtgc gtaaccgcaa 1380

gg 1382

<210> 330
<211> 1370
<212> DNA
<213> Bacteroides ureolyticus

<400> 330
gaggaacaac agttggaaac ggctgctaat acctcatact cctatttgac ataagttaaa 60

tagggaaagt cttttcggtg taggatgaga ctatatcgta tcagctagtt ggtaaggtaa 120

tggcttacca aggctatgac gcgtaactgg tctgagagga tgatcagtca cattggaact 180

gagacacggt ccaaactcct acgggaggca gcagtaagga atattgcgca atgggggaaa 240

ccctgacgca gcaacgccgc gtggaggatg acacttttcg gagcgtaaac tccttttatc 300

aggaaagaat aatgacggta cctgatgaat aagcaccggc taactccgtg ccagcagccg 360

cggtaatacg gggggtgcaa gcgttactcg gaatcactgg gcgtaaagga cgcgtaggcg 420

gattatcaag tcttttgtga aatctagtgg cttaaccact aaactgctta ggaaactgat 480

agtctagagt aggggagagg tagatggaat tcttggtgta ggggtaaaat ccgtagagat 540

caagaagaat acccattgcg aaagcgatct gctggaacct aactgacgct gaggcgtgaa 600

agcgtgggta gcaaacagga ttagataccc tggtagtcca cgccctaaac gatgtatact 660

agttgttgct ttgctagtca aggcagtaat gcagctaacg cattaagtat accgcctggg 720

gagtacggtc gcaagattaa aactcaaagg aatagacggg gacccgcaca agcggtggag 780

catgtggttt aattcgaaga tacgcgaaga accttacctg gacttgacat cctaaaaaca 840

tctaagagat tagaaagtgc tagtttacta gaatttagtg acaggtgctg cacggctgtc 900

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cacgtgttta 960

gttgctaaca gctcggctga gcactctaaa cagactgcct tcgtaaggag gaggaaggtg 1020

tggacgacgt caagtcatca tggcccttat gtccagggcg acacacgtgc tacaatgaca 1080

tatacagtaa gacgcaatat cgcaagatgg agcaaatcta taaaatatgt cccagttcgg 1140

attgtggtct gcaactcgac cccatgaagc cggaatcgct agtaatcgta gatcagccat 1200

gctacggtga atacgttccc gggtcttgta ctcaccgccc gtcacaccat ggaagttgat 1260

ctcactcgaa gcagggatgc taaaatagct accttccaca gtggaatcag taactggggt 1320

gaagtcgtaa caaggtaacc gtaggagaac ctgcggttgg atcacctcct 1370

<210> 331
<211> 1388
<212> DNA
<213> Bacteroides vulgatus

<220>
<221> modified_base
<222> (36)..(37)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1072)..(1072)
<223> a, c, t, g, unknown or other

<400> 331
agtcgagggg cagcatggtc ttagcttgct aagacnngat ggcgaccggc gcacgggtga 60

gtaacacgta tccaacctgc cgtctactct tggacagcct tctgaaagga agattaatac 120

aagatggcat catgagtccg catgttcaca tgattaaagg tattccggta gacgatgggg 180

atgcgttcca ttagatagta ggcggggtaa cggcccacct agtcttcgat ggataggggt 240

tctgagagga aggtccccca cattggaact gagacacggt ccaaactcct acgggaggca 300

gcagtgagga atattggtca atgggcgaga gcctgaacca gccaagtagc gtgaaggatg 360

actgccctat gggttgtaaa cttcttttat aaaggaataa agtcgggtat gcatacccgt 420

ttgcatgtac tttatgaata aggatggcta actccgtgcc agcagccgcg gtaatacgga 480

ggatccgagc gttatccgga tttattgggt ttaaagggag cgtagatgga tgtttaagtc 540

agttgtgaaa gtttgcggct caaccgtaaa attgcagttg atactggata tcttgagtgc 600

agttgaggca ggcggaattc gtggtgtagc ggtgaaatgc ttagatatca cgaagaactc 660

cgattgcgaa ggcagcctgc taagctgcaa ctgacattga ggctcgaaag tgtgggtatc 720

aaacaggatt agataccctg gtagtccaca cggtaaacga tgaatactcg ctgtttgcga 780

tatacgcaag cggccaagcg aaagcgttaa gtattccacc tggggagtac gccggcaacg 840

gtgaaactca aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg 900

atgattcgcg aggaacctta cccggtatta aattgcagat gaattacggt aaaagccgta 960

ggccgcaagg catctgtgaa ttgatactgg gtatcttgac agctcgtgcc gtgaggtgtc 1020

ggcttaagtg ccataacgag cgcaaccctt gttgtcagtt actaacaggt tntgctgagg 1080

actctgacaa gactgccatc gtaagatgtg aggaaggtgg ggatgacgtc aaatcagcac 1140

ggcccttacg tccggggcta cacacgtgtt acaatggggg gtacagaggg ccgctaccac 1200

gcgagtggat gccaatccca aaaacctctc tcagttcgga ctggagtctg caacccgact 1260

ccacgaagct ggattcgcta gtaatcgcgc atcagccacg gcgcggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcaagccatg ggagccgggg gtacctgaag tgcgtaaccg 1380

cgaggagc 1388

<210> 332
<211> 1508

<212> DNA
<213> Bacteroides xylanisolvens

<400> 332
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcagcattt tagtttgctt gcaaactaaa gatggcgacc ggcgcacggg tgagtaacac 120

gtatccaacc tgccgataac tcggggatag cctttcgaaa gaaagattaa tatccgatag 180

tatattaaac cgcatggttt tactattaaa gaatttcggt tatcgatggg gatgcgttcc 240

attagtttgt tggcggggta acggcccacc aagactacga tggatagggg ttctgagagg 300

aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg 360

aatattggtc aatggacgag agtctgaacc agccaagtag cgtgaaggat gactgcccta 420

tgggttgtaa acttctttta tatgggaata aagtattcca cgtgtggaat tttgtatgta 480

ccatatgaat aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccga 540

gcgttatccg gatttattgg gtttaaaggg agcgtaggtg gattgttaag tcagttgtga 600

aagtttgcgg ctcaaccgta aaattgcagt tgaaactggc agtcttgagt acagtagagg 660

tgggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac tccgattgcg 720

aaggcagctc actagactgc aactgacact gatgctcgaa agtgtgggta tcaaacagga 780

ttagataccc tggtagtcca cacagtaaac gatgaatact cgctgtttgc gatatacagt 840

aagcggccaa gcgaaagcat taagtattcc acctggggag tacgccggca acggtgaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac 960

gcgaggaacc ttacccgggc ttaaattgca tttgaataat ctggaaacag gttagccgca 1020

aggcaaatgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa 1080

gtgccataac gagcgcaacc cttatcttta gttactaaca ggtcatgctg aggactctag 1140

agagactgcc gtcgtaagat gtgaggaagg tggggatgac gtcaaatcag cacggccctt 1200

acgtccgggg ctacacacgt gttacaatgg ggggtacaga aggcagctac ctggcgacag 1260

gatgctaatc ccaaaaacct ctctcagttc ggatcgaagt ctgcaacccg acttcgtgaa 1320

gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcaagcc atgaaagccg ggggtacctg aagtacgtaa ccgcaaggag 1440

cgtcctaggg taaaactggt aattggggct aagtcgtaac aaggtagccg taccggaagg 1500

tgcggctg 1508

<210> 333
<211> 1481
<212> DNA
<213> Bacteroidetes bacterium oral taxon D27

<400> 333
agagtttgat cctggctcag gatgaacgct agcggcaggc ctaacacatg caagtcgagg 60

ggtagtcccg atttatcggg atgagaccgg cgcacgggtg cgtaacgcgt atgcaatcta 120

ccttatacta agggatagcc cagagaaatt tggattaata ccttatagtt aataaaaaag 180

gcatcttttt aattataaag attaattggt ataagatgag catgcgtccc attagttagt 240

tggtaaggta acggcttacc aagacgatga tgggtagggg tcctgagagg gagatccccc 300

acactggtac tgagacacgg accagactcc tacgggaggc agcagtgagg aatattggtc 360

aatgggcgca agcctgaacc agccatgccg cgtgcaggat gacgcatcta tggtgtgtaa 420

actgcttttg tacaggaaga aacctcccga cgagtcggga cttgacggta ctgtaagaat 480

aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccaa gcgttatccg 540

gaatcattgg gcttaaaggg tccgtaggcg gcttaataag tcagcggtga aagtttttgg 600

cttaaccaaa aaattgccat tgatactgtt aggcttgaat ttttgtgaag taactagaat 660

atgtagtgta gcggtgaaat gcttagatat tacatggaat accaattgcg aaggcaggtt 720

actaacaaac gattgacgct gatggacgaa agcgtgggta gcgaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatggatact agctgttcgg gcgtaagctt gagtggctaa 840

gcgaaagtga taagtatccc acctggggag tacgggcgca agcctgaaac tcaaaggaat 900

tgacgggagc ccgcacaagc ggtggagcat gtggtttaat tcgatgatac gcgaggaacc 960

ttaccagggc ttaaatgtat tttgaccgtt taggaaacta gactttcgca agacaaaata 1020

caaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcaggttaa gtcctataac 1080

gagcgcaacc cctgttgtta gttgccagcg agtcaagtcg ggaactctaa caagactgcc 1140

agtgtaaact gtgaggaagg tggggatgac gtcaaatcat cacggccctt acgtcctggg 1200

ccacacacgt gctacaatgg acggcacaga gagcagctac caggtgactg gatgcgaatc 1260

tataaaaccg ttctcagttc ggatcggagt ctgcaactcg actccgtgaa gctggaatcg 1320

ctagtaatcg gatatcagcc atgatccggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcaagcc atggaagctg ggggtacctg aagtcggtga ccgcaaggag ctgcctaggg 1440

taaaactggt aactagggct aagtcgtaac aaggtagccg t 1481

<210> 334
<211> 1481
<212> DNA
<213> Bacteroidetes bacterium oral taxon F31

<400> 334
agagtttgat cctggctcag gatgaacgct agcggcaggc ctaacacatg caagtcgagg 60

ggtagaggaa gcttgcttcc ttgagaccgg cgcacgggtg cgtaacgcgt atgcaatcta 120

ccttgtacag ggggatagcc cagagaaatt tggattaata cctcatagtg tttaagagtg 180

gcatcacttt tttactaaag ttccaacggt acaagatgag catgcgtccc attagctagt 240

tggtgtggta acggcatacc aaggcaatga tgggtagggg tcctgagagg gaggtccccc 300

acactggtac tgagacacgg accagactcc tacgggaggc agcagtgagg aatattgggc 360

aatggaggca actctgaccc agccatgccg cgtgcaggaa gacggtccta tggattgtaa 420

actgcttttg tacgagaaga aacatcccga cgtgtcggga cttgacggta tcgtaagaat 480

aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccaa gcgttatccg 540

gaatcattgg gtttaaaggg tccgtaggcg gtcttataag tcagtggtga aatctcctag 600

ctcaactagg aaactgccat tgatactgta agacttgaat gtttgtgaag taactagaat 660

atgtagtgta gcggtgaaat gcttagatat tacatggaat accaattgcg aaggcaggtt 720

actaacagat gattgacgct gatggacgaa agcgtgggga gcgaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatggatact agctgttcga gagcaatctt gagtggctaa 840

gcgaaagtga taagtatccc acctggggag tacgcacgca agtgtgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgatgatac gcgaggaacc 960

ttaccagggc ttaaatggga gacgacagtt taggaaacta gactttcttc ggacgtcttt 1020

caaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcaggttaa gtcctataac 1080

gagcgcaacc cctgttgtta gttgccagcg agtaatgtcg ggaactctag caagactgcc 1140

ggtgtaaacc gtgaggaagg tggggatgac gtcaaatcat cacggccctt acgtcctggg 1200

ccacacacgt gctacaatgg caggtacaga gagcagccac ttagcgataa ggagcgaatc 1260

tataaaacct gtctcagttc ggattggagt ctgcaactcg actctatgaa gctggaatcg 1320

ctagtaatcg gatatcagcc atgatccggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcaagcc atggaagctg ggggtacctg aagtcggtga ccgtaaggag ctgcctaggg 1440

taaaactagt aactggggct aagtcgtaac aaggtagccg t 1481

<210> 335
<211> 1477
<212> DNA
<213> Bacteroidetes bacterium oral taxon F44

<400> 335
aagtttgatc ctggctcagg atgaacgcta gcggcaggcc taacacatgc aagtcgaggg 60

gtagaagctt tcgggctttg agaccggcgc acgggtgcgt aacgcgtatg caatctgcct 120

tgtactgagg gatagcccag agaaatttgg attaatacct catggtattt tttgttggca 180

tcaacagatt attaaagaga ttcggtacaa gatgagcatg cgtcccatta gctagttggt 240

atggtaacgg cataccaagg ctacgatggg taggggtcct gagagggaga tcccccacac 300

tggtactgag acacggacca gactcctacg ggaggcagca gtgaggaata ttggtcaatg 360

gtcgcaagac tgaaccagcc atgccgcgtg taggatgaag catctatggt gtgtaaacta 420

cttttgtacg ggaagaaaca ctccctcgtg agggagcttg acggtaccgt aagaataagg 480

atcggctaac tccgtgccag cagccgcggt aatacggagg atccaagcgt tatccggaat 540

cattgggttt aaagggtccg taggcggttt tataagtcag tggtgaaatc cggcagctca 600

actgtcgaac tgccattgat actgtagaac ttgaatcatt gtgaagtaac tagaatatgt 660

agtgtagcgg tgaaatgctt agatattaca tggaatacca attgcgaagg caggttacta 720

acaatgtatt gacgctgatg gacgaaagcg tgggtagcga acaggattag ataccctggt 780

agtccacgcc gtaaacgatg gatactagct gttcggttgt aagattgagt ggctaagcga 840

aagtgataag tatcccacct ggggagtacg ggcgcaagcc tgaaactcaa aggaattgac 900

gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgatacgcga ggaaccttac 960

cagggcttaa atgtagtatg acaggtttgg aaacagactt ttcttcggac atattacaag 1020

gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtca ggttaagtcc tataacgagc 1080

gcaacccctg ttgttagttg ccatcgagta atgtcgggaa ctctaacaag actgccggtg 1140

caaaccgtga ggaaggtggg gatgacgtca aatcatcacg gcccttacgt cctgggctac 1200

acacgtgcta caatggcagg tacagagagc agccacttcg caaggaggag cgaatctata 1260

aagcctgtct cagttcggat tggagtctgc aacccgactc catgaagctg gaatcgctag 1320

taatcggata tcagccatga tccggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

caagccatgg aagctggggg tacctgaagt cggtgaccgc aaggagctgc ctagggtaaa 1440

actggtaact ggggctaagt cgtaacaagg tagccgt 1477

<210> 336
<211> 1316
<212> DNA
<213> Barnesiella intestinihominis

<400> 336
gatgaacgct agcgacaggc ctaacacatg caagtcgagg gaccggcgca cgggtgagta 60

acacgtatgc aatccacctg taacaggggg ataacccgga gaaatccgga ctaatacccc 120

ataattaaag ttggttacag acgagcatgc gctccattag ccagttggcg gggtaacggc 180

ccaccaaagc gacgatggat aggggttctg agaggaaggt cccccacatt ggaactgaga 240

cacggtccaa actcctacgg gaggcagcag tgaggaatat tggtcaatgg tcggcagact 300

gaaccagcca agtcgcgtga gggaagacgg cctacgggtt gtaaacctct tttgtcggag 360

agtatgcaag tatccgaaga aaaagcatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggatgc gagcgttatc cggatttatt gggtttaaag ggtgcgtagg cggcacgcca 480

agtcagcggt gaaatttccg ggctcaaccc ggagtgtgcc gttgaaactg gcgagctaga 540

gtacacaaga ggcaggcgga atgcgtggtg tagcggtgaa atgcatagat atcacgcaga 600

accccgattg cgaaggcagc ctgctagggt gacagacgct gaggcacgaa agcgtgggta 660

tcgaacagga ttagataccc tggtagtcca cgcagtaaac gatgaatact aactgtttgc 720

gtgtaagcgg tacagcgaaa gcgttaagta ttccacctgg ggagtacgcc ggcaacggtg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggctcaaac gcgaggtgct gcatggttgt cgtcagctcg 900

tgccgtgagg tgtcggctta agtgccataa cgagcgcaac ccctatcgac agttactaac 960

ggccgaggac tctgtcgaga ctgccggcgc aagccggagg aaggtgggga tgacgtcaaa 1020

tcagcacggc ccttacgtcc ggggcgacac acgtgttaca atggcaggca gaaggcagcc 1080

agtcagcaat gacgcgcgaa tcccgcctgt ctcagttcgg atggagtctg caacccgact 1140

ccagaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt caagccatgg aagccgggag tacctgaagc atgcagcgta 1260

cgaaggtaat accggtaact ggggctaagt cgtaacaagg tagccgtacc ggaagg 1316

<210> 337
<211> 1461
<212> DNA
<213> Barnesiella viscericola

<400> 337
tcaggatgaa cgctagcgac aggcctaaca catgcaagtc gaggggcagc gcggaggtag 60

caatacttct ggcggcgacc ggcgcacggg tgagtaacac gtatgcaatc tgcctgtaac 120

aggggataa cccggagaaa tccggcctaa taccccataa cgacatatct tcgcatgggg 180

agatgtctaa agagagcaat cttggttaca gatgagcatg cggtccatta gccagttggc 240

ggggtaacgg cccaccaaag cgacgatgga taggggttct gagaggaagg tcccccacat 300

tggaactgag acacggtcca aactcctacg ggaggcagca gtgaggaata ttggtcaatg 360

gtcggcagac tgaaccagcc aagtcgcgtg aaggaagacg gccctacggg ttgtaaactt 420

cttttgtcgg agagtaaagt gcgctacgcg tagcgtattg caagtatccg aagaaaaagc 480

atcggctaac tccgtgccag cagccgcggt aatacggagg atgcgagcgt tatccggatt 540

tattgggttt aaagggtgcg taggcggcac gccaagtcag cggtgaaatg cccgggctta 600

acccgggagc tgccgttgaa actgcgagct agcgtgcaca agaggcaggc ggaatgcgtg 660

gtgtagcggt gaaatgcata gatatcacgc agaaccccga ttgcgaaggc agcctgctag 720

ggtgcaacgg acgctgaggc acgaaagcgt ggggatcgaa caggattaga taccctggta 780

gtccacgcag taaacgatga atactaactg tttgcgatat aatgtaagcg gtacagcgaa 840

agcgttaagt attccacctg gggagtacgc cggcaacggt gaaactcaaa ggaattgacg 900

ggggcccgca caagcggagg aacatgtggt ttaattcgat gatacgcgag gaaccttacc 960

cgggctcaaa cgcaggggga atatgggtga aagtccatag ccagcaatgg tcgcctgcga 1020

ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc ggcttaagtg ccataacgag 1080

cgcaacccta ttgacagtta ctaacgggtc aagccgagga ctctgtcgag actgccggcg 1140

caagccgcga ggaaggtggg gatgacgtca aatcagcacg gcccttacgt ccggggcgac 1200

acacgtgtta caatggcagg tacagaaggc agccagtcag caatgacgcg cgaatcccga 1260

aaacctgtct cagttcggat tggagtctgc aactcgactc catgaagctg gattcgctag 1320

taatcgcgca tcagccatgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

caagccatgg aagccgggag tacctgaagc atgcaaccgc aaggagcgta cgaaggtaat 1440

accggtaact ggggctaagt c 1461

<210> 338
<211> 1492
<212> DNA
<213> Bartonella bacilliformis

<400> 338
ttcaacttga gagtttgatc ctggctcaga acgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg cactcttttt gagtgagcgg cagacgggtg agtaacgcgt gggaatctac 120

ccatctctac ggaataacac agagaaattt gtgctaatac cgtatacgtc cttcgggaga 180

aagatttatc ggagatggat gagcccgcgt tggattagct agttggtgag gtaacggccc 240

accaaggcga cgatccatag ctggtctgag aggatgatca gccacactgg gactgagaca 300

cggcccagac tcctacggga ggcagcagtg gggaatattg gacaatgggg gcaaccctga 360

tccagccatg ccgcgtgagt gatgaaggcc ttagggttgt aaagctcttt caccggtgaa 420

gataatgacg gtagccggag aagaagcccc ggctaacttc gtgccagcag ccgcggtaat 480

acgaaggggg ctagcgttgt tcggatttac tgggcgtaaa gcgcatgtag gcggatattt 540

aagtcagagg tgaaatccca gggctcaacc ttggaactgc ctttgatact ggatgtctcg 600

agtatggaag aggtgagtgg aattccgagt gtagaggtaa aattcgtaga tattcggagg 660

aacaccagtg gcgaaggcgg ctcactggtc cattactgac gctgaggtgc gaaagcgtgg 720

ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgaat gttagccgtc 780

gggcagttta ctgctcggtg gcgcagctaa cgcgttaaac attccgcctg gggagtacgg 840

tcgcaagatt aaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt 900

ttaattcgaa gcaacgcgca gaaccttacc agcccttgac atcccgatcg cggagagtgg 960

agacactttc cttcagttag gctggatcgg agacaggtgc tgcatggctg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccctcgccct tagttgccag 1080

cattcagttg ggcactctaa ggggactgcc ggtgataagc cgagaggaag gtggggatga 1140

cgtcaagtcc tcatggccct tacgggctgg gctacacacg tgctacaatg gtggtgacag 1200

tgggcagcga aaccgcaagg tcgagctaat ctccaaaagc catctcagtt cggattgcac 1260

tctgcaactc gagtgcatga agtcggaatc gctagtaatc gtggatcagc atgccacggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgggagttg gttttacccg 1380

aaggtgctgt gctaaccgca aggaagcagg caaccacggt agggtcagcg actggggtga 1440

agtcgtaaca aggtagccgt aggggaacct gcggctggat cacctccttt ct 1492

<210> 339
<211> 1491
<212> DNA
<213> Bartonella grahamii

<400> 339
tgagagtttg atcctggctc agaacgaacg ctggcggcag gcttaacaca tgcaagtcga 60

gcgcactctt ttagagtgag cggcaaacgg gtgagtaacg cgtgggaatc tacccatctc 120

tacggaataa cacagagaaa tttgtgctaa taccgtatac gtccttttg gagaaagatt 180

tatcggagat ggatgagccc gcgttggatt agctagttgg tgaggtaacg gctcaccaag 240

gcgacgatcc atagctggtc tgagaggatg atcagccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtggggaat attggacaat gggggcaacc ctgatccagc 360

catgccgcgt gagtgatgaa ggccctaggg ttgtaaagct ctttcaccgg tgaagataat 420

gacggtaacc ggagaagaag ccccggctaa cttcgtgcca gcagccgcgg taatacgaag 480

ggggctagcg ttgttcggat ttactgggcg taaagcgcac gtaggcggat atttaagtca 540

gaggtgaaat cccagggctc aaccctggaa ctgcctttga tactggatat cttgagtatg 600

gaagaggtga gtggaattcc gagtgtagag gtaaaattcg tagatattcg gaggaacacc 660

agtggcgaag gcggctcact ggtccattac tgacgctgag gtgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatgttagc cgtcgggcgg 780

tttactgctc ggtggcgcag ctaacgcatt aaacattccg cctggggagt acggtcgcaa 840

gattaaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgaagcaacg cgcagaacct taccagccct tgacatcccg atcgcggaag gtggagacac 960

cctccttcag ttaggctgga tcggagacag gtgctgcatg gctgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg cccttagttg ccagcattta 1080

gttgggcact ctaaggggac tgccggtgat aagccgagag gaaggtgggg atgacgtcaa 1140

gtcctcatgg cccttacggg ctgggctaca cacgtgctac aatggtggtg acagtgggca 1200

gcgagaccgc gaggtcgagc taatctccaa aagccatctc agttcggatt gcactctgca 1260

actcgagtgc atgaagttgg aatcgctagt aatcgtggat cagcatgcca cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca caccatggga gttggtttta cccgaaggtg 1380

ctgtgctaac cgcaaggagg caggcaacca cggtagggtc agcgactggg gtgaagtcgt 1440

aacaaggtag ccgtagggga acctgtggct ggatcacctc ctttctaagg a 1491

<210> 340
<211> 1492
<212> DNA
<213> Bartonella henselae

<400> 340
ttcaatatga gagtttgatc ctggctcaga acgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg cactctttta gagtgagcgg caaacgggtg agtaacgcgt gggaatctac 120

ccatctctac ggaataacac agagaaattt gtgctaatac cgtatacgtc cttagggaga 180

aagatttatc ggagatggat gagcccgcgt tggattagct agttggtgag gtaacggctc 240

accaaggcga cgatccatag ctggtctgag aggatgatca gccacactgg gactgagaca 300

cggcccagac tcctacggga ggcagcagtg gggaatattg gacaatgggg gcaaccctga 360

tccagccatg ccgcgtgagt gatgaaggcc ctagggttgt aaagctcttt caccggtgaa 420

gataatgacg gtaaccggag aagaagcccc ggctaacttc gtgccagcag ccgcggtaat 480

acgaaggggg ctagcgttgt tcggatttac tgggcgtaaa gcgcatgtag gcggatattt 540

aagtcagagg tgaaatccca gggctcaacc ctggaactgc ctttgatact gggtatcttg 600

agtgtggaag aggtgagtgg aattccgagt gtagaggtaa aattcgtaga tattcggagg 660

aacaccagtg gcgaaggcgg ctcactggtc cattactgac gctgaggtgc gaaagcgtgg 720

ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgaat gttagccgtc 780

gggcggttta ctgctcggtg gcgcagctaa cgcgttaaac attccgcctg gggagtacgg 840

tcgcaagatt aaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt 900

ttaattcgaa gcaacgcgca gaaccttacc agcccttgac atcccgatcg cggaaggtgg 960

agacaccctc cttcagttag gctggatcgg agacaggtgc tgcatggctg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccctcgccct tagttgccag 1080

catttggttg ggcactctag ggggactgcc ggtgataagc cgagaggaag gtggggatga 1140

cgtcaagtcc tcatggccct tacgggctgg gctacacacg tgctacaatg gtggtgacag 1200

tgggcagcga gaccgcgagg tcgagctaat ctccaaaagc catctcagtt cggattgcac 1260

tctgcaactc gagtgcatga agtcggaatc gctagtaatc gtggatcagc atgccacggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgggagttg gttttacccg 1380

aaggtgctgt gctaaccgca agggggcagg caaccacggt agggtcagcg actggggtga 1440

agtcgtaaca aggtagccgt aggggaacct gtggctggat cacctccttt ct 1492

<210> 341
<211> 1493
<212> DNA
<213> Bartonella quintana

<400> 341
ttcaatatga gagtttgatc ctggctcaga acgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg cactctttta gagtgagcgg caaacgggtg agtaacgcgt gggaatctac 120

ccatctctac ggaataacac agagaaattt gtgctaatac cgtatacgtc cctctgggag 180

aaagatttat cggaggtgga tgagcccgcg ttggattagc tagttggtga ggtaagggct 240

caccaaggcg acgatccata gctggtctga gaggatgatc agccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt ggacaatggg ggcaaccctg 360

atccagccat gccgcgtgag tgatgaaggc cctagggttg taaagctctt tcaccggtga 420

agataatgac gttaaccgga gaagaagccc cggctaactt cgtgccagca gccgcggtaa 480

tacgaagggg gctagcgttg ttcggattta ctgggcgtaa agcgcatgta ggcggatatt 540

taagtcagag gtgaaatccc agggctcaac cctggaactg cctttgatac tggatgtctc 600

gagtgtggaa gaggtgagtg gaattccgag tgtagaggta aaattcgtag atattcggag 660

gaacaccagt ggcgaaggcg gctcactggt ccattactga cgctgaggtg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgaa tgttagccgt 780

cgggtggttt actactcggt ggcgcagcta acgcgttaaa cattccgcct ggggagtacg 840

gtcgcaagat taaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcgc agaaccttac cagcccttga catcccgatc gcggaaggtg 960

gagacaccct ccttcagtta ggctggatcg gtgacaggtg ctgcatggct gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgccc ttagttgcca 1080

tcattaagtt gggcactcta gggggactgc cggtgataag ccgagaggaa ggtggggatg 1140

acgtcaagtc ctcatggccc ttacgggctg ggctacacac gtgctacaat ggtggtgaca 1200

gtgggcagcg agaccgcgag gtcgagctaa tctccaaaag ccatctcagt tcggattgca 1260

ctctgcaact cgagtgcatg aagttggaat cgctagtaat cgtggatcag catgccacgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgggagtt ggttttaccc 1380

gaaggtgctg tgctaaccgc aaggaggcag gcaaccacgg tagggtcagc gactggggtg 1440

aagtcgtaac aaggtagccg taggggaacc tgtggctgga tcacctcctt tct 1493

<210> 342
<211> 1228
<212> DNA
<213> Bartonella tamiae

<400> 342
tttcggagtg agcggcagac gggtgagtaa cacgtgggaa tctacccatc tctacggaat 60

aacacagaga aatttgtgct aataccgtat acgtccttat ggagaaagat ttatcggaga 120

tggatgagcc cgcgttggat tagctagttg gtagggtaaa ggcttaccaa ggcgacgatc 180

catagctggt ctgagaggat gatcagccac actgggactg agacacggcc cagactccta 240

cgggaggcag cagtggggaa tattggacaa tgggcgaaag cctgatccag ccatgccgcg 300

tgagtgatga aggccctagg gttgtaaagc tctttcaccg gtgaagataa tgacggtaac 360

cggagaagaa gccccggcta acttcgtgcc agcagccgcg gtaatacgaa gggggctagc 420

gttgttcgga tttactgggc gtaaagcgca cgtaggcgga catttaagtc agaggtgaaa 480

tcccagggct caaccctgga actgcctttg atactgggtg tcttgagtat ggaagaggtg 540

agtggaattc cgagtgtaga ggtgaaattc gtagatattc ggaggaacac cagtggcgaa 600

ggcggctcac tggtccatta ctgacgctga ggtgcgaaag cgtggggagc aaacaggatt 660

agataccctg gtagtccacg ccgtaaacga tgaatgttag ccgtcggaca gtttactgtt 720

cggtggcgca gctaacgcat taaacattcc gcctggggag tacggtcgca agattaaaac 780

tcaaaggaat tgacgggggc ccgcccaagc ggtggagcat gtggtttaat tcgaagcaac 840

gcgcagaacc ttaccagccc ttgacatccc gatcgcggtt agtggagaca ctttccttca 900

gttaggctgg atcggtgaca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 960

gggttaagtc ccgcaacgag cgcaaccctc gcccttagtt gccatcatta agttgggcac 1020

tctaagggga ctgccggtga taagccgaga ggaaggtggg gatgacgtca agtcctcatg 1080

gcccttacgg gctgggctac acacgtgcta caatggtggt gacagtgggc agcgagaccg 1140

cgaggtcgag ctaatctcca aaagccatct cagttcggat tgcactctgc aactcgagtg 1200

catgaagtgg aatcgctagt aatcgtgg 1228

<210> 343
<211> 1324
<212> DNA
<213> Bartonella washoensis

<400> 343
gcaagtcgag cgcactcttt tagagtgagc ggcaaacggg tgagtaacgc gtgggaatct 60

acccctctct acggaataac acagagaaat ttgtgctaat accgtatacg tccctttgg 120

gagaaagatt tatcggagat ggatgagccc gcgttggatt agctagttgg tgaggtaacg 180

gcccaccaag gcgacgatcc atagctggtc tgagaggatg atcagccaca ctgggactga 240

gacacggccc agactcctac gggaggcagc agtggggaat attggacaat gggggcaacc 300

ctgatccagc catgccgcgt gagtgatgaa ggccctaggg ttgtaaagct ctttcaccgg 360

tgaagataat gacggtaacc ggagaagaag ccccggctaa cttcgtgcca gcagccgcgg 420

taatacgaag ggggctagcg ttgttcggat ttactgggcg taaagcgcat gtaggcggac 480

atttaagtca gaggtgaaat cccagggctc aaccctggaa ctgcctttga tactgggtgt 540

cttgagtgtg gaagaggtga gtggaattcc gagtgtagag gtaaaattcg tagatattcg 600

gaggaacacc agtggcgaag gcggctcact ggtccattac tgacgctgag gtgcgaaagc 660

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatgttagc 720

cgtcgggcgg tttactgctc ggtggcgcag ctaacgcgtt aaacattccg cctggggagt 780

acggtcgcaa gattaaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg 840

tggtttaatt cgaagcaacg cgcagaacct taccagccct tgacatcccg atcgcggaag 900

gtggagacac cctccttcag ttaggctgga tcggagacag gtgctgcatg gctgtcgtca 960

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg cccttagttg 1020

ccatcattaa gttgggcact ctaggggggac tgccggtgat aagccgagag gaaggtgggg 1080

atgacgtcaa gtcctcatgg cccttacggg ctgggctaca cacgtgctac aatggtggtg 1140

acagtgggca gcgagaccgc gaggtcgagc taatctccaa aagccatctc agttcggatt 1200

gcactctgca actcgagtgc atgaagttgg aatcgctagt aatcgtggat cagcatgcca 1260

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga gttggtttta 1320

cccg 1324

<210> 344
<211> 1407
<212> DNA
<213> Bdellovibrio sp. MPA

<400> 344
catgcaagtc gaacggggaa agctttcggg tgagtactag tggcgcacgg gtgagtaacg 60

cgtggataat ctgcctttga gtgggggata actagtcgaa agattagcta ataccgcata 120

agaccacagg aactgaggtt ctaggggtta aaggtttttc gctcatagat gagtccgcgt 180

gagattagct agttggtgag gtaacggctc accaaggcga cgatctctaa ctggtctgag 240

aggatgatca gtcacactgg aactgagaca cggtccagac tcctacggga ggcagcagta 300

gggaatattg cacaatggag gaaactctga tgcagcgacg ccgcgtgagt gatgaaggct 360

ttcgggtcgt aaagctctgt cgcaggggaa taacacaatg aatgtaccct gtaagaaagg 420

atcggctaac ttcgtgccag cagccgcggt aagacgaggg atcctagcgt tgttcggaat 480

tattgggcgt aaagcggatg taggtggctt tgtaagtcag gtgtgaaagc ctagggctca 540

accctagaag tgcatctgat actgcgaagc ttgagtgtgg gagaggatag tagaattcct 600

ggtgtagtgg tgaaatacgt agatatcagg aggaataccg gaggcgaagg cggctatctg 660

gcccaacact gacactgaga tccgaaagcg tggggatcaa acaggattag ataccctggt 720

agtccacgcc gtaaacgatg gatacttgtt gttggaggta ttgacccctt cagtgacgaa 780

gctaacgcgt taagtatccc gcctggggag tacggtcgca agattaaaac tcaaagaaat 840

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgatgcaac gcgaagaacc 900

ttacctaggc ttgacatgta ctggaagact ggcagaaatg tcgtcgcctt cgggccggta 960

cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1020

cgagcgcaac ccctgcattt agttgccagc attcagttgg gcactctaga tggactgccg 1080

gtgttaaacc ggaggaaggt ggggatgacg tcaagtcctc atggccctta tgcctagggc 1140

tacacacgtg ctacaatggt ggttacagac ggatgccaaa ccgcaaggtg gagctaatcc 1200

tacaaaagcc atctaagttc agattggtct ctgcaactcg agaccatgaa gttggaatcg 1260

ctagtaatcg cggatcagaa tgccgcggtg aatacgttcc cgggccttgt acacaccgcc 1320

cgtcacacca tgaaagttgg ttgtaccaga agtcgctgcg ctaaccgtaa ggaggcaggc 1380

gcccaaggta tggtcgatga ttggggt 1407

<210> 345
<211> 1289
<212> DNA
<213> Bifidobacteriaceae genomosp. C1

<400> 345
cgctggcggc gtgcttaaca catgcaagtc gagcgagcgg cgaacgggtg agtaatgcgt 60

gactgacctg ccctgaggtt tggaatagct cctggaaacg ggtggtaatg ccggatgttg 120

aaaagtgcct tgggatgggg tcgcgtccta tcaggtagtc ggtggggtag tggcctaccg 180

agcctacgac gggtagccgg cctgagaggg tgaccggcca cattgggact gagatacggc 240

ccagactcct acgggaggca gcagtgggga atattgcgca atgggggaaa ccctgacgca 300

gcgacgccgc gtgcgggatg gaggccttcg ggttgtgaac cgcttttgtt agggagcatg 360

agtgtacctt tcgaataagg accggctaac tacgtgccag cagccgcggt aatacgtagg 420

gtccaagcgc tgtccggaat tattgggcgt aaagggctcg taggcggttc gtcgcgtctg 480

gtgtgaaagc ccattgctta acggtgggtt tgcgctggat acgggcgggc ttgagtgcgg 540

taggggagaa cggaattccc ggtgtaacgg tggaatgtgt agatatcggg aagaacaccg 600

atggcgaagg cagttctctg ggccgactga cgctgaggag cgaaagcgtg gggagcgaac 660

aggattagat accctggtag tccacgctgt aaacggtgga tgctggatgt ggggcgttct 720

gtgtcggagc taacgcgtta agcatcccgc ctggggagta cggccgcaag gttaaaactc 780

aaagaaattg acgggggccc gcacaagcgg cggagcatgc ggtttaattc gatgcaacgc 840

gaagaacctt acctgggttt gacatgcaca ggtggtgcat ggccgtcgtc agctcgtgtc 900

gtgagatgtt gggtcaagtc ccgcaacgag cgcaaccctt gccctgtgtt gccagcagct 960

gggcactcac gggggaccgc cggggttaac ccggaggagg gtggggatga cgtcaggtca 1020

tcatgcccct tacgtccagg gctacacgca tgctacaatg gccggcagcg ggatgcgatg 1080

tcgtgaggcg gagcggatcc cttccggtct cagttcggac ggagcctgca actcggctcc 1140

ggaaggtgga gtcgctagta atcgcggatc agcaacgccg cggtgaatgc gttcccgggc 1200

cttgtacaca ccgcccgtca agtcatgaaa gtcggcaaca cccgaagccc gtgcctaggg 1260

agcggtcgaa ggtggggctg gtgattggg 1289

<210> 346
<211> 1021
<212> DNA
<213> Bifidobacterium adolescentis

<220>
<221> modified_base
<222> (773)..(773)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (859)..(859)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (975)..(975)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (991)..(992)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1015)..(1015)
<223> a, c, t, g, unknown or other

<400> 346
tcccaggagc ttgctcctgg gtgagagtgg cgaacgggtg agtaatgcgt gaccgacctg 60

ccccatacac cggaatagct cttggaaacg ggtggtaatg ccggatgctc cagttggatg 120

catgtccttc tgggaaagat tcatcggtat gggatggggt cgcgtcctat cagcttgatg 180

gcggggtaac ggcccaccat ggcttcgacg ggtagccggc ctgagagggc gaccggccac 240

attgggactg agatacggcc cagactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggcgcaag cctgatgcag cgacgccgcg tgcgggatga cggccttcgg gttgtaaacc 360

gcttttgact gggagcaagc ccttcggggt gagtgtacct ttcgaataag caccggctaa 420

ctacgtgcca gcagccgcgg taatacgtag ggtgcaagcg ttatccggaa ttattgggcg 480

taaagggctc gtaggcggtt cgtcgcgtcc ggtgtgaaag tccatcgctt aacggtggat 540

ccgcgccggg tacgggcggg cttgagtgcg gtaggggaga ctggaattcc cggtgtaacg 600

gtggaatgtg tagatatcgg gaagaacacc aatggcgaag gcaggtctct gggccgtcac 660

tgacgctgag gagcgaaagc gtggggagcg aacaggatta gataccctgg tagtccacgc 720

cgtaaacggt ggatgctgga tgtggggacc attccacggt ctccgtgtcg ganccaacgc 780

gttaagcatc ccgcctgggg agtacggccg caaggctaaa actcaaagaa attgacgggg 840

gcccgcacaa gcggcgganc atgcggatta attcgatgca acgcgaagaa ccttacctgg 900

gcttgacatg ttcccgacag ccgtagagat acggtctccc ttcggggcgg gttcacaggt 960

ggtgcatggt cgtcntcagc tcgtgtcgtg nnatgttggg ttaagtcccg caacnagcgc 1020

a 1021

<210> 347
<211> 1535
<212> DNA
<213> Bifidobacterium angulatum

<400> 347
tttttgtgga gggttcgatt ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ggatcggctg gagcttgctc cggccgtgag agtggcgaac gggtgagtaa 120

tgcgtgaccg acctgccccg tacaccggaa tagctcctgg aaacgggtgg taatgccgga 180

tgctccagtc catcgcatgg tggtctggga aagattttat cggtatggga tggggtcgcg 240

tcctatcagg tagtcggcgg ggtaacggcc caccgagcct acgacgggta gccggcctga 300

gagggcgacc ggccacattg ggactgagat acggcccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagcgac gccgcgtgcg ggatgacggc 420

cttcgggttg taaaccgctt ttgttgggga gcaagccttc gggtgagtgt acccttcgaa 480

taagcaccgg ctaactacgt gccagcagcc gcggtaatac gtagggtgca agcgttatcc 540

ggaattattg ggcgtaaaga gctcgtaggc ggttcgtcgc gtccggtgtg aaagtccatc 600

gcttaacggt ggatctgcgc cgggtacggg cgggctggag tgcggtaggg gagactggaa 660

ttcccggtgt aacggtggaa tgtgtagata tcgggaagaa caccaatggc gaaggcaggt 720

ctctgggccg ttactgacgc tgaggagcga aagcgtgggg agcgaacagg attagatacc 780

ctggtagtcc acgccgtaaa cggtggatgc tggatgtggg gcccattcca cgggttccgt 840

gtcggagcta acgcgttaag catcccgcct ggggagtacg gccgcaaggc taaaactcaa 900

agaaattgac gggggcccgc acaagcggcg gagcatgcgg attaattcga tgcaacgcga 960

agaaccttac ctgggcttga catgttcccg acagccccag agatggggcc tcccttcggg 1020

gcgggttcac aggtggtgca tggtcgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct cgccccgtgt tgccagcaca tgatggtggg aactcacggg 1140

ggaccgccgg ggttaactcg gaggaaggtg gggatgacgt cagatcatca tgcccccttac 1200

gtccagggct tcacgcatgc tacaatggcc ggtacaacgg gatgcgacat ggcgacatgg 1260

agcggatccc tgaaaaccgg tctcagttcg gattggagtc tgcaacccga ctccatgaag 1320

gcggagtcgc tagtaatcgc gaatcagcaa cgtcgcggtg aatgcgttcc cgggccttgt 1380

acacaccgcc cgtcaagtca tgaaagtggg tagcacccga agccggtggc ccaaccagtt 1440

cgctgggggg agccgtctaa ggtgagactc gtgattggga ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gatcacctcc tttct 1535

<210> 348
<211> 1550
<212> DNA
<213> Bifidobacterium animalis

<400> 348
tttttgtgga gggttcgatt ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ggatccctgg cagcttgctg tcggggtgag agtggcgaac gggtgagtaa 120

tgcgtgacca acctgccctg tgcaccggaa tagctcctgg aaacgggtgg taataccgga 180

tgctccgctc catcgcatgg tggggtggga aatgcttttg cggcatggga tggggtcgcg 240

tcctatcagc ttgttggcgg ggtgatggcc caccaaggcg ttgacgggta gccggcctga 300

gagggtgacc ggccacattg ggactgagat acggcccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagcgac gccgcgtgcg ggatggaggc 420

cttcgggttg taaaccgctt ttgttcaagg gcaaggcacg gtttcggccg tgttgagtgg 480

attgttcgaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac gtagggtgcg 540

agcgttatcc ggatttattg ggcgtaaagg gctcgtaggc ggttcgtcgc gtccggtgtg 600

aaagtccatc gcctaacggt ggatctgcgc ccgggtacgg gcgggctgga gtgcggtagg 660

ggagactgga attcccggtg taacggtgga atgtgtagat atcgggaaga acaccaatgg 720

cgaaggcagg tctctgggcc gtcactgacg ctgaggagcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgccgtaa acggtggatg ctggatgtgg ggccctttcc 840

acgggtcccg tgtcggagcc aacgcgttaa gcatcccgcc tggggagtac ggccgcaagg 900

ctaaaactca aagaaattga cgggggcccg cacaagcggc ggagcatgcg gattaattcg 960

atgcaacgcg aagaacctta cctgggcttg acatgtgccg gatcgccgtg gagacacggt 1020

ttcccttcgg ggccggttca caggtggtgc atggtcgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc tcgccgcatg ttgccagcgg gtgatgccgg 1140

gaactcatgt gggaccgccg gggtcaactc ggaggaaggt ggggatgacg tcagatcatc 1200

atgcccctta cgtccagggc ttcacgcatg ctacaatggc cggtacaacg cggtgcgaca 1260

cggtgacgtg gggcggatcg ctgaaaaccg gtctcagttc ggatcgcagt ctgcaactcg 1320

actgcgtgaa ggcggagtcg ctagtaatcg cggatcagca acgccgcggt gaatgcgttc 1380

ccgggccttg tacacaccgc ccgtcaagtc atgaaagtgg gtagcacccg aagccggtgg 1440

cccgaccctt gtgggggggag ccgtctaagg tgagactcgt gattgggact aagtcgtaac 1500

aaggtagccg taccggaagg tgcggctgga tcacctcctt tctacggaga 1550

<210> 349
<211> 1056
<212> DNA
<213> Bifidobacterium bifidum

<220>
<221> modified_base
<222> (764)..(764)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (850)..(850)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (919)..(919)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (961)..(961)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (985)..(985)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (989)..(989)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (993)..(993)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1002)..(1002)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1014)..(1014)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1026)..(1026)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1028)..(1029)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1045)..(1045)
<223> a, c, t, g, unknown or other

<400> 349
ctttgcttgg tggtgagagt ggcgaacggg tgagtaatgc gtgaccgacc tgccccatgc 60

tccggaatag ctcctggaaa cgggtggtaa tgccggatgt tccacatgat cgcatgtgat 120

tgtgggaaag attctatcgg cgtgggatgg ggtcgcgtcc tatcagcttg ttggtgaggt 180

aacggctcac caaggcttcg acgggtagcc ggcctgagag ggcgaccggc cacattggga 240

ctgagatacg gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcgc 300

aagcctgatg cagcgacgcc gcgtgaggga tggaggcctt cgggttgtaa acctcttttg 360

tttgggagca agccttcggg tgagtgtacc tttcgaataa gcgccggcta actacgtgcc 420

agcagccgcg gtaatacgta gggcgcaagc gttatccgga tttattgggc gtaaagggct 480

cgtaggcggc tcgtcgcgtc cggtgtgaaa gtccatcgct taacggtgga tctgcgccgg 540

gtacgggcgg gctggagtgc ggtaggggag actggaattc ccggtgtaac ggtggaatgt 600

gtagatatcg ggaagaacac cgatggcgaa ggcaggtctc tgggccgtca ctgacgctga 660

ggagcgaaag cgtggggagc gaacaggatt agataccctg gtagtccacg ccgtaaacgg 720

tggacgctgg atgtggggca cgttccacgt gttccgtgtc gganctaacg cgttaagcgt 780

cccgcctggg gagtacggcc gcaaggctaa aactcaaaga aattgacggg ggcccgcaca 840

agcggcggan catgcggatt aattcgatgc aacgcgaaga accttacctg ggcttgacat 900

gttcccgacg acgccagana tggcgtttcc cttcggggcg ggttcacagg tggtgcatgg 960

ncgtcgtcag ctcgtgtcgt gagangttng ggntaagtcc cncaacgagc gcancctcg 1020

ccccgngnng ccagcacgtt atggngggga actcac 1056

<210> 350
<211> 1535
<212> DNA
<213> Bifidobacterium breve

<400> 350
tttttgtgga gggttcgatt ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ggatccatcg ggctttgcct ggtggtgaga gtggcgaacg ggtgagtaat 120

gcgtgaccga cctgccccat gcaccggaat agctcctgga aacgggtggt aatgccggat 180

gctccatcac accgcatggt gtgttgggaa agcctttgcg gcatgggatg gggtcgcgtc 240

ctatcagctt gatggcgggg taacggccca ccatggcttc gacgggtagc cggcctgaga 300

gggcgaccgg ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg caagcctgat gcagcgacgc cgcgtgaggg atggaggcct 420

tcgggttgta aacctctttt gttagggagc aaggcacttt gtgttgagtg tacctttcga 480

ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc aagcgttatc 540

cggaattatt gggcgtaaag ggctcgtagg cggttcgtcg cgtccggtgt gaaagtccat 600

cgcttaacgg tggatccgcg ccgggtacgg gcgggcttga gtgcggtagg ggagactgga 660

attcccggtg taacggtgga atgtgtagat atcgggaaga acaccaatgg cgaaggcagg 720

tctctgggcc gttactgacg ctgaggagcg aaagcgtggg gagcgaacag gattagatac 780

cctggtagtc cacgccgtaa acggtggatg ctggatgtgg ggcccgttcc acgggttccg 840

tgtcggagct aacgcgttaa gcatcccgcc tggggagtac ggccgcaagg ctaaaactca 900

aagaaattga cgggggcccg cacaagcggc ggagcatgcg gattaattcg atgcaacgcg 960

aagaacctta cctgggcttg acatgttccc gacgatccca gagatggggt ttcccttcgg 1020

ggcgggttca caggtggtgc atggtcgtcg tcagctcgtg tcgtgagatg ttgggttaag 1080

tcccgcaacg agcgcaaccc tcgccccgtg ttgccagcgg attgtgccgg gaactcacgg 1140

gggaccgccg gggttaactc ggaggaaggt ggggatgacg tcagatcatc atgccccttа 1200

cgtccagggc ttcacgcatg ctacaatggc cggtacaacg ggatgcgaca gtgcgagctg 1260

gagcggatcc ctgaaaaccg gtctcagttc ggatcgcagt ctgcaactcg actgcgtgaa 1320

ggcggagtcg ctagtaatcg cgaatcagca acgtcgcggt gaatgcgttc ccgggccttg 1380

tacacaccgc ccgtcaagtc atgaaagtgg gcagcacccg aagccggtgg cctaacccct 1440

tgcgggaggg agccgtctaa ggtgaggctc gtgattggga ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gatcacctcc tttct 1535

<210> 351
<211> 1051
<212> DNA
<213> Bifidobacterium catenulatum

<220>
<221> modified_base
<222> (817)..(817)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (935)..(935)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (966)..(967)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (978)..(978)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1030)..(1030)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1042)..(1043)

<223> a, c, t, g, unknown or other

<400> 351
tcgaacggga tccaggcagc ttgctgcctg gtgagagtgg cgaacgggtg agtaatgcgt 60

gaccgacctg ccccatacac cggaatagct cctggaaacg ggtggtaatg ccggatgctc 120

cgactcctcg catggggtgt cgggaaagat ttcatcggta tgggatgggg tcgcgtccta 180

tcaggtagtc ggcggggtaa cggcccaccg agcctacgac gggtagccgg cctgagaggg 240

cgaccggcca cattgggact gagatacggc ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggcgcaa gcctgatgca gcgacgccgc gtgcgggatg acggccttcg 360

ggttgtaaac cgcttttgat cgggagcaag ccttcgggtg agtgtacctt tcgaataagc 420

accggctaac tacgtgccag cagccgcggt aatacgtagg gtgcaagcgt tatccggaat 480

tattgggcgt aaagggctcg taggcggttc gtcgcgtccg gtgtgaaagt ccatcgctta 540

acggtggatc tgcgccgggt acgggcgggc tggagtgcgg taggggagac tggaattccc 600

ggtgtaacgg tggaatgtgt agatatcggg aagaacacca atggcgaagg caggtctctg 660

ggccgttact gacgctgagg agcgaaagcg tggggagcga acaggattag ataccctggt 720

agtccacgcc gtaaacggtg gatgctggat gtggggcccg ttccacgggt tccgtgtcgg 780

agctaacgcg ttaagcatcc cgcctgggga gtacggncgc aaggctaaaa ctcaaagaaa 840

ttgacggggg cccgcacaag cggcggagca tgcggattaa ttcgatgcaa cgcgaagaac 900

cttacctggg cttgacatgt tcccgacagc cgtanagatg cggcctccct tcggggcggg 960

ttcacnntgg tgcatggncg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcan cctcgccctg tnngccagca c 1051

<210> 352
<211> 1539
<212> DNA
<213> Bifidobacterium dentium

<400> 352
ttttcgtgga gggttcgatt ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ggatcccggg ggttcgcctc cgggtgagag tggcgaacgg gtgagtaatg 120

cgtgaccgac ctgccccata caccggaata gctcctggaa acgggtggta atgccggatg 180

ctccggttgg atgcatgtcc ttccgggaaa ggttccatcg gtatgggatg gggtcgcgtc 240

ctatcagctt gatggcgggg taacggccca ccatggcttc gacgggtagc cggcctgaga 300

gggcgaccgg ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg caagcctgat gcagcgacgc cgcgtgcggg atggaggcct 420

tcgggttgta aaccgctttt gatcgggagc aagcccttcg gggtgagtgt acccttcgaa 480

taagcaccgg ctaactacgt gccagcagcc gcggtaatac gtagggtgca agcgttatcc 540

ggaattattg ggcgtaaagg gctcgtaggc ggttcgtcgc gtccggtgtg aaagcccatc 600

gcttaacggt gggtctgcgc cgggtacggg cgggctggag tgcggtaggg gagactggaa 660

ttcccggtgt aacggtggaa tgtgtagata tcgggaagaa caccaatggc gaaggcaggt 720

ctctgggccg tcactgacgc tgaggagcga aagcgtgggg agcgaacagg attagatacc 780

ctggtagtcc acgccgtaaa cggtggatgc tggatgtggg gcccgttcca cgggttccgt 840

gtcggagcta acgcgttaag catcccgcct ggggagtacg gccgcaaggc taaaactcaa 900

agaaattgac gggggcccgc acaagcggcg gagcatgcgg attaattcga tgcaacgcga 960

agaaccttac ctgggcttga catgttcccg acggccgtag agatacggcc tcccttcggg 1020

gcgggttcac aggtggtgca tggtcgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct cgccctgtgt tgccagcacg tcatggtggg aactcacggg 1140

ggaccgccgg ggtcaactcg gaggaaggtg gggatgacgt cagatcatca tgccccttac 1200

gtccagggct tcacgcatgc tacaatggcc ggtacagcgg gatgcgacat ggcgacatgg 1260

agcggatccc tgaaaaccgg tctcagttcg gattggagtc tgcaacccga ctccatgaag 1320

gcggagtcgc tagtaatcgc ggatcagcaa cgccgcggtg aatgcgttcc cgggccttgt 1380

acacaccgcc cgtcaagtca tgaaagtggg cagcacccga agccggtggc ctaacccttc 1440

tgtgggatgg agccgtctaa ggtgaggctc gtgattggga ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gatcacctcc tttctacgg 1539

<210> 353
<211> 1551
<212> DNA
<213> Bifidobacterium gallicum

<400> 353
tttttgtgga gggttcgatt ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ggatccggcc gagcttgtct tggctggtga gagtggcgaa cgggtgagta 120

atgcgtgacc aacctgcctt gtgcaccgga atagctcctg gaaacgggtg gtaataccgg 180

atgttccgct ccatcgcatg gtggtgtggg aaatgctttt gcggcatggg atggggtcgc 240

gtcctatcag cttgttggcg gggtgacggc ccaccaaggc tttgacgggt agccggcctg 300

agagggtgac cggccacatt gggactgaga tacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtgc gggatggagg 420

ccttcgggtt gtaaaccgct tttgattgtc agcaaggcgt cctttcgggg atgttgagtg 480

tagctttcga ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 540

aagcgttatc cggaattatt gggcgtaaag ggctcgtagg cggttcgtcg cgtccggtgt 600

gaaagtccat cgcttaacgg tggatctgcg ccgggtacgg gcgggctgga gtgcggtagg 660

ggagactgga attcccggtg taacggtgga atgtgtagat atcgggaaga acaccaatgg 720

cgaaggcagg tctctgggcc gttactgacg ctgaggagcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgccgtaa acggtggatg ctggatgtgg ggccctttt 840

ccgggtcctg tgtcggagct aacgcgttaa gcatcccgcc tggggagtac ggccgcaagg 900

ctaaaactca aagaaattga cgggggcccg cacaagcggc ggagcatgcg gattaattcg 960

atgcaacgcg aagaacctta cctgggcttg acatgttccg gatcgcccca gagatggggt 1020

ttcccttcgg ggccggttca caggtggtgc atggtcgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc tcgccgcgtg ttgccagcgg gtcatgccgg 1140

gaactcacgt gggaccgccg gggtcaactc ggaggaaggt ggggatgacg tcagatcatc 1200

atgcccctta cgtccagggc ttcacgcatg ctacaatggc cggtacaacg ggatgcgaca 1260

ccgtgaggtg gggcggatcc ctgaaaaccg gtctcagttc ggatcgcagt ctgcaacccg 1320

actgcgtgaa ggcggagtcg ctagtaatcg cagatcagca acgctgcggt gaatgcgttc 1380

ccgggccttg tacacaccgc ccgtcaagtc atgaaagtgg gtagcacccg aagccggtgg 1440

cccgaccgcc ttgtgtgggg ggagccgtct aaggtgagac tcgtgattgg gactaagtcg 1500

taacaaggta gccgtaccgg aaggtgcggc tggatcacct cctttctacg g 1551

<210> 354
<211> 1400
<212> DNA
<213> Bifidobacterium infantis

<400> 354
gattctggct caggatgaac gctggcggcg tgcttaacac atgcaagtcg aacgggatcc 60

atcaggcttt gcttggtggt gagagtggcg aacgggtgag taatgcgtga ccgacctgcc 120

ccatacaccg gaatagctcc tggaaacggg tggtaatgcc ggatgctcca gttgatcgca 180

tggtcttctg ggaaagcttt cgcggtatgg gatggggtcg cgtcctatca gcttgacggc 240

ggggtaacgg cccaccgtgg cttcgacggg tagccggcct gagagggcga ccggccacat 300

tgggactgag atacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg 360

ggcgcaagcc tgatgcagcg acgccgcgtg agggatggag gccttcgggt tgtaaacctc 420

ttttatcggg gagcaagcga gagtgagttt acccgttgaa taagcaccgg ctaactacgt 480

gccagcagcc gcggtaatac gtagggtgca agcgttatcc ggaattattg ggcgtaaagg 540

gctcgtaggc ggttcgtcgc gtccggtgtg aaagtccatc gcttaacggt ggatccgcgc 600

cgggtacggg cgggcttgag tgcggtaggg gagactggaa ttcccggtgt aacggtggaa 660

tgtgtagata tcgggaagaa caccaatggc gaaggcaggt ctctgggccg ttactgacgc 720

tgaggagcga aagccgtggg gagcgaacag gattagatac cctggtagtc cacgccgtaa 780

acggtggatg ctggatgtgg ggcccgttcc acgggttccg tgtcggagct aacgcgttaa 840

gcatcccgcc tggggagtac ggccgcaagc taaaaactca aagaaattga cgggggcccg 900

cacaagcggc ggagcatgcg gattaattcg atcgaacgcg aagaacctta cctgggcttg 960

acatgttccc gacggtcgta gagatacggc ttcccttcgg ggcgggttca caggtggtgc 1020

atggtcgtcg tcacgtcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

tcgccccgtg ttgccagcgg attatgccgg gaactcacgg gggaccgccg gggttaactc 1140

ggaggaaggt ggggatgacg tcagatcatc atgcccctta cgtccagggc ttcacgcatg 1200

ctacaatggc cggtacaacg ggatgcgacg cggcgacgcg gagcggatcc ctgaaaaccg 1260

gtctcagttc ggatcgcagt ctgcaactcg actgcgtgaa ggcggagtcg ctagtaatcg 1320

cgaatcagca acgtcgcggt gaatgcgttc ccgggccttg tacacaccgc ccgtcaagtc 1380

atgaaagtgg gtagcacccg 1400

<210> 355
<211> 1013
<212> DNA
<213> Bifidobacterium kashiwanohense

<220>
<221> modified_base
<222> (19)..(19)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (21)..(21)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (29)..(29)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (45)..(47)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (947)..(947)
<223> a, c, t, g, unknown or other

<400> 355
gcgggatgac gccttcggnt ntaaaccgnt ttgatcggga gcaannncgg gtgagtgtac 60

ctttcgaata agcaccggct aactacgtgc cagcagccgc ggtaatacgt agggtgcaag 120

cgttatccgg aattattggg cgtaaagggc tcgtaggcgg ttcgtcgcgt ccggtgtgaa 180

agtccatcgc ttaacggtgg atctgcgccg ggtacgggcg ggctggagtg cggtagggga 240

gactggaatt cccggtgtaa cggtggaatg tgtagatatc gggaagaaca ccaatggcga 300

aggcaggtct ctgggccgtt actgacgctg aggagcgaaa gcgtggggag cgaacaggat 360

tagataccct ggtagtccac gccgtaaacg gtggatgctg gatgtggggc ccgttccacg 420

ggttccgtgt cggagctaac gcgttaagca tcccgcctgg ggagtacggc cgcaaggcta 480

aaactcaaag aaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg 540

caacgcgaag aaccttacct gggcttgaca tgttcccgac cgctccagag atggggcttc 600

ccttcggggc gggttcacag gtggtgcatg gtcgtcgtca gctcgtgtcg tgagatgttg 660

ggttaagtcc cgcaacgagc gcaaccctcg ccctgtgttg ccagcacgtc atggtgggaa 720

ctcacggggg accgccgggg tcaactcgga ggaaggtggg gatgacgtca gatcatcatg 780

ccccttacgt ccagggcttc acgcatgcta caatggccgg tacaacggga tgcgacacgg 840

cgacgtggag cggatccctg aaaaccggtc tcagttcgga ttggagtctg caacccgact 900

ccatgaaggc ggagtcgcta gtaatcgcgg atcagcaacg ccgcggngaa tgcgttcccg 960

ggccttgtac acaccgcccg tcaagtcatg aaagtgggta gcacccgaag ccg 1013

<210> 356
<211> 1346
<212> DNA
<213> Bifidobacterium longum

<400> 356
cttgcttggt ggtgagagtg gcgaacgggt gagtaatgcg tgaccgacct gccccataca 60

ccggaatagc tcctggaaac gggtggtaat gccggatgct ccagttgatc gcatggtctt 120

ctgggaaagc tttcgcggta tgggatgggg tcgcgtccta tcagcttgac ggcggggtaa 180

cggcccaccg tggcttcgac gggtagccgg cctgagaggg cgaccggcca cattgggact 240

gagatacggc ccagactcct acgggaggca gcagtgggga atattgcaca atgggcgcaa 300

gcctgatgca gcgacgccgc gtgagggatg gaggccttcg ggttgtaaac ctcttttatc 360

ggggagcagc gagagtgagt ttacccgttg aataagcacc ggcaactacg tgccagcagc 420

cgcggtaata cgtaggtgca agcgttatcc ggaattattg ggcgtaaagg gctcgtaggc 480

ggttcgtcgc gtccggtgtg aaagtccatc gcttaacggt ggatccgcgc cgggtacggg 540

cgggcttgag tgcggtaggg gagactggaa ttcccggtgt aacggtggaa tgtgtagata 600

tcgggaagaa caccaatggc gaaggcaggt ctctgggccg ttactgacgc tgaggagcga 660

aagcgtgggg agcgaacagg attagatacc ctggtagtcc acgccgtaaa cggtggatgc 720

tggatgtggg gcccgttcca cgggttccgt gtcggagcta acgcgttaag catcccgcct 780

ggggagtacg gccgcaaggc taaaactcaa agaaattgac gggggcccgc acaagcggcg 840

gagcatgcgg attaattcga tgcaacgcga agaatcatcg ctgggtctgc gccggttccg 900

ggcgggcttg agtgcgggag tgccgtctgg gatggctggt gtgaggtgca tgggcgtcgt 960

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct cgccccgtgt 1020

tgccagcgga ttatgccggg aactcacggg ggaccgccgg ggttaactcg gaggaaggtg 1080

gggatgacgt cagatcatca tgccccttac gtccagggct tcacgcatgc tacaatggcc 1140

ggtacaacgg gatgcgacgc ggcgacgcgg agcggatccc tgaaaaccgg tctcagttcg 1200

gatcgcagtc tgcaactcga ctgcgtgaag gcggagtcgc tagtaatcgc gaatcagcaa 1260

cgtcgcggtg aatgcgttcc cgggccttgt acacaccgcc cgtcaagtca tgaaagtggg 1320

cagcacccga agccggtggc ctaacc 1346

<210> 357
<211> 1357
<212> DNA
<213> Bifidobacterium pseudocatenulatum

<400> 357
acgggatcca tcaggctttg cttggtggtg agagtggcga acgggtgagt aatgcgtgac 60

cgacctgccc catacaccgg aatagctcct ggaaacgggt ggtaatgccg gatgctccgg 120

cctgccgcat ggtgggctgg gaaagattgt atcggtatgg gatggggtcg cgtcctatca 180

ggtagtcggc ggggtaacgg cccaccgagc ctacgacggg tagccggcct gagagggcga 240

ccggccacat tgggactgag atacggccca gactcctacg ggaggcagca gtggggaata 300

ttgcacaatg ggcgcaagcc tgatgcagcg acgccgcgtg cgggatgacg gccttcgggt 360

tgtaaaccgc ttttgatcgg gagcaagcct tcggggagtg tacctttcaa taacaccggc 420

taactacgtg ccagcagccg cggtaatacg tagggtgcaa gcgttatccg gaattattgg 480

gcgtaaaggg ctcgtaggcg gttcgtcgcg tccggtgtga aagtccatcg cttaacggtg 540

gatctgcgcc gggtacgggc gggctggagt gcggtagggg agactggaat tcccggtgta 600

acggtggaat gtgtagatat cgggaagaac accaatggcg aaggcaggtc tctgggccgt 660

tactgacgct gaggagcgaa agcgtgggga gcgaacagga ttagataccc tggtagtcca 720

cgccgtaaac ggtggatgct ggatgtgggg cccgttccac gggttccgtg tcggagctaa 780

cgcgttaagc atcccgcctg gggagtacgg ccgcaaggct aaaactcaaa gaaattgacg 840

ggggcccgca caagcggcgg atcatgcgga ttaattcgat gcaacgcgaa gaaccttacc 900

tgggcttgac atgttcccga ccgctccaga gatggggctt cccttcgggg aggctggaat 960

gccgggtgta gcggtggaat agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1020

cgcaaccctc gccctgtgtt gccagcacgt catggtggga actcacgggg gaccgccggg 1080

gtcaactcgg aggaaggtgg ggatgacgtc agatcatcat gccccttacg tccagggctt 1140

cacgcatgct acaatggccg gtacaacggg atgcgacacg gcgacgtgga gcggatccct 1200

gaaaaccggt ctcagttcgg attggagtct gcaacccgac tccatgaagg cggagtcgct 1260

agtaatcgcg gatcagcaac gccgcggtga atgcgttccc gggccttgta cacaccgccc 1320

gtcaagtcat gaaagtgggt agcacccgaa gccggtg 1357

<210> 358
<211> 1527
<212> DNA
<213> Bifidobacterium pseudolongum

<220>
<221> modified_base
<222> (1526)..(1526)
<223> a, c, t, g, unknown or other

<400> 358
ttcgattctg gctcaggatg aacgctggcg gcgtgcttaa cacatgcaag tcgaacggga 60

tccctggcag cttgctgccg gggtgagagt ggcgaacggg tgagtaatgc gtgaccgacc 120

tgccccatgc accggaatag ctcctggaaa cgggtggtaa tgccggatgt tccacatgag 180

cgcatgcgag tgtgggaaag gcttttgcgg catgggatgg ggtcgcgtcc tatcagcttg 240

ttggtggggt aacggcctac caaggcgttg acgggtagcc ggcctgagag ggcgaccggc 300

cacattggga ctgagatacg gcccagactc ctacgggagg cagcagtggg gaatattgca 360

caatgggcgc aagcctgatg cagcgacgcc gcgtgcggga tggaggcctt cgggttgtaa 420

accgcttttg ttcaagggca aggcacggtt tcggccgtgt tgagtggatt gttcgaataa 480

gcaccggcta actacgtgcc agcagccgcg gtaatacgta gggtgcaagc gttatccgga 540

tttattgggc gtaaagggct cgtaggcggt tcgtcgcgtc cggtgtgaaa gtccatcgct 600

taacggtgga tccgcgccgg gtacgggcgg gcttgagtgc ggtaggggag actggaattc 660

ccggtgtaac ggtggaatgt gtagatatcg ggaagaacac caatggcgaa ggcaggtctc 720

tgggccgtta ctgacgctga ggagcgaaag cgtggggagc gaacaggatt agataccctg 780

gtagtccacg ccgtaaacgg tggatgctgg atgtggggcc ctttttccgg gtcctgtgtc 840

ggagctaacg cgttaagcat cccgcctggg gagtacggcc gcaaggctaa aactcaaaga 900

aattgacggg ggcccgcaca agcggcggag catgcggatt aattcgatgc aacgcgaaga 960

accttacctg ggcttgacat gtgcctgacg atcccggaga cggggtttcc cttcggggcg 1020

ggttcacagg tggtgcatgg tcgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caaccctcgc cgcgtgttgc cagcgggtca tgccgggaac tcacgtggga 1140

ccgccggggt taactcggag gaaggtgggg atgacgtcag atcatcatgc cccttacgtc 1200

cagggcttca cgcatgctac aatggccggt acaacggggt gcgacacggt gacgtggggc 1260

ggatccctga aaaccggtct cagttcggat cgcagtctgc aactcgactg cgtgaaggtg 1320

gagtcgctag taatcgcgga tcagcaacgc cgcggtgaat gcgttcccgg gccttgtaca 1380

caccgcccgt caagtcatga aagtgggcag cacccgaaga cggtggccta acccttgtgg 1440

ggggagccgt ctaaggtgag gctcgtgatt gggactaagt cgtaacaagg tagccgtacc 1500

ggaaggtgcg gctggatcac ctcctna 1527

<210> 359
<211> 1380
<212> DNA
<213> Bifidobacterium scardovii

<400> 359
gaacgctggc ggcgtgctta acacatgcaa gtcgaacggg atccggccag cttgctggtt 60

ggtgagagtg gcgaacgggt gagtaatgcg tgaccgacct gccccatgct ccggaatagc 120

tcctggaaac gggtggtaat gccggatggt ccagcatgct gcatggcgtg ttgggaaaga 180

tttatcggcg tgggatgggg tcgcgtccta tcagcttgac ggtggggtga tggcctaccg 240

tggcttcgac gggtagccgg cctgagaggg cgaccggcca cattgggact gagatacggc 300

ccagactcct acgggaggca gcagtgggga atattgcaca atgggcgcaa gcctgatgca 360

gcgacgccgc gtgagggatg gaggccttcg ggttgtaaac ctcttttagc agggagcaag 420

gcttcggttg agtgtacctg ttgaataagc accggctaac tacgtgccag cagccgcggt 480

aatacgtagg gtgcaagcgt tatccggaat tattgggcgt aaagggctcg taggcggttc 540

gtcgcgtctg gtgtgaaagt ccatcgctta acggtggatc tgcgccgggt acgggcgggc 600

tggagtgcgg taggggagac tggaattccc ggtgtaacgg tggaatgtgt agatatcggg 660

aagaacacca atggcgaagg caggtctctg ggccgttact gacgctgagg agcgaaagcg 720

tggggagcga acaggattag ataccctggt agtccacgcc gtaaacggtg gacgctggat 780

gtggggccca ttccacgggt tccgtgtcgg agctaacgcg ttaagcgtcc cgcctgggga 840

gtacggccgc aaggctaaaa ctcaaagaaa ttgacggggg cccgcacaag cggcggagca 900

tgcggattaa ttcgatgcaa cgcgaagaac cttacctggg cttgacatgt tcccgacggc 960

cccagagatg gggcttccct tcggggcggg ttcacaggtg gtgcatggtc gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgccc cgtgttgcca 1080

gcattttgga tgggaactca cgggggaccg ccggggttaa ctcggaggaa ggtggggatg 1140

acgtcagatc atcatgcccc tacgtccagg gcttcacgca tgctacaatg gccggtacaa 1200

cgggatgcga catggcgaca tggagcggat ccctgaaaac cggtctcagt tcggattgga 1260

gtctgcaacc cgactccatg aaggcggagt cgctagtaat cgcgaatcag caacgtcgcg 1320

gtgaatgcgt tcccgggcct tgtacacacc gcccgtcaag tcatgaaagt gggcagcacc 1380

<210> 360
<211> 1363
<212> DNA
<213> Bifidobacterium sp. HM2

<400> 360
gggttcgatt ctggctcagg atgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa tgcgtgaccg acctgcccca tgcaccggaa tagctcctgg 120

aaacgggtgg taatgccgga tgctgaaagg cggcatggga tggggtcgcg tcctatcagc 180

ttgatggcgg ggtaacggcc caccatggct tcgacgggta gccggcctga gagggcgacc 240

ggccacattg ggactgagat acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cgcaagcctg atgcagcgac gccgcgtgcg ggatgacggc cttcgggttg 360

taaaccgctt ttgatcggga gcatgagtgt acctttcgaa taagcaccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggtgca agcgttatcc ggaattattg ggcgtaaagg 480

gctcgtaggc ggttcgtcgc gtccggtgtg aaagtccatc gcttaacggt ggatctgcgc 540

cgggtacggg cgggctggag tgcggtaggg gagactggaa ttcccggtgt aacggtggaa 600

tgtgtagata tcgggaagaa caccaatggc gaaggcaggt ctctgggccg actgacgctg 660

aggagcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac gccgtaaacg 720

gtggatgctg gatgtggggc gttccgtgtc ggagctaacg cgttaagcat cccgcctggg 780

gagtacggcc gcaaggctaa aactcaaaga aattgacggg ggcccgcaca agcggcggag 840

catgcggatt aattcgatgc aacgcgaaga accttacctg ggcttgacat gcacaggtgg 900

tgcatggtcg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

ccctcgccct gtgttgccag cacgtgggaa ctcacggggg accgccgggg tcaactcgga 1020

ggaaggtggg gatgacgtca gatcatcatg ccccttacgt ccagggcttc acgcatgcta 1080

caatggccgg caacgggatg cgacacggcg acgtggagcg gatccctgcc ggtctcagtt 1140

cggatggagt ctgcaacccg actccagaag gcggagtcgc tagtaatcgc ggatcagcaa 1200

cgccgcggtg aatgcgttcc cgggccttgt acacaccgcc cgtcaagtca tgaaagtggg 1260

tagcacccga agccggtgcc tatggagccg tctaaggtga gactcgtgat tgggactaag 1320

tcgtaacaag gtagccgtac cggaaggtgc ggctggatca cct 1363

<210> 361
<211> 1245
<212> DNA
<213> Bifidobacterium sp. HMLN12

<220>
<221> modified_base
<222> (28)..(28)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (792)..(792)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1210)..(1210)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1217)..(1217)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1219)..(1219)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1228)..(1228)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1240)..(1241)
<223> a, c, t, g, unknown or other

<400> 361
aacgggagag gatgcgtgac cgacctgncc catgcaccgg aatagctcct ggaaacgggt 60

ggtaatgccg gatgttccac atgagcgcat gcgagtgtgg gaaaggcttt tgcggcatgg 120

gatggggtcg cgtcctatca gcttgttggt ggggtaacgg cctaccaagg cgttgacggg 180

tagccggcct gagagggcga ccggccacat tgggactgag atacggccca gactcctacg 240

ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc tgatgcagcg acgccgcgtg 300

cgggatggag gccttcgggt tgtaaaccgc ttttgttcaa gggcaaggca cggtttcggc 360

cgtgttgagt ggattgttcg aataagcacc ggctaactac gtgccagcag ccgcggtaat 420

acgtagggtg caagcgttat ccggatttat tgggcgtaaa gggctcgtag gcggttcgtc 480

gcgtccggtg tgaaagtcca tcgcttaacg gtggatccgc gccgggtacg ggcgggcttg 540

agtgcggtag gggagactgg aattcccggt gtaacggtgg aatgtgtaga tatcgggaag 600

aacaccaatg gcgaaggcag gtctctgggc cgttactgac gctgaggagc gaaagcgtgg 660

gaagcgaaca ggattagata ccctggtagt ccacgccgta aacggtggat gctggatgtg 720

gggccctttt tccgggtcct gtgtcggagc taacgcgtta agcatcccgc ctggggagta 780

cggccgcaag gntaaaactc aaagaaattg acgggggccc gcacaagcgg cggagcatgc 840

ggattaattc gatgcaacgc gaagaacctt acctgggctt gacatgtgcc tgacgatccc 900

ggagacgggg tttcccttcg gggcgggttc acaggtggtg catggtcgtc agctcgtgtc 960

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gccgcgtgtt gccagcgggt 1020

catgccggga actcacgtgg gaccgccggg gttaactcgg aggaaggtgg ggatgacgtc 1080

agatcatcat gccccttacg tccagggctt cacgcatgct acaatggccg gtacaacggg 1140

gtgcgacacg gtgacgtggg gcggatccct gaaaaccggt ctcagttcgg atcgcagtct 1200

gcaactcgan tgctaangng cggagtcnct agtaatcgcn natca 1245

<210> 362
<211> 1405
<212> DNA
<213> Bifidobacterium sp. M45

<220>
<221> modified_base
<222> (1215)..(1215)
<223> a, c, t, g, unknown or other

<400> 362
gcttaccatg cagtcgaacg ggatcccagg agcttgctcc tgggtgagag tggcgaacgg 60

gtgagtaatg cgtgaccgac ctgccccata caccggaata gctcctggaa acgggtggta 120

atgccggatg ctccagttga atgcatgtcc ttctgggaaa gattttgcgg tatgggatgg 180

ggtcgcgtcc tatcagcttg atggcggggt aacggcccac catggcttcc acgggtagcc 240

ggcctgagag ggcgaccggc cacattggga ctgaaatacg gcccagactc ctacgggagg 300

cagcagtggg gaatattgca caatgggcgc aagcctgatg cagcgacgcc gcgtgcggga 360

tgacggcctt cgggttgtaa accgcttttg actgggagca agcccttcgg ggtgagtgta 420

cctttcgaat aagcaccggc taactacgtg ccagcagccg cggtaatacg tagggtgcaa 480

gcgttatccg gaattattgg gcgtaaaggg ctcgtaagcg gttcgtcgcg tccggtgtga 540

aagtccatcg cttaacggtg gatccgcgcc gggtacgggc gggcttgagt gcggtagggg 600

agactggaat tcccggtgta acggtggaat gtgtagatat cgggaagaac accaatggcg 660

aaggcaggtc tctgggccgt cactgacgct gaggagcgaa agcgtgggga gcgaacagga 720

ttagataccc tggtagtcca cgccgtaaac ggtggatgct ggatgtgggg accattccac 780

ggtctccgtg tcggagccaa cgcgttaagc atcccgcctg gggagtacgg ccgcaaggct 840

aaaactcaaa gaaattgacg ggggcccgca caagcggcgg agcatgcgga ttaattcgat 900

gcaacgcgaa gaaccttacc tgggcttgac atgttcccga cagccccaga gatggggcct 960

cccttcgggg cgggttcaca ggtggtgcat ggtcgtcgtc agctcgtgtc gtgagatgtt 1020

gggttaagtc ccgcaacgag cgcaaccctc gccctgtgtt gccagcacgt cgtggtggga 1080

actcacgggg gaccgccggg gtcaactcgg aggaaggtgg ggatgacgtc agatcatcat 1140

gcccccttacg tccagggctt cacgcatgct acaatggccg gtacaacggg atgcgacact 1200

gtgaggtgga gcggntccct taaaaccggt ctcagttcgg attggagtct gcaacccgac 1260

tccatgaagg cggagtcgct agtaatcgcg gatcagcaac gccgcggtga atgcgttccc 1320

gggccttgta cacaccgccc gtcaagtcat gaaagtgggt agcacccgaa gccggtggcc 1380

caacctttg ggggagccgt ctaag 1405

<210> 363
<211> 1267
<212> DNA
<213> Bifidobacterium sp. MSX5B

<400> 363
gctggcggcg tgcttaacac atgcaagtcg aacgagtggc gaacgggtga gtaatgcgtg 60

accgacctgc cccatacacc ggaatagctc ctggaaacgg gtggtaatgc cggatgctga 120

aagtcggtat gggatggggt cgcgtcctat cagcttgatg gcggggtaac ggcccaccat 180

ggcttcgacg ggtagccggc ctgagagggc gaccggccac attgggactg agatacggcc 240

cagactccta cgggaggcag cagtggggaa tattgcacaa tgggcgcaag cctgatgcag 300

cgacgccgcg tgcgggatga aggccttcgg gttgtaaacc gcttttgatc gggagcatga 360

gtgtaccctt cgaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 420

tgcaagcgtt atccggaatt attgggcgta aagggctcgt aggcggttcg tcgcgtccgg 480

tgtgaaagcc catcgcttaa cggtgggtct gcgccgggta cgggcgggct ggagtgcggt 540

aggggagact ggaattcccg gtgtaacggt ggaatgtgta gatatcggga agaacaccaa 600

tggcgaaggc aggtctctgg gccgactgac gctgaggagc gaaagcgtgg ggagcgaaca 660

ggattagata ccctggtagt ccacgccgta aacggtggat gctggatgtg gggcgttccg 720

tgtcggagct aacgcgttaa gcatcccgcc tggggagtac ggccgcaagg ctaaaactca 780

aagaaattga cgggggcccg cacaagcggc ggagcatgcg gattaattcg atgcaacgcg 840

aagaacctta cctgggcttg acatgcacag gtggtgcatg gtcgtcgtca gctcgtgtcg 900

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg ccctgtgttg ccagcacgtg 960

ggaactcacg ggggaccgcc ggggtcaact cggaggaagg tggggatgac gtcagatcat 1020

catgcccctt acgtccaggg cttcacgcat gctacaatgg ccggcagcgg gatgcgacat 1080

ggcgacatgg agcggatccc tgccggtctc agttcggatg gagtctgcaa cccgactcca 1140

gaaggcggag tcgctagtaa tcgcggatca gcaacgccgc ggtgaatgcg ttcccgggcc 1200

ttgtacacac cgcccgtcaa gtcatgaaag tgggcagcac ccgaagccgg tgcctatgga 1260

gccgtct 1267

<210> 364
<211> 1303
<212> DNA
<213> Bifidobacterium sp. TM-7

<400> 364
tggctcagga tgaacgctgg cggcgtgctt aacacatgca agtcgaacga gtggcgaacg 60

ggtgagtaat gcgtgaccga cctgccccat acaccggaat agctcctgga aacgggtggt 120

aatgccggat gctgaaagtc ggtatgggat ggggtcgcgt cctatcagct tgatggcggg 180

gtaacggccc accatggctt cgacgggtag ccggcctgag agggcgaccg gccacattgg 240

gactgagata cggcccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc 300

gcaagcctga tgcagcgacg ccgcgtgcgg gatgacggcc ttcgggttgt aaaccgcttt 360

tgactgggag catgagtgta cctttcgaat aagcaccggc taactacgtg ccagcagccg 420

cggtaatacg tagggtgcaa gcgttatccg gaattattgg gcgtaaaggg ctcgtaggcg 480

gttcgtcgcg tccggtgtga aagtccatcg cttaacggtg gatccgcgcc gggtacgggc 540

gggcttgagt gcggtagggg agactggaat tcccggtgta acggtggaat gtgtagatat 600

cgggaagaac accaatggcg aaggcaggtc tctgggccga ctgacgctga ggagcgaaag 660

cgtggggagc gaacaggatt agataccctg gtagtccacg ccgtaaacgg tggatgctgg 720

atgtggggat ctccgtgtcg gagccaacgc gttaagcatc ccgcctgggg agtacggccg 780

caaggctaaa actcaaagaa attgacgggg gcccgcacaa gcggcggagc atgcggatta 840

attcgatgca acgcgaagaa ccttacctgg gcttgacatg cacaggtggt gcatggtcgt 900

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcgccctg 960

tgttgccagc acgtgggaac tcacggggga ccgccggggt caactcggag gaaggtgggg 1020

atgacgtcag atcatcatgc cccttacgtc cagggcttca cgcatgctac aatggccggc 1080

aacgggatgc gacactgtga ggtggagcgg atcccttccg gtctcagttc ggatggagtc 1140

tgcaacccga ctccagaagg cggagtcgct agtaatcgcg gatcagcaac gccgcggtga 1200

atgcgttccc gggccttgta cacaccgccc gtcaagtcat gaaagtgggt agcacccgaa 1260

gccggtgccc agggagccgt ctaaggtgag actcgtgatt ggg 1303

<210> 365
<211> 1392
<212> DNA
<213> Bifidobacterium thermophilum

<400> 365
tggctcagga tgaacgctgg cggcgtgctt aacacatgca agtcgaacgg gatcctgcaa 60

gcttgcttgc gggtgagagt ggcgaacggg tgagtaatgc gtgaccaacc tgccccatgc 120

tccggaatag ctcctggaaa cgggtggtaa tgccggatgt gccgggctcc tgcatggggg 180

tccgggaaag ctctggcggc gtgggatggg gtcgcgtcct atcagcttgt tggcggggtg 240

agggcccacc aaggcttcga cgggtagccg gcctgagagg gcgaccggcc acattgggac 300

tgagatacgg cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgca 360

agcctgatgc agcgacgccg cgtgcgggat ggaggccttc gggttgtaaa ccgcttttgt 420

ttgggagcaa gcccttcggg gtgagtgtac ctttcgaata agcaccggct aactacgtgc 480

cagcagccgc ggtaatacgt agggtgcgag cgttatccgg atttattggg cgtaaagggc 540

tcgtaggcgg ttcgtcgcgt ccggtgtgaa agtccatcgc ctaacggtgg atctgcgccg 600

ggtacgggcg ggctggagtg cggtagggga gactggaatt cccggtgtaa cggtggaatg 660

tgtagatatc gggaagaaca ccaatggcga aggcaggtct ctgggccgtt actgacgctg 720

aggagcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac gccgtaaacg 780

gtggatgctg gatgtggggc ccttccacgg gtcccgtgtc ggagccaacg cgttaagcat 840

cccgcctggg gagtacggcc gcaaggctaa aactcaaaga aattgacggg ggcccgcaca 900

agcggcggag catgcggatt aattcgatgc aacgcgaaga accttacctg ggcttgacat 960

gttcccgacg acggcggaga cgtcgtttcc cttcggggcg ggttcacagg tggtgcatgg 1020

tcgtcgtcag ctcgtgtcgt gagatgttgg gtcaagtccc gcaacgagcg caaccctcgc 1080

cccgtgttgc cagcgcgtca tggcgggaac tcacggggga ccgccggggt taacccggga 1140

ggaaggtggg gatgacgtca gatcatcatg ccccttacgt ccagggcttc acgcatgcta 1200

caatggccgg tacaacggga tgcgacatgg cgacatggag cggatccctg aaaaccggtc 1260

tcagttcgga tcggagcctg caacccggct ccgtgaaggc ggagtcgcta gtaatcgcgg 1320

atcagcaacg ccgcggtgaa tgcgttcccg ggccttgtac acaccgcccg tcaagtcatg 1380

aaagtgggca gc 1392

<210> 366
<211> 1412
<212> DNA
<213> Bifidobacterium urinalis

<400> 366
ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg ggatcctttc 60

aagcttgcta ggggggtgag agtggcgaac gggtgagtaa cgcgtgatta acctgccgtg 120

tagtttggaa tagctcctgg aaacgggtgg taatgccgaa tgttccacat gctcgcatgg 180

gtgtgtggga aaacgtttta gtgctatgcg atgggatcgc gtcctatcag cttgttggtg 240

gggtagtggc ctaccaaggc ttcgacgggt agccggcctg agagggcgac cggccacatt 300

gggactgaga tacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg 360

ggggaaccct gatgcagcga cgccgcgtgc gggatgacgg ccttcgggtt gtaaaccgct 420

tttattgggg agcaagcgtg agtgagtgta ccttttgaat aagcaccggc taactacgtg 480

ccagcagccg cggtaatacg tagggtgcaa gcgttgtccg gaattattgg gcgtaaagag 540

ctcgtaggcg gtttgtcgcg tctggtgtga aagtccatcg cttaacggtg gattggcgct 600

tggtacgggc aggctagagt gtagtagggg agactggaat tctcggtgta acggtggaat 660

gtgtagatat cgggaagaac accaatggcg aaggcaggtc tctgggctat tactgacgct 720

gaggagcgaa agcgtgggga gcgaacagga ttagataccc tggtaatcca cgccgtaaac 780

ggtggatgct ggatgtgggg ccctttccac gggttctgtg tcggagctaa cgcgttaagc 840

atcccgcctg gggagtacgg ccgcaaggct aaaactcaaa gaaattgacg ggggcccgca 900

caagcggcgg agcatgcgga ttaattcgat gcaacgcgaa gaaccttacc aagacttgac 960

atgttaacga tggcctcaga gatggggtgt ctcttcggag cgttttcaca ggtggtgcat 1020

ggtcgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt 1080

gtcttgtgtt gccagcacgt tatggtggga actcacaaga gaccgccggg gttaactcgg 1140

aggaaggtgg ggatgacgtc agatcatcat gcccccttacg tcttgggctt cacgcatgct 1200

acaatggccg gtacagcgag gtgcgatagg gtgacctgga gcggatctct gaaaaccggt 1260

ctcagttcgg atcggagcct gcaactcggc tccgtgaagg tggagtcgct agtaatcgca 1320

gatcagcaac gctgcggtga atgcgttccc gggccttgta cacaccgccc gtcaagtcat 1380

gaaagtgggc agcacccgaa gccggtggcc ta 1412

<210> 367
<211> 1551
<212> DNA
<213> Bilophila wadsworthia

<400> 367
tcaactggag agtttgattc tggctcagat tgaacgctgg cggcgtgctt aacacatgca 60

agtcgaacgt gaaagtcctt cggggcgagt aaagtggcgc acgggtgagt aacgcgtgga 120

taatctaccc ttaagatggg gataacggct ggaaacggtc gctaataccg aatacgctcc 180

cgattttatc gttgggggga aagatggcct ctgcttgcaa gctatcgctt aaggatgagt 240

ccgcgtccca ttagctagtt ggcggggtaa cggcccacca aggcgacgat gggtagccgg 300

tctgagagga tgaccggcca cactggaact ggaacacggt ccagactcct acgggaggca 360

gcagtgggga atattgcgca atgggcgaaa gcctgacgca gcgacgccgc gtgagggatg 420

aaggttctcg gatcgtaaac ctctgtcagg ggggaagaaa ccccctcgtg tgaataatgc 480

gagggcttga cggtaccccc aaaggaagca ccggctaact ccgtgccagc agccgcggta 540

atacggaggg tgcaagcgtt aatcggaatc actgggcgta aagcgcacgt aggcggcttg 600

gtaagtcagg ggtgaaatcc cacagcccaa ctgtggaact gcctttgata ctgccaggct 660

tgagtaccgg agagggtggc ggaattccag gtgtaggagt gaaatccgta gatatctgga 720

ggaacaccgg tggcgaaggc ggccacctgg acggtaactg acgctgaggt gcgaaagcgt 780

gggtagcaaa caggattaga taccctggta gtccacgctg taaacgatgg gtgctgggtg 840

ctgggatgta tgtctcggtg ccgtagctaa cgcgataagc accccgcctg gggagtacgg 900

tcgcaaggct gaaactcaaa gaaattgacg ggggcccgca caagcggtgg agtatgtggt 960

ttaattcgat gcaacgcgaa gaaccttacc caggcttgac atctagggaa cccttcggaa 1020

atgaaggggt gcccttcggg gagccctaag acaggtgctg catggctgtc gtcagctcgt 1080

gccgtgaggt gttgggttaa gtcccgcaac gagcgcaacc cctatcttca gttgccagca 1140

ggtaaggctg ggcactctgg agagaccgcc ccggtcaacg gggaggaagg tggggacgac 1200

gtcaagtcat catggccctt acgcctgggg ctacacacgt actacaatgg cgcgcacaaa 1260

gggtagcgag accgcgaggt ggagccaatc ccaaaaaacg cgtcccagtc cggattggag 1320

tctgcaactc gactccatga agtcggaatc gctagtaatt cgagatcagc atgctcgggt 1380

gaatgcgttc ccgggccttg tacacaccgc ccgtcacacc acgaaagtcg gttttacccg 1440

aagccggtga gctaactcgc aagaggagca gccgtctacg gtagggccga tgattggggt 1500

gaagtcgtaa caaggtagcc gtaggggaac ctgcggctgg atcacctcct t 1551

<210> 368
<211> 1296
<212> DNA
<213> Bisgaard Taxon

<400> 368
attgaacgct ggcggcaggc ttaacacatg caagtcgaac gagtggcgga cgggtgagta 60

atgcttggga atctggctta tggaggggga taactgcggg aaactgcagc taataccgcg 120

tattgaaagc tgccataaga tgagcccaag tgggattagg tagttggtgg ggtaaaggcc 180

taccaagccg acgatctcta gctggtctga gaggatgacc agccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggaaaccctg 300

acgcagccat gccgcgtgaa tgaagaaggc cttcgggttg taaagttctt tcggtaatga 360

ggatgacgtt aattacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 420

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcccgcaggc ggacttttaa 480

gtgagatgtg aaatccctgg gcttaaccta ggaactgcat ttcagactgg gagtctagag 540

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 600

taccgaaggc gaaggcagcc ccttgggaat actgacgctc atgtgcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 720

cttggtgccc gaagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 780

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 840

aacgcgaaga accttaccta ctcttgacat cgacaggtgc tgcatggctg tcgtcagctc 900

gtgttgtgaa atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag 960

cgatcgggaa ctcaaaggag actgccagtg acaaactgga ggaaggtggg gatgacgtca 1020

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggtgca cagagggcgg 1080

cgagacggcg acgttgagcg aatctcagtg catctaagtc cggatggagt ctgcaactcg 1140

actccagaag tcggaatcgc tagtaatcgc aaatcagaat gttgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccat gggagtgggt tgtaccagaa gtagatgctt 1260

agggcgttta ccacggtatg attcatgact ggggtg 1296

<210> 369
<211> 1296
<212> DNA
<213> Bisgaard Taxon

<400> 369
attgaacgct ggcggcaggc ttaacacatg caagtcgaac gagtggcgga cgggtgagta 60

atgcttggga atctggctta tggaggggga taactgcggg aaactgcagc taataccgcg 120

tattgaaagc tgccataaga tgagcccaag tgggattagg tagttggtgg ggtaaaggcc 180

taccaagccg acgatctcta gctggtctga gaggatgacc agccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggaaaccctg 300

acgcagccat gccgcgtgaa tgaagaaggc cttcgggttg taaagttctt tcggtaatga 360

ggatgacgtt aattacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 420

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcccgcaggc ggacttttaa 480

gtgagatgtg aaatccctgg gcttaaccta ggaactgcat ttcagactgg gagtctagag 540

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 600

taccgaaggc gaaggcagcc ccttgggaat actgacgctc atgtgcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 720

cttggtgccc gaagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 780

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 840

aacgcgaaga accttaccta ctcttgacat cgacaggtgc tgcatggctg tcgtcagctc 900

gtgttgtgaa atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag 960

cgatcgggaa ctcaaaggag actgccagtg acaaactgga ggaaggtggg gatgacgtca 1020

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggtgca cagagggcgg 1080

cgagacggcg acgttgagcg aatctcagtg catctaagtc cggatggagt ctgcaactcg 1140

actccagaag tcggaatcgc tagtaatcgc aaatcagaat gttgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccat gggagtgggt tgtaccagaa gtagatgctt 1260

agggcgttta ccacggtatg attcatgact ggggtg 1296

<210> 370
<211> 1296
<212> DNA
<213> Bisgaard Taxon

<400> 370
attgaacgct ggcggcaggc ttaacacatg caagtcgaac gagtggcgga cgggtgagta 60

atgcttggga atctggctta tggaggggga taactgcggg aaactgcagc taataccgcg 120

tattgaaagc tgccataaga tgagcccaag tgggattagg tagttggtgg ggtaaaggcc 180

taccaagccg acgatctcta gctggtctga gaggatgacc agccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggaaaccctg 300

acgcagccat gccgcgtgaa tgaagaaggc cttcgggttg taaagttctt tcggtaatga 360

ggatgacgtt aattacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 420

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcccgcaggc ggacttttaa 480

gtgagatgtg aaatccctgg gcttaaccta ggaactgcat ttcagactgg gagtctagag 540

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 600

taccgaaggc gaaggcagcc ccttgggaat actgacgctc atgtgcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 720

cttggtgccc gaagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 780

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 840

aacgcgaaga accttaccta ctcttgacat cgacaggtgc tgcatggctg tcgtcagctc 900

gtgttgtgaa atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag 960

cgatcgggaa ctcaaaggag actgccagtg acaaactgga ggaaggtggg gatgacgtca 1020

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggtgca cagagggcgg 1080

cgagacggcg acgttgagcg aatctcagtg catctaagtc cggatggagt ctgcaactcg 1140

actccagaag tcggaatcgc tagtaatcgc aaatcagaat gttgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccat gggagtgggt tgtaccagaa gtagatgctt 1260

agggcgttta ccacggtatg attcatgact ggggtg 1296

<210> 371
<211> 1296
<212> DNA
<213> Bisgaard Taxon

<400> 371
attgaacgct ggcggcaggc ttaacacatg caagtcgaac gagtggcgga cgggtgagta 60

atgcttggga atctggctta tggaggggga taactgcggg aaactgcagc taataccgcg 120

tattgaaagc tgccataaga tgagcccaag tgggattagg tagttggtgg ggtaaaggcc 180

taccaagccg acgatctcta gctggtctga gaggatgacc agccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggaaaccctg 300

acgcagccat gccgcgtgaa tgaagaaggc cttcgggttg taaagttctt tcggtaatga 360

ggatgacgtt aattacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 420

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcccgcaggc ggacttttaa 480

gtgagatgtg aaatccctgg gcttaaccta ggaactgcat ttcagactgg gagtctagag 540

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 600

taccgaaggc gaaggcagcc ccttgggaat actgacgctc atgtgcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 720

cttggtgccc gaagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 780

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 840

aacgcgaaga accttaccta ctcttgacat cgacaggtgc tgcatggctg tcgtcagctc 900

gtgttgtgaa atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag 960

cgatcgggaa ctcaaaggag actgccagtg acaaactgga ggaaggtggg gatgacgtca 1020

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggtgca cagagggcgg 1080

cgagacggcg acgttgagcg aatctcagtg catctaagtc cggatggagt ctgcaactcg 1140

actccagaag tcggaatcgc tagtaatcgc aaatcagaat gttgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccat gggagtgggt tgtaccagaa gtagatgctt 1260

agggcgttta ccacggtatg attcatgact ggggtg 1296

<210> 372
<211> 1477
<212> DNA
<213> Blastomonas natatoria

<400> 372
agagtttgat cctggctcag aacgaacgct ggcggcatgc ctaacacatg caagtcgaac 60

gaaggcttcg gccttagtgg cgcacgggtg cgtaacgcgt gggaatctgc ccttgggttc 120

ggaataacag tgagaaatta ctgctaatac cggatgatga cttcggtcca aagatttatc 180

gcccaaggat gagcccgcgt aagattagct agttggtgag gtaaaggctc accaaggcga 240

cgatctttag ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggc gaaagcctga tccagcaatg 360

ccgcgtgagt gatgaaggcc ttagggttgt aaagctcttt taccagggat gataatgaca 420

gtacctggag aataagctcc ggctaactcc gtgccagcag ccgcggtaat acggagggag 480

ctagcgttgt tcggaattac tgggcgtaaa gcgcacgtag gcggccattc aagtcagagg 540

tgaaagcccg gggctcaacc ccggaactgc ctttgaaact agatggcttg aatcttggag 600

aggcgagtgg aattccgagt gtagaggtga aattcgtaga tattcggaag aacaccagtg 660

gcgaaggcga ctcgctggac aagtattgac gctgaggtgc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgata actagctgtc cgggttcatg 780

gaacttgggt ggcgcagcta acgcattaag ttatccgcct ggggagtacg gtcgcaagat 840

taaaactcaa aggaattgac gggggcctgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac cagcgtttga catgtctagt atgtttccca gagatgggtt 960

acttcagttc ggctggctag aacacaggtg ctgcatggct gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca accctcgtct ttagttgcca tcatttagtt 1080

gggcactcta aagaaaccgc cggtgataag ccggaggaag gtggggatga cgtcaagtcc 1140

tcatggccct tacacgctgg gctacacacg tgctacaatg gcggtgacag tgagcagcta 1200

gatcgcgaga tcatgctaat ctcaaaaagc cgtctcagtt cggattgttc tctgcaactc 1260

gagagcatga aggcggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1320

ccaggccttg tacacaccgc ccgtcacacc atgggagttg gattcacccg aaggcgctgc 1380

gctaacccgc aagggaggca ggcgaccacg gtgggttcag cgactggggt gaagtcgtaa 1440

caaggtagcc gtaggggaac ctgcggctgg atcacct 1477

<210> 373
<211> 1493
<212> DNA
<213> Blautia coccoides

<400> 373
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gaagcgctaa gacagatttc ttcggattga agtctttgtg actgagcggc ggacgggtga 120

gtaacgcgtg ggtaacctgc ctcatacagg gggataacag ttagaaatga ctgctaatac 180

cgcataagcg cacaggaccg catggtctgg tgtgaaaaac tccggtggta tgagatggac 240

ccgcgtctga ttagctagtt ggaggggtaa cggcccacca aggcgacgat cagtagccgg 300

cctgagaggg tgaacggcca cattgggact gagacacggc ccagactcct acgggaggca 360

gcagtgggga atattgcaca atgggggaaa ccctgatgca gcgacgccgc gtgaaggaag 420

aagtatctcg gtatgtaaac ttctatcagc agggaagaaa atgacggtac ctgactaaga 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt aggggcaag cgttatccgg 540

atttactggg tgtaaaggga gcgtagacgg aagagcaagt ctgatgtgaa aggctggggc 600

ttaaccccag gactgcattg gaaactgttg ttctagagtg ccggagaggt aagcggaatt 660

cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccagtggcga aggcggctta 720

ctggacggta actgacgttg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatacta ggtgtcgggt ggcaaagcca ttcggtgccg 840

cagcaaacgc aataagtatt ccacctgggg agtacgttcg caagaatgaa actcaaagga 900

attgacgggg acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccaag tcttgacatc cctctgaccg tcccgtaacg ggggcttccc ttcggggcag 1020

aggagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttat ccttagtagc cagcacatga tggtgggcac tctagggaga 1140

ctgccgggga taacccggag gaaggcgggg acgacgtcaa atcatcatgc cccttatgat 1200

ttgggctaca cacgtgctac aatggcgtaa acaaagggaa gcgagacagc gatgttgagc 1260

gaatcccaaa aataacgtcc cagttcggac tgcagtctgc aactcgactg cacgaagctg 1320

gaatcgctag taatcgcgga tcagaatgcc gcggtgaata cgttcccggg tcttgtacac 1380

accgcccgtc acaccatggg agtcagtaac gcccgaagtc agtgacctaa ccgaaaggaa 1440

ggagctgccg aaggcgggac cgataactgg ggtgaagtcg taacaaggta acc 1493

<210> 374
<211> 1362
<212> DNA
<213> Blautia glucerasea

<220>
<221> modified_base
<222> (944)..(944)
<223> a, c, t, g, unknown or other

<400> 374
tggaagcttc ggtggaaata gcttgttcct agtggcggac gggtgagtaa cgcgtgggta 60

acctgcctca cactggggga taacagtcag aaatgactgc taataccgca taagcgcacg 120

ggattgcatg atccagtgtg aaaaactccg gtggtgtgag atggacccgc gttggattag 180

ccagttggca gggtaacggc ctaccaaagc gacgatccat agccggcctg agagggtgga 240

cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 300

tgcacaatgg gggaaaccct gatgcagcga cgccgcgtga aggaagaagt atctcggtat 360

gtaaacttct atcagcaggg aagaaaatga cggtacctga ctaagaagcc ccggctaact 420

acgtgccagc agccgcggta atacgtaggg ggcaagcgtt atccggattt actgggtgta 480

aagggagcgt agacggagca gcaagtctga tgtgaaaggc aggggctcaa cccctggact 540

gcattggaaa ctgttgatct tgagtaccgg agaggtaagc ggaattccta gtgtagcggt 600

gaaatgcgta gatattagga ggaacaccag tggcgaaggc ggcttactgg acggtaactg 660

acgttgaggc tcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg 720

taaacgatga atactaggtg tcgggtgcag agccattcgg tgccgcagca aacgcagtaa 780

gtattccacc tggggagtac gttcgcaaga atgaaactca aaggaattga cggggacccg 840

cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaagtcttg 900

acatccctat gaccggcgag taacgtcgcc ttttcttcgg agcngaggag acaggtggtg 960

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1020

cctatcctta gtagccagcg gtttggccgg gcactctgag gagactgcca gggataacct 1080

ggaggaaggc ggggatgacg tcaaatcatc atgcccctta tgatttgggc tacacacgtg 1140

ctacaatggc gtaaacaaag ggaagcgaga gtgtgagctt aagcaaatcc caaaaataac 1200

gtcccagttc ggactgcagt ctgcaactcg actgcacgaa gctggaatcg ctagtaatcg 1260

cggatcagaa tgccgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcacacca 1320

tgggagtcag taacgcccga agtcagtgac cgaaccgaaa gg 1362

<210> 375
<211> 1026
<212> DNA
<213> Blautia glucerasei

<220>
<221> modified_base
<222> (10)..(10)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (37)..(39)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (861)..(861)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (932)..(934)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (941)..(943)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (950)..(951)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (953)..(953)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (957)..(957)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (965)..(965)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (967)..(967)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (970)..(972)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (991)..(992)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1019)..(1019)
<223> a, c, t, g, unknown or other

<400> 375
cgaacggggn acattttatt ggaagcttcg gctaggnnnt atagcttgtt cctagtggcg 60

gacgggtgag taacgcgtgg gtaacctgcc tcacactggg ggataacagt cagaaatgac 120

tgctaatacc gcataagcgc acgggattgc atgatccagt gtgaaaaact ccggtggtgt 180

gagatggacc cgcgttggat tagccagttg gcagggtaac ggcctaccaa agcgacgatc 240

catagccggc ctgagagggt ggacggccac attgggactg agacacggcc cagactccta 300

cgggaggcag cagtggggaa tattgcacaa tgggggaaac cctgatgcag cgacgccgcg 360

tgaaggaaga agtatctcgg tatgtaaact tctatcagca gggaagaaaa tgacggtacc 420

tgactaagaa gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc 480

gttatccgga tttactgggt gtaaagggag cgtagacgga gcagcaagtc tgatgtgaaa 540

ggcaggggct caacccctgg actgcattgg aaactgttga tcttgagtac cggagaggta 600

agcggaattc ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa 660

ggcggcttac tggacggtaa ctgacgttga ggctcgaaag cgtggggagc aaacaggatt 720

agataccctg gtagtccacg ccgtaaacga tgaatactag gtgtcgggtg gcagagccat 780

tcggtgccgc agcaaacgca gtaagtattc cacctgggga gtacgttcgc aagaatgaaa 840

ctcaaaggaa ttgacgggga nccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 900

cgcgaagaac cttaccaagt cttgacatcc cnnngaccgg nnngtaacgn ngncttnctc 960

ttcgnancan nngagacagg tggtgcatgg nngtcgtcag ctcgtgtcgt gagatgttng 1020

gttaag 1026

<210> 376
<211> 1157
<212> DNA
<213> Blautia hansenii

<400> 376
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gaagcactta tcattgactc ttcggaagat ttgatatttg actgagcggc ggacgggtga 120

gtaacgcgtg ggtaacctgc ctcatacagg ggaataacag ttagaaatgg ctgctaatgc 180

cgcataagcg cacaggatcg catggtctgg tgtgaaaaac tgaggtggta tgagatggac 240

ccgcgtctga ttaggtagtt ggtggggtaa cggcctacca agccgacgat cagtagccgg 300

cctgagaggg tgaacggcca cattgggact gagacacggc ccagactcct acgggaggca 360

gcagtgggga atattgcaca atgggggaaa ccctgatgca gcgacgccgc gtgaaggaag 420

aagtatctcg gtatgtaaac ttctatcagc agggaagaaa atgacggtac ctgactaaga 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt agggggcaag cgttatccgg 540

atttactggg tgtaaaggga gcgtagacgg aagagcaagt ctgatgtgaa aggctggggc 600

ttaaccccag gactgcattg gaaactgttt ttctagagtg ccggagaggt aagcggaatt 660

cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccagtggcga aggcggctta 720

ctggacggta actgacgttg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatacta ggtgtcgggg tgcaaagcag ttcggtgccg 840

cagcaaacgc aataagtatt ccacctgggg agtacgttcg caagaatgaa actcaaagga 900

attgacgggg acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccaag tcttgacatc tgcctgaccg ttccttgacc ggagctttcc ttcgggacag 1020

gcaagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccctat ccttagtagc cagcagttcg gctgggcact ctagggagac 1140

tgccggggat aacccgg 1157

<210> 377
<211> 975
<212> DNA
<213> Blautia hydrogenotrophica

<220>
<221> modified_base
<222> (23)..(23)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (947)..(947)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (952)..(953)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (963)..(964)
<223> a, c, t, g, unknown or other

<400> 377
tttcggttga agttttctat tgnctgagtg gcggacgggt gagtaacgcg tgggtaacct 60

gccctataca gggggataac agttagaaat gactgctaat accgcataag cgcacagctt 120

cgcatgaagc ggtgtgaaaa actgaggtgg tataggatgg acccgcgttg gattagctag 180

ttggtgaggt aacggcccac caaggcgacg atccatagcc ggcctgagag ggtgaacggc 240

cacattggga ctgagacacg gcccaaactc ctacgggagg cagcagtggg gaatattgca 300

caatggggga aaccctgatg cagcgacgcc gcgtgaagga agaagtatct cggtatgtaa 360

acttctatca gcagggaaga aagtgacggt acctgactaa gaagccccgg ctaattacgt 420

gccagcagcc gcggtaatac gtaaggggca agcgttatcc ggatttactg ggtgtaaagg 480

gagcgtagac ggtttggcaa gtctgatgtg aaaggcatgg gctcaacctg tggactgcat 540

tggaaactgt cagacttgag tgccggagag gcaagcggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaggaa caccagtggc gaaggcggcc tgctggacgg taactgacgt 660

tgaggctcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgctgtaaa 720

cgatgaatac taggtgtcgg gtggcaaagc cattcggtgc cgcagcaaac gcaataagta 780

ttccacctgg ggagtacgtt cgcaagaatg aaactcaaag gaattgacgg ggacccgcac 840

aagcggtgga gcatgtggtt taattcgaag caacgcgaag aaccttacca aatcttgaca 900

tccctctgac cgggaagtaa tgttcccttt tcttcggaac agagganaca gnnggtgcat 960

ggnngtcgtc agctc 975

<210> 378
<211> 998
<212> DNA
<213> Blautia luti

<220>
<221> modified_base
<222> (33)..(33)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (765)..(767)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (771)..(775)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (915)..(916)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (929)..(929)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (940)..(940)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (949)..(949)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (958)..(958)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (966)..(968)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (972)..(973)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (975)..(976)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (979)..(979)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (981)..(981)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (984)..(985)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (991)..(992)
<223> a, c, t, g, unknown or other

<400> 378
tcgaacggga attactttat tgaaacttcg gtngatttaa tttaattcta gtggcggacg 60

ggtgagtaac gcgtgggtaa cctgccttat acaggggat aacagtcaga aatggctgct 120

aataccgcat aagcgcacag agctgcatgg ctcagtgtga aaaactccgg tggtataaga 180

tggacccgcg ttggattagc ttgttggtgg ggtaacggcc caccaaggcg acgatccata 240

gccggcctga gagggtgaac ggccacattg ggactgagac acggcccaga ctcctacggg 300

aggcagcagt ggggaatatt gcacaatggg ggaaaccctg atgcagcgac gccgcgtgaa 360

ggaagaagta tctcggtatg taaacttcta tcagcaggga agatagtgac ggtacctgac 420

taagaagccc cggctaacta cgtgccagca gccgcggtaa tacgtagggg gcaagcgtta 480

tccggattta ctgggtgtaa agggagcgta gacggtgtgg caagtctgat gtgaaaggca 540

tgggctcaac ctgtggactg cattggaaac tgtcatactt gagtgccgga ggggtaagcg 600

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg 660

gcttactgga cggtaactga cgttgaggct cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgaa tactaggtgt cgggnnncat nnnnncttcg 780

gtgccgtcgc aaacgcagta agtattccac ctggggagta cgttcgcaag aatgaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 900

gaagaacctt accanntctt gacatcccnc tgaccggatn ctttaatcng gatctttncc 960

ttcggnnnag anngnnacng nggnncatgg nngtcgtc 998

<210> 379
<211> 1393
<212> DNA
<213> Blautia producta

<220>
<221> modified_base
<222> (10)..(10)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (15)..(16)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (42)..(42)
<223> a, c, t, g, unknown or other

<400> 379
agcgaagcan cttgnncgga tttcttcgga ttgaagtttt tngtgactga gcggcggacg 60

ggtgagtaac gcgtgggtaa cctgcctcat acaggggat aacagttaga aatggctgct 120

aataccgcat aagcgcacag gaccgcatgg tctggtgtga aaaactccgg tggtatgaga 180

tggacccgcg tctgattagc tagttggagg ggtaacggcc caccaaggcg acgatcagta 240

gccggcctga gagggtgaac ggccacattg ggactgagac acggcccaga ctcctacggg 300

aggcagcagt ggggaatatt gcacaatggg ggaaaccctg atgcagcgac gccgcgtgaa 360

ggaagaagta tctcggtatg taaacttcta tcagcaggga agaaaatgac ggtacctgac 420

taagaagccc cggctaacta cgtgccagca gccgcggtaa tacgtagggg gcaagcgtta 480

tccggattta ctgggtgtaa agggagcgta gacggaagag caagtctgat gtgaaaggct 540

ggggcttaac cccaggactg cattggaaac tgtttttcta gagtgccgga gaggtaagcg 600

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg 660

gcttactgga cggtaactga cgttgaggct cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgaa tactaggtgt cgggtggcaa agccattcgg 780

tgccgcagca aacgcaataa gtattccacc tggggagtac gttcgcaaga atgaaactca 840

aaggaattga cggggacccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 900

aagaacctta ccaagtcttg acatccctct gaccggcccg taacggggcc ttcccttcgg 960

ggcagaggag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1020

gtcccgcaac gagcgcaacc cctatcctta gtagccagca ggtgaagctg ggcactctag 1080

ggagactgcc ggggataacc cggaggaagg cggggacgac gtcaaatcat catgcccctt 1140

atgatttggg ctacacacgt gctacaatgg cgtaaacaaa gggaagcgag acagcgatgt 1200

tgagcaaatc ccaaaaataa cgtcccagtt cggactgcag tctgcaactc gactgcacga 1260

agctggaatc gctagtaatc gcgaatcaga atgtcgcggt gaatacgttc ccgggtcttg 1320

tacacaccgc ccgtcacacc atgggagtca gtaacgcccg aagttcagtg acccaacctt 1380

ataggaggga gct 1393

<210> 380
<211> 1366
<212> DNA
<213> Blautia schinkii

<400> 380
tgacagagac ttcggttgaa gtcgttataa tcctagtggc ggacgggtga gtaacgcgtg 60

ggtaacctgc ctcacactgg gggataacag tcagaaatga ctgctaatac cgcataagcg 120

cacggggctg catggttcag tgtgaaaaac tccggtggtg tgagatggac ccgcgttgga 180

ttagccagtt ggcagggtaa cggcctacca aagcgacgat ccatagccgg cctgagaggg 240

tggacggcca cattgggact gagacacggc ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggggaaa ccctgatgca gcgacgccgc gtgaaggaag aagtatctcg 360

gtatgtaaac ttctatcagc agggaagaaa atgacggtac ctgactaaga agccccggct 420

aactacgtgc cagcagccgc ggtaatacgt agggggcaag cgtatccgga tttactgggt 480

gtaaagggag cgtagacgga gcagcaagtc tgatgtgaaa ggcgggggct caacccccgg 540

actgcattgg aaactgttga tcttgagtac cggagaggta agcggaattc ctagtgtagc 600

ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa ggcggcttac tggacggtaa 660

ctgacgttga ggctcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 720

ccgtaaacga tgaatactag gtgtcgggtg gcagagccat tcggtgccgc agcaaacgca 780

gtaagtattc cacctgggga gtacgttcgc aagaatgaaa ctcaaaggaa ttgacgggga 840

cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaagt 900

cttgacatcc ctatgaccgg tgagtaacgt cacctttcct tcgggacaga ggagacaggt 960

ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1020

aacccctatc cttagtagcc agcggtttgg ccgggcactc tgaggagact gccagggata 1080

acctggagga aggcggggat gacgtcaaat catcatgccc cttatgattt gggctacaca 1140

cgtgctacaa tggcgtaaac aaagggaagc gagagtgtga gcttaagcaa atcccaaaaa 1200

taacgtccca gttcggactg cagtctgcaa ctcgactgca cgaagctgga atcgctagta 1260

atcgcggatc agaatgccgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac 1320

accatgggag tcagtaacgc ccgaagtcag tgaccgaacc gaaagg 1366

<210> 381
<211> 1015
<212> DNA
<213> Blautia sp. M25

<220>
<221> modified_base
<222> (77)..(77)
<223> a, c, t, g, unknown or other

<400> 381
gaaggaagaa gtatctcggt atgtaaactt ctatcagcag ggaagataat gacggtacct 60

gactaagaag ccccggncta actacgtgcc agcagccgcg gtaatacgta gggggcgagc 120

gttatccgga tttactgggt gtaaagggag cgtagacggc gtatcaagtc tgatgtgaaa 180

ggcaggggct taacccctgg actgcattgg aaactggtat gcttgagtgc cggaggggta 240

agcggaattc ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa 300

ggcggcttac tggacggtaa ctgacgttga ggctcgaaag cgtggggagc aaacaggatt 360

agataccctg gtagtccacg ccgtaaacga tgaatactag gtgtctggga gcacagctct 420

taggtgccgc cgcaaacgca ttaagtattc cacctgggga gtacgttcgc aagaatgaaa 480

ctcaaaggaa ttgacgggga cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 540

cgcgaagaac cttaccaaat cttgacatcc ctctgacaga gtatgtaatg tacttttcct 600

tcgggacagg ggagacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 660

ttaagtcccg caacgagcgc aacccctatc cttagtagcc agcaagtaat gttgggcact 720

ctgaggagac tgccagggat aacctggagg aaggcgggga tgacgtcaaa tcatcatgcc 780

ccttatgatt tgggctacac acgtgctaca atggcgtaaa caaagggaag cgaacctgtg 840

agggtgggca aatctcaaaa ataacgtccc agttcggact gcagtctgca actcgactgc 900

acgaagctgg aatcgctagt aatcgcggat cagaatgccg cggtgaatac gttcccgggt 960

cttgtacaca ccgcccgtca caccatggga gtcagtaacg cccgaagtca gtgac 1015

<210> 382
<211> 1372
<212> DNA
<213> Blautia stercoris

<400> 382
tgcaagtcga gcgaagcgct tacgacagaa ccttcggggg aagatgtaag ggactgagcg 60

gcggacgggt gagtaacgcg tgggtaacct gcctcataca gggggataac agttggaaac 120

ggctgctaat accgcataag cgcacggtat cgcatgatac agtgtgaaaa actccggtgg 180

tatgagatgg acccgcgtct gattagctag ttggaggggt aacggcccac caaggcgacg 240

atcagtagcc ggcctgagag ggtgaacggc cacattggga ctgagacacg gcccagactc 300

ctacgggagg cagcagtggg gaatattgca caatggggga aaccctgatg cagcgacgcc 360

gcgtgaagga agaagtatct cggtatgtaa acttctatca gcagggaaga aaatgacggt 420

acctgactaa gaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggcga 480

agcgttatcc ggatttactg ggtgtaaagg gagcgtagac ggaagagcaa gtctgatgtg 540

aaaggctggg gcttaacccc aggactgcat tggaaactgt ttttcttgag tgccggagag 600

gtaagcggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaggaa caccagtggc 660

gaaggcggct tactggacgg taactgacgt tgaggctcga aagcgtgggg agcaaacagg 720

attagatacc ctggtagtcc acgccgtaaa cgatgaatac taggtgttgg ggagcaaagc 780

tcttcggtgc cgcagcaaac gcaataagta ttccacctgg ggagtacgtt cgcaagaatg 840

aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 900

caacgcgaag aaccttacca agtcttgaca tcgatctgac cggttcgtaa tggaaccttt 960

ccttcgggac agagaagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt 1020

gggttaagtc ccgcaacgag cgcaacccct atcctcagta gccagcaggt gaagctgggc 1080

actctgtgga gactgccagg gataacctgg aggaaggcgg ggacgacgtc aaatcatcat 1140

gccccttatg atttgggcta cacacgtgct acaatggcgt aaacaaaggg aagcgagccc 1200

gcgaggggga gcaaatccca aaaataacgt cccagttcgg actgcagtct gcaactcgac 1260

tgcacgaagc tggaatcgct agtaatcgcg aatcagaatg tcgcggtgaa tacgttcccg 1320

ggtcttgtac acaccgcccg tcacaccatg ggagtcagta acgcccgaag tc 1372

<210> 383
<211> 1375
<212> DNA
<213> Blautia wexlerae

<220>
<221> modified_base
<222> (12)..(13)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (17)..(17)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (21)..(21)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (27)..(27)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (47)..(47)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (917)..(917)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (958)..(958)
<223> a, c, t, g, unknown or other

<400> 383
tcgaacggga anntatnttc nattganact tcggtggatt tagattntat ttcgtagtgg 60

cggacgggtg agtaacgcgt gggtaacctg ccttatacag ggggataaca gtcagaaatg 120

gctgctaata ccgcataagc gcacagagct gcatggctca gtgtgaaaaa ctccggtggt 180

ataagatgga cccgcgttgg attagctagt tggtggggta acggcccacc aaggcgacga 240

tccatagccg gcctgagagg gtgaacggcc acattgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtgggg aatattgcac aatgggggaa accctgatgc agcgacgccg 360

cgtgaaggaa gaagtatctc ggtatgtaaa cttctatcag cagggaagat agtgacggta 420

cctgactaag aagccccggc taactacgtg ccacagccgc gaaggggca gcgttatccg 480

gatttactgg gtgtaaaggg agcgtagacg gtgtggcaag ttgatgtgaa aggcatgggc 540

tcaacctgtg gatgcattgg aaactgtcat acttgagtgc cggaggggta agcggaattc 600

tagtgtagcg gtgaaatgcg tagatattag gaggaacacc agtggcgaag gcggcttact 660

ggacggtaac tgacgttgag gctcgaaagc gtggggagca aacaggatta gataccctgg 720

tagtccacgc cgtaaacgat gaatactagg tgtcgggtgg caaccttcgg tgccgtcgca 780

aacgcagtaa gtattccacc tggggagtac gttcgcaaga atgaaactca aaggaattga 840

cggggacccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta 900

ccaagtcttg acatccnatt taacgggtct taaaggggcg tttacgttgg ggaaagtntg 960

atatgagagg catgtgctta acctgctcgt gtcgtgagat gttgggttaa gtcccgcaac 1020

gagcgcaacc cctatcctca gtagccagca tttaaggtgg gcactctggg gagactgcca 1080

gggataacct ggaggaaggc ggggatgacg tcaaatcatc atgcccctta tgatttgggc 1140

tacacacgtg ctacaatggc gtaaacaaag ggaagcgaga ttgtgagatg gagcaaatcc 1200

caaaaataac gtcccagttc ggactgtagt ctgcaacccg actacacgaa gctggaatcg 1260

ctagtaatcg cggatcagaa tgccgcggtg aatacgttcc cgggtcttgt acacaccgcc 1320

cgtcacacca tgggagtcag taacgcccga agtcagtgac ctaactgcaa agaag 1375

<210> 384
<211> 1464
<212> DNA
<213> Bordetella bronchiseptica

<220>
<221> modified_base
<222> (87)..(87)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (160)..(160)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (243)..(243)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (331)..(331)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (380)..(380)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (958)..(958)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1287)..(1287)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1391)..(1391)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1409)..(1409)
<223> a, c, t, g, unknown or other

<400> 384
aactgaagag tttgatcctg gctcagattg aacgctggcg ggatgcttta cacatgcaag 60

tcggacggca gcacgggctt cggcctngtg gcgagtggcg aacgggtgag taatgtatcg 120

gaacgtgccc agtagcgggg gataactacg cgaaagcgtn gctaataccg catacgccct 180

acgggggaaa gcgggggacc ttcgggcctc gcactattgg agcggccgat atcggattag 240

ctngttggtg gggtaacggc ctaccaaggc gacgatccgt agctggtttg agaggacgac 300

cagccacact gggactgaga cacggcccag nctcctacgg gaggcagcag tggggaattt 360

tggacaatgg gggcaacccn gatccagcca tcccgcgtgt gcgatgaagg ccttcgggtt 420

gtaaagcact tttggcagga aagaaacggc acgggctaat atcctgtgca actgacggta 480

cctgcagaat aagcaccggc taactacgtg ccagcagccg cggtaatacg tagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg tgcgcaggcg gttcggaaag aaagatgtga 600

aatcccaggg cttaaccttg gaactgcatt tttaactacc gggctagagt gtgtcagagg 660

gaggtggaat tccgcgtgta gcagtgaaat gcgtagatat gcggaggaac accgatggcg 720

aaggcagcct cctgggataa cactgacgct catgcacgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccctaaac gatgtcaact agctgttggg gccttcgggc 840

cttggtagcg cagctaacgc gtgaagttga ccgcctgggg agtacggtcg caagattaaa 900

actcaaagga attgacgggg acccgcacaa gcggtggatg atgtggatta attcgatnca 960

acgcgaaaaa ccttacctac ccttgacatg tctggaatcc cgaagagatt tgggagtgct 1020

cgcaagagaa ccggaacaca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt gtcattagtt gctacgaaag ggcactctaa 1140

tgagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct catggccctt 1200

atgggtaggg cttcacacgt catacaatgg tcgggacaga gggtcgccaa cccgcgaggg 1260

ggagccaatc ccagaaaccc gatcgtngtc cggatcgcag tctgcaactc gactgcgtga 1320

agtcggaatc gctagtaatc gcggatcagc atgtcgcggt gaatacgttc ccgggtcttg 1380

tacacaccgc ncgtcacacc atgggagtng gttttaccag aagtagttag cctaaccgca 1440

agggggggcga ttaccacggt agga 1464

<210> 385
<211> 1292
<212> DNA
<213> Bordetella holmesii

<400> 385

attgaacgct ggcgggatgc tttacacatg caagtcggac gagtggcgaa cgggtgagta 60

atgtatcgga acgtgcccgg tagcggggga taactacgcg aaagcgtggc taataccgca 120

tacggaaagg cactattgga gcggccgata tcggattagc tagttggtgg ggtaacggcc 180

taccaaggcg acgatccgta gctggtttga gaggacgacc agtcacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatttt ggacaatggg ggcaaccctg 300

atccagccat cccgcgtgtg cgatgaaggc cttcgggttg taaagcactt ttggcaggaa 360

agatgacggt acctgcagaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac 420

gtagggtgca agcgttaatc ggaattactg ggcgtaaagc gtgcgcaggc ggttcggaaa 480

gaaagatgtg aaatcccagg gcttaacctt ggaactgcat ttttaactac cgagctagag 540

tgtgtcagag ggaggtggaa ttccgcgtgt agcagtgaaa tgcgtagata tgcggaggaa 600

caccgatggc gaaggcagcc tcctgggata actgacgctc atgcacgaaa gtgtggggag 660

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcaacta gctgttgggg 720

ccttggtagc gcagctaacg cgtgaagttg accgcctggg gagtacggtc gcaagattaa 780

aactcaaagg aattgacggg gacccgcaca agcggtggat gatgtggatt aattcgatgc 840

aacgcgaaaa accttaccta cccttgacat gcacaggtgc tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtcat tagttgctac 960

ggcactctaa tgagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct 1020

catggccctt atgggtaggg cttcacacgt catacaatgg tcggcagagg gttgccaacc 1080

cgcgaggggg agccaatccc agccggtcgt agtccggacg cagtctgcaa ctcgactgcg 1140

gaagtcggaa tcgctagtaa tcgcggatca gcatgtcgcg gtgaatacgt tcccgggtct 1200

tgtacacacc gcccgtcaca ccatgggagt gggttttacc agaagtagtt gcctagggcg 1260

attaccacgg taggattcat gactggggtg aa 1292

<210> 386
<211> 1464
<212> DNA
<213> Bordetella parapertussis

<220>
<221> modified_base
<222> (87)..(87)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (243)..(243)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (331)..(331)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (1229)..(1229)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1371)..(1371)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1391)..(1391)
<223> a, c, t, g, unknown or other

<400> 386
aactgaagag tttgatcctg gctcagattg aacgctggcg ggatgcttta cacatgcaag 60

tcggacggca gcacgggctt cggcctngtg gcgagtggcg aacgggtgag taatgtatcg 120

gaacgtgccc agtagcgggg gataactacg cgaaagcgta gctaataccg catacgccct 180

acgggggaaa gcgggggacc ttcgggcctc gcactattgg agcggccgat atcggattag 240

ctngttggtg gggtaacggc ctaccaaggc gacgatccgt agctggtttg agaggacgac 300

cagccacact gggactgaga cacggcccag nctcctacgg gaggcagcag tggggaattt 360

tggacaatgg gggcaaccct gatccagcca tcccgcgtgt gcgatgaagg ccttcgggtt 420

gtaaagcact tttggcagga aagaaacggc acgggctaat atcctgtgca actgacggta 480

cctgcagaat aagcaccggc taactacgtg ccagcagccg cggtaatacg tagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg tgcgcaggcg gttcggaaag aaagatgtga 600

aatcccaggg cttaaccttg gaactgcatt tttaactacc gggctagagt gtgtcagagg 660

gaggtggaat tccgcgtgta gcagtgaaat gcgtagatat gcggaggaac accgatggcg 720

aaggcagcct cctgggataa cactgacgct catgcacgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccctaaac gatgtcaact agctgttggg gccttcgggc 840

cttggtagcg cagctaacgc gtgaagttga ccgcctgggg agtacggtcg caagattaaa 900

actcaaagga attgacgggg acccgcacaa gcggtggatg atgtggatta attcgatgca 960

acgcgaaaaa ccttacctac ccttgacatg tctggaatcc cgaagagatt tgggagtgct 1020

cgcaagagaa ccggaacaca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt gtcattagtt gctacgaaag ggcactctaa 1140

tgagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct catggccctt 1200

atgggtaggg cttcacacgt catacaatng tcgggacaga gggtcgccaa cccgcgaggg 1260

ggagccaatc ccagaaaccc gatcgtagtc cggatcgcag tctgcaactc gactgcgtga 1320

agtcggaatc gctagtaatc gcggatcagc atgtcgcggt gaatacgttc ncgggtcttg 1380

tacacaccgc ncgtcacacc atgggagtgg gttttaccag aagtagttag cctaaccgca 1440

agggggggcga ttaccacggt agga 1464

<210> 387
<211> 1533
<212> DNA

<213> Bordetella pertussis

<400> 387
ttgaactgaa gagtttgatc ctggctcaga ttgaacgctg gcgggatgct ttacacatgc 60

aagtcggacg gcagcacggg cttcggcctg gtggcgagtg gcgaacgggt gagtaatgta 120

tcggaacgtg cccagtagcg ggggataact acgcgaaagc gtggctaata ccgcatacgc 180

cctacggggg aaagcggggg accttcgggc ctcgcactat tggagcggcc gatatcggat 240

tagctagttg gtggggtaac ggcctaccaa ggcgacgatc cgtagctggt ttgagaggac 300

gaccagccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

ttttggacaa tgggggcaac cctgatccag ccatcccgcg tgtgcgatga aggccttcgg 420

gttgtaaagc acttttggca ggaaagaaac ggcacgggct aatatcctgt gcaactgacg 480

gtacctgcag aataagcacc ggctaactac gtgccagcag ccgcggtaat acgtagggtg 540

caagcgttaa tcggaattac tgggcgtaaa gcgtgcgcag gcggttcgga aagaaagatg 600

tgaaatccca gggcttaacc ttggaactgc atttttaact accgggctag agtgtgtcag 660

agggaggtgg aattccgcgt gtagcagtga aatgcgtaga tatgcggagg aacaccgatg 720

gcgaaggcag cctcctggga taacactgac gctcatgcac gaaagtgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgcccta aacgatgtca actagctgtt ggggccttcg 840

ggccttggta gcgcagctaa cgcgtgaagt tgaccgcctg gggagtacgg tcgcaagatt 900

aaaactcaaa ggaattgacg gggacccgca caagcggtgg atgatgtgga ttaattcgat 960

gcaacgcgaa aaaccttacc tacccttgac atgtctggaa tcccgaagag atttgggagt 1020

gctcgcaaga gaaccggaac acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttgtcatta gttgctacga aagggcactc 1140

taatgagact gccggtgaca aaccggagga aggtggggat gacgtcaagt cctcatggcc 1200

cttatgggta gggcttcaca cgtcatacaa tggtcgggac agagggttgc caacccgcga 1260

gggggagcca atcccagaaa cccggtcgta gtccggatcg cagtctgcaa ctcgactgcg 1320

tgaagtcgga atcgctagta atcgcggatc agcatgtcgc ggtgaatacg ttcccgggtc 1380

ttgtacacac cgcccgtcac accatgggag tgggttttac cagaagtagt tagcctaacc 1440

gcaaggggg cgattaccac ggtaggattc atgactgggg tgaagtcgta acaaggtagc 1500

cgtatcggaa ggtgcggctg gatcacctcc ttt 1533

<210> 388
<211> 1533
<212> DNA
<213> Borrelia afzelii

<400> 388
gaagagtttg atcctggctt agaactaacg ctggcagtgc gtcttaagca tgcaagtcaa 60

acggaatgta gcaatacatt tagtggcgaa cgggtgagta acgcgtggat gatctaccta 120

tgagatgggg ataactacta gaaatagtag ctaataccga ataaggtcaa ttaatttgtt 180

aattgatgaa aggaagcctt taaagcttcg cttgtagatg agtctgcgtc ttattagtta 240

gttggtgggg taaatgccta ccaagacgat gataagtaac cggcctgaga gggtgaacgg 300

tcacactgga actgagatac ggtccagact cctacgggag gcagcagcta agaatcttcc 360

gcaatgggcg aaagcctgac ggagcgacac tgcgtgaatg aagaaggtcg aaagattgta 420

aaattctttt ataaatgagg aataagcttt gtaggaaatg acaaagcgat gacgttaatt 480

tatgaataag ccccggctaa ttacgtgcca gcagccgcgg taatacgtaa ggggcgagcg 540

ttgttcggga ttattgggcg taaagggtga gtaggcggat atataagtct atgcataaaa 600

taccacagct caactgtgga gctatgttgg aaactatatg tctagagtct gatagaggaa 660

gttagaattc ctggtgtaag ggtggaatct gttgatatca ggaagaatac cggaggcgaa 720

ggcgaacttc tgggtcaaga ctgacgctga gtcacgaaag cgtaggtagc aaacaggatt 780

agataccctg gtagtctacg ctgtaaacga tgcacacttg gtgttaacta aaagttagta 840

ccgaagctaa cgtgttaagt gtgccgcctg gggagtatgc tcgcaagagt gaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gatacgcgag 960

gaaccttacc agggcttgac atatatagga tatagttaga gataattatt ccccgtttgg 1020

ggtctatata caggtgctgc atggttgtcg tcagctcgtg ctgtgaggtg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttgttatctg ttaccagcat gtaatgatgg ggactcagat 1140

aagactgccg gtgataagtc ggaggaaggt gaggatgacg tcaaatcatc atggccctta 1200

tgtcctgggc tacacacgtg ctacaatggc ctgtacaaag cgaagcgaaa cagtgatgtg 1260

aagcaaaacg cacaaagcag gtctcagtcc ggattgaagt ctgaaactcg acttcatgaa 1320

gttggaatcg ctagtaatcg tatatcagaa tgatacggtg aatacgttct cgggccttgt 1380

acacaccgcc cgtcacacca cccgagttga ggatacccga agctattatt ctaacccgta 1440

agggaggaag gtatttaagg tatgtttagt gaggggggtg aagtcgtaac aaggtagccg 1500

tactggaaag tgcggctgga tcacctcctt tct 1533

<210> 389
<211> 1533
<212> DNA
<213> Borrelia burgdorferi

<400> 389
gaagagtttg atcctggctt agaactaacg ctggcagtgc gtcttaagca tgcaagtcaa 60

acgggatgta gcaatacatt cagtggcgaa cgggtgagta acgcgtggat gatctaccta 120

tgagatgggg ataactatta gaaatagtag ctataccga ataaggtcag ttaatttgtt 180

aattgatgaa aggaagcctt taaagcttcg cttgtagatg agtctgcgtc ttattagcta 240

gttggtaggg taaatgccta ccaaggcaat gataagtaac cggcctgaga gggtgaacgg 300

tcacactgga actgagatac ggtccagact cctacgggag gcagcagcta agaatcttcc 360

gcaatgggcg aaagcctgac ggagcgacac tgcgtgaatg aagaaggtcg aaagattgta 420

aaattctttt ataaatgagg aataagcttt gtaggaaatg acaaagtgat gacgttaatt 480

tatgaataag ccccggctaa ttacgtgcca gcagccgcgg taatacgtaa ggggcgagcg 540

ttgttcggga ttattgggcg taaagggtga gtaggcggat atataagtct atgcataaaa 600

taccacagct caactgtgga cctatgttgg aaactatatg tctagagtct gatagaggaa 660

gttagaattt ctggtgtaag ggtggaatct gttgatatca gaaagaatac cggaggcgaa 720

ggcgaacttc tgggtcaaga ctgacgctga gtcacgaaag cgtagggagc aaacaggatt 780

agataccctg gtagtctacg ctgtaaacga tgcacacttg gtgttaacta aaagttagta 840

ccgaagctaa cgtgttaagt gtgccgcctg gggagtatgc tcgcaagagt gaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gatacgcgag 960

gaaccttacc agggcttgac atatatagga tatagttaga gataattatt ccccgtttgg 1020

ggtctatata caggtgctgc atggttgtcg tcagctcgtg ctgtgaggtg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttgttatctg ttaccagcat gtaatggtgg ggactcagat 1140

aagactgccg gtgataagtc ggaggaaggt gaggatgacg tcaaatcatc atggccctta 1200

tgtcctgggc tacacacgtg ctacaatggc ctgtacaaag cgaagcgaaa cagtgatgtg 1260

aagcaaaacg cataaagcag gtctcagtcc ggattgaagt ctgaaactcg acttcatgaa 1320

gttggaatcg ctagtaatcg tatatcagaa tgatacggtg aatacgttct cgggccttgt 1380

acacaccgcc cgtcacacca cccgagttga ggatacccga agctattatt ctaacccgta 1440

agggaggaag gtatttaagg tatgtttagt gaggggggtg aagtcgtaac aaggtagccg 1500

tactggaaag tgcggctgga tcacctcctt tct 1533

<210> 390
<211> 1299
<212> DNA
<213> Borrelia crocidurae

<400> 390
cctggcttag aactaacgct ggcagtgcgt cttaagcatg caagtcagac gagtggcgaa 60

cgggtgagta acgcgtggat aatctaccta tgagatgggg ataactatta gaaatagtag 120

ctaataccga ataaggaaag tcgcttgtag atgagtctgc gtcttattag ctagttggta 180

gggtaagagc ctaccaaggc tatgataagt aaccggcctg agagggtgaa cggtcacact 240

ggaactgaga tacggtccag actcctacgg gaggcagcag ctaagaatct tccgcaatgg 300

gcgaaagcct gacggagcga cactgcgtga acgaagaagg tcgaaagatt gtaaagttct 360

tttataaatg aggatgacgt taatttatga ataagccccg gctaattacg tgccagcagc 420

cgcggtaata cgtaaggggc gagcgttgtt cgggattatt gggcgtaaag ggtgagtagg 480

cggatatgca agtctggcgt aaaataccac agctcaactg tggagctatg ctagaaactg 540

catgactaga gtctgatagg ggaagttaga attcctggtg taagggtgga atctgttgat 600

atcaggaaga ataccagagg cgaaggcgaa cttctaggtc aactgacgct gagtcacgaa 660

agcgtaggga gcaaacagga ttagataccc tggtagtcta cgctgtaaac gatgcacact 720

tggtgttaat cggttagtac cgaagctaac gtgttaagtg tgccgcctgg ggagtatgct 780

cgcaagagtg aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 840

taattcgatg atacgcgagg aaccttacca gggcttgaca tatacaggtg ctgcatggtt 900

gtcgtcagct cgtgctgtga ggtgttgggt taagtcccgc aacgagcgca acccttattg 960

tctgttacca gcatatgggg actcagacga gactgccggt gataagccgg aggaaggtga 1020

ggatgacgtc aaatcatcat ggcccttatg tcctgggcta cacacgtgct acaatggcct 1080

gcaaagcgat gcgaaacagt gatgtgaagc aaaacgcatc aggtctcagt ccagatgaag 1140

tctgaaactc gacttcagaa gttggaatcg ctagtaatcg tatatcagaa tgatacggtg 1200

aatacgttct cgggccttgt acacaccgcc cgtcacacca cccgagttga ggatacccga 1260

agctattttc taggaaggta tctaaggtat gtttagtga 1299

<210> 391
<211> 1534
<212> DNA
<213> Borrelia duttonii

<400> 391
gaagagtttg atcctggctt agaactaacg ctggcagtgc gtcttaagca tgcaagtcaa 60

acgggatgta gcaatacatt cagtggcgaa cgggtgagta acgcgtggat aatctaccta 120

tgagatgggg ataactatta gaaatagtag ctaataccga ataaggtcag ttgagatgtc 180

aattgatgaa aggaagcctt taaagcttcg cttgtagatg agtctgcgtc ttattagcta 240

gttggtaggg taagagccta ccaaggctat gataagtaac cggcctgaga gggtgaacgg 300

tcacactgga actgagatac ggtccagact cctacgggag gcagcagcta agaatcttcc 360

gcaatgggcg aaagcctgac ggagcgacac tgcgtgaacg aagaaggtcg aaagattgta 420

aagttctttt ataaatgagg aataagcttt gtaggaaatg acaaggtgat gacgttaatt 480

tatgaataag ccccggctaa ttacgtgcca gcagccgcgg taatacgtaa ggggcgagcg 540

ttgttcggga ttattgggcg taaagggtga gtaggcggat atgcaagtct gtgcgtaaaa 600

taccacagct caactgtgga gctatgctag aaactgcatg actagagtct gataggggaa 660

gttagaattc ctggtgtaag ggtggaatct gttgatatca ggaagaatac cagaggcgaa 720

ggcgaacttc taggtcaaga ctgacgctga gtcacgaaag cgtagggagc aaacaggatt 780

agataccctg gtagtctacg ctgtaaacga tgcacacttg gtgttaatcg agaggttagt 840

accgaagcta acgtgttaag tgtgccgcct ggggagtatg ctcgcaagag tgaaactcaa 900

aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgatacgcga 960

ggaaccttac cagggcttga catatacagg atgtagttag agataactat tccccgtttg 1020

gggtctgtat acaggtgctg catggttgtc gtcagctcgt gctgtgaggt gttgggttaa 1080

gtcccgcaac gagcgcaacc cttattgtct gttaccagca tgtaaagatg gggactcaga 1140

cgagactgcc ggtgataagc cggaggaagg tgaggatgac gtcaaatcat catggccctt 1200

atgtcctggg ctacacacgt gctacaatgg cctgtacaaa gcgatgcgaa acagtgatgt 1260

gaagcaaaac gcataaagca ggtctcagtc cagattgaag tctgaaactc gacttcatga 1320

agttggaatc gctagtaatc gtatatcaga atgatacggt gaatacgttc tcgggccttg 1380

tacacaccgc ccgtcacacc acccgagttg aggatacccg aagctattat tctaacccgc 1440

aagggaggaa ggtatctaag gtatgtttag tgaggggggt gaagtcgtaa caaggtagcc 1500

gtactggaaa gtgtggctgg atcacctcct ttct 1534

<210> 392
<211> 1533
<212> DNA
<213> Borrelia garinii

<400> 392
gaagagtttg atcctggctt agaactaacg ctggcagtgc gtcttaagca tgcaagtcaa 60

acgggatgta gcaatacatc tagtggcgaa cgggtgagta acgcgtggat gatctaccta 120

cgagatgggg ataactatta gaaatagtag ctaataccga ataaagtcaa ttaatttgtt 180

aattgatgaa aggaagcctt taaagcttcg cttgtagatg agtctgcgtc ttattagcta 240

gttggtaggg taaatgccta ccaaggcgat gataagtaac cggcctgaga gggtgaacgg 300

tcacactgga actgagatac ggtccagact cctacgggag gcagcagcta agaatcttcc 360

gcaatgggcg aaagcctgac ggagcgacac tgcgtgaatg aagaaggtcg aaagattgta 420

aaattctttt ataaatgagg aataagcttt gtaggaaatg acaaagtgat gacgttaatt 480

tatgaataag ccccggctaa ttacgtgcca gcagccgcgg taatacgtaa ggggcgagcg 540

ttgttcggga ttattgggcg taaagggtga gtaggcggat atataagtct atgcataaaa 600

taccacagct caactgtgga actatgttgg aaactatatg tctagagtct gatagaggaa 660

gttagaattt ctggtgtaag ggtggaatct gttgatatca gaaagaatac cggaggcgaa 720

ggcgaacttc tgggtcaaga ctgacgctga gtcacgaaag cgtagggagc aaacaggatt 780

agataccctg gtagtctacg ctgtaaacga tgcacacttg gtgttaacta aaagttagta 840

ccgaagctaa cgtgttaagt gtgccgcctg gggagtatgc tcgcaagagt gaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gatacgcgag 960

gaaccttacc agggcttgac atatatagga tatagttaga gataattatt ccccgtttgg 1020

ggtctatata caggtgctgc atggttgtcg tcagctcgtg ctgtgaggtg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttgttatctg ttaccagcat gtaatggtgg ggactcagat 1140

aagactgccg gtgataagtc ggaggaaggt gaggatgacg tcaaatcatc atggcccttа 1200

tgtcctgggc tacacacgtg ctacaatggc ctgtacaaag cgaagcgaaa cagtgatgtg 1260

aagcaaaacg cataaagcag gtctcagtcc ggattgaagt ctgaaactcg acttcatgaa 1320

gttggaatcg ctagtaatcg tatatcagaa tgatacggtg aatacgttct cgggccttgt 1380

acacaccgcc cgtcacacca cccgagttga ggatacccga agctattatt ctaacccgta 1440

agggaggaag gtatttaagg tatgtttagt gaggggggtg aagtcgtaac aaggtagccg 1500

tactggaaag tgcggctgga tcacctcctt tct 1533

<210> 393
<211> 1273
<212> DNA
<213> Borrelia hermsii

<400> 393
gggtgagtaa cgcgtggata atctacctat gagatgggga taactattag aaatagtagc 60

taataccgaa taaggtcaat tgagatgtta attgatgaaa ggaagccttt aaagcttcgc 120

ttgtagatga gtctgcgtct tattagctag ttggtagggt aaaagcctac caaggctgtg 180

ataagtaacc ggcctgagag ggtgaacggt cacactggaa ctgagatacg gtccagactc 240

ctacgggagg cagcagctaa gaatcttccg caatgggcga aagcctgacg gagcgacact 300

gcgtgaacga agaaggtcga aagattgtaa agttctttta taaatgagga ataagctttg 360

taggaaatga caaagtgatg acgttaattt atgaataagc cccggctaat tacgtgccag 420

cagccgcggt aatacgtaag gggcgagcgt tgttcgggat tattgggcgt aaagggtgag 480

taggcggata tgcaagtcta tgcgtaaaat accacagctc aactgtggga atatgctgga 540

aactgcatga ctagagtctg ataggggaag ttagaattcc tggtgtaagg gtggaatctg 600

ttgatatcag gaagaatacc agaggcgaag gcgaacttct aggtcaagac tgacgctgag 660

tcacgaaagc gtagggagca aacaggatta gataccctgg tagtctacgc tgtaaacgat 720

gcacacttgg tgttaatcga aaggttagta ccgaagctaa cgtgttaagt gtgccgcctg 780

gggagtatgc tcgcaagagt gaaactcaaa ggaattgacg ggggcccgca caagcggtgg 840

agcatgtggt ttaattcgat gatacgcgag gaaccttacc agggcttgac atatacagga 900

tgtagttaga gataactatt ccccgtttgg ggtctgtata caggtgctgc atggttgtcg 960

tcagctcgtg ctgtgaggtg ttgggttaag tcccgcaacg agcgcaaccc ttattgtctg 1020

ttaccagcat gtaaagatgg ggactcagac gagactgccg gtgataagcc ggaggaaggt 1080

gaggatgacg tcaaatcatc atggccctta tgtcctgggc tacacacgtg ctacaatggc 1140

ctgtacaaag cgatgcgaaa cagtgatgtg aagcaaaacg cataaagcag gtctcagtcc 1200

agattgaagt ctgaaactcg acttcatgaa gttggaatcg ctagtaatcg tatatcagaa 1260

tgatacggtg aat 1273

<210> 394
<211> 1300
<212> DNA
<213> Borrelia hispanica

<400> 394
tcctggctta gaactaacgc tggcagtgcg tcttaagcat gcaagtcaga cgagtggcga 60

acgggtgagt aacgcgtgga taatctacct atgagatggg gataactatt agaaatagta 120

gctaataccg aataaggaaa gtcgcttgta gatgagtctg cgtcttatta gctagttggt 180

agggtaagag cctaccaagg ctatgataag taaccggcct gagagggtga acggtcacac 240

tggaactgag atacggtcca gactcctacg ggaggcagca gctaagaatc ttccgcaatg 300

ggcgaaagcc tgacggagcg acactgcgtg aacgaagaag gtcgaaagat tgtaaagttc 360

ttttataaat gaggatgacg ttaatttatg aataagcccc ggctaattac gtgccagcag 420

ccgcggtaat acgtaagggg cgagcgttgt tcgggattat tgggcgtaaa gggtgagtag 480

gcggatatgc aagtctagcg taaaatacca cagctcaact gtggagctat gctagaaact 540

gcatgactag agtctgatag gggaagttag aattcctggt gtaagggtgg aatctgttga 600

tatcaggaag aataccagag gcgaaggcga acttctaggt caactgacgc tgagtcacga 660

aagcgtaggg agcaaacagg attagatacc ctggtagtct acgctgtaaa cgatgcacac 720

ttggtgttaa tcggttagta ccgaagctaa cgtgttaagt gtgccgcctg gggagtatgc 780

tcgcaagagt gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt 840

ttaattcgat gatacgcgag gaaccttacc agggcttgac atatacaggt gctgcatggt 900

tgtcgtcagc tcgtgctgtg aggtgttggg ttaagtcccg caacgagcgc aacccttatt 960

gtctgttacc agcatatggg gactcagacg agactgccgg tgataagccg gaggaaggtg 1020

aggatgacgt caaatcatca tggcccttat gtcctgggct acacacgtgc tacaatggcc 1080

tgcaaagcga tgcgaaacag tgatgtgaag caaaacgcat caggtctcag tccagatgaa 1140

gtctgaaact cgacttcaga agttggaatc gctagtaatc gtatatcaga atgatacggt 1200

gaatacgttc tcgggccttg tacacaccgc ccgtcacacc acccgagttg aggatacccg 1260

aagctatttt ctaggaaggt atctaaggta tgtttagtga 1300

<210> 395
<211> 1526
<212> DNA
<213> Borrelia persica

<400> 395
agtttgatcc tggcttagaa ctaacgctgg cagtgcgtct taagcatgca agtcagacgg 60

gatgtagcaa tacattcagt ggcgaacggg tgagtaacgc gtggataatc tacctatgag 120

atggggataa ctattagaaa tagtagctaa taccgaataa ggtcagttga gatgtcaatt 180

gatgaaagga agcctttaaa gcttcgcttg tagatgagtc tgcgtcttat tagctagttg 240

gtggggtaag agcctaccaa ggctatgata agtaaccggc ctgagagggt gaacggtcac 300

actggaactg agatacggtc cagactccta cgggaggcag cagctaagaa tcttccgcaa 360

tgggcgaaag cctgacggag cgacactgcg tgaacgaaga aggtcgaaag attgtaaagt 420

tcttttataa atgaggaata agctttgtag gaaatgacaa ggtgatgacg ttaatttatg 480

aataagcccc ggctaattac gtgccagcag ccgcggtaat acgtaagggg cgagcgttgt 540

tcgggattat tgggcgtaaa gggtgagtag gcggatatgc aagtctatgc gtaaaatacc 600

acagctcaac tgtggagcta tgctggaaac tgcatgacta gagtctgata ggggaagtta 660

gaattcctgg tgtaagggtg gaatctgttg atatcaggaa gaataccaga ggcgaaggcg 720

aacttctagg tcaagactga cgctgagtca cgaaagcgta gggagcaaac aggattagat 780

accctggtag tctacgctgt aaacgatgca cacttggtgt taattgagag attagtaccg 840

aagctaacgt gttaagtgtg ccgcctgggg agtatgctcg caagagtgaa actcaaagga 900

attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgatgat acgcgagaaa 960

ccttaccagg gcttgacata tacaggatgt agttagagat aattattccc cgtttggggt 1020

ctgtatacag gtgctgcatg gttgtcgtca gctcgtgctg tgaggtgttg ggttaagtcc 1080

cgcaacgagc gcaaccctta ttgtctgtta ccagcatgta aagatgggaa ctcagatgag 1140

actgccggtg ataagccgga ggaaggtgag gatgacgtca aatcatcatg gcccttatgc 1200

cctgggctac acacgtgcta caatggcctg tacaaagcga agcgaaacag tgatgtgaag 1260

caaaacgcat taaagcaggt ctcagtccag attgaagtct gaaactcgac ttcatgaagt 1320

tggaatcgct agtaatcgta tatcagcatg atacggtgaa tacgttctcg ggccttgtac 1380

acaccgcccg tcacaccacc cgagttgagg atacccgaag ctattattct aacccgcaag 1440

ggaggaaggt atctaaggta tgtttagtga ggggggtgaa gtcgtaacaa ggtagccgta 1500

ctggaaagtg tggctggatc acctcc 1526

<210> 396
<211> 1525
<212> DNA
<213> Borrelia recurrentis

<400> 396
agtttgatcc tggcttagaa ctaacgctgg cagtgcgtct taagcatgca agtcaaacgg 60

gatgtagcaa tacattcagt ggcgaacggg tgagtaacgc gtggataatc tacctatgag 120

atggggataa ctattagaaa tagtagctaa taccgaataa ggtcagttga gatgtcaatt 180

gatgaaagga agcctttaaa gctttgcttg tagatgagtc tgcgtcttat tagctagttg 240

gtagggtaag agcctaccaa ggctatgata agtaaccggc ctgagagggt gaacggtcac 300

actggaactg agatacggtc cagactccta cgggaggcag cagctaagaa tcttccgcaa 360

tgggcgaaag cctgacggag cgacactgcg tgaacgaaga aggtcgaaag attgtaaagt 420

tcttttataa atgaggaata agctttgtag gaaatgacaa ggtgatgacg ttaatttatg 480

aataagtccc ggctaattac gtgccagcag ccgcggtaat acgtaagggg cgagcgttgt 540

tcgggattat tgggcgtaaa gggtgagtag gcggatatgc aagtctgtgc gtaaaatacc 600

acagctcaac tgtggagcta tgctagaaac tgcatgacta gagtctgata ggggaagtta 660

gaattcctgg tgtaagggtg gaatctgttg atatcaggaa gaataccaga ggcgaaggcg 720

aacttctagg tcaagactga cgctgagtca cgaaagcgta gggagcaaac aggattagat 780

accctggtag tctacgctgt aaacgatgca cacttggtgt taatcgagag gttagtaccg 840

aagctaacgt gttaagtgtg ccgcctgggg agtatgctcg caagagtgaa actcaaagga 900

attgacgggg gcccgtacaa gcggtggagc atgtggttta attcgatgat acgcgaggaa 960

ccttaccagg gcttgacata tacaggatgt agttagagat aactattccc cgtttggggt 1020

ctgtatacag gtgctgcatg gttgtcgtca gctcgtgctg tgaggtgttg ggttaagtcc 1080

cgcaacgagc gcaaccctta ttgtctgtta ccagcatgta aagatgggga ctcagacgag 1140

actgccggtg ataagccgga ggaaggtgag gatgacgtca aatcatcatg gcccttatgt 1200

cctgggctac acacgtgcta caatggcctg tacaaagcga tgcgaaacag tgatgtgaag 1260

caaaacgcat aaagcaggtc tcagtccaga ttgaagtctg aaactcgact tcatgaagtt 1320

ggaatcgcta gtaatcgtat atcagaatga tacggtgaat acgttctcgg gccttgtaca 1380

caccgcccgt cacaccaccc gagttgagga tacccgaagc tattatttta acccgcaagg 1440

gaggaaggta tctaaggtat gtttagtgag gggggtgaag tcgtaacaag gtagccgtac 1500

tggaaagtgt ggctggatca cctcc 1525

<210> 397
<211> 1467
<212> DNA
<213> Borrelia sp. NE49

<400> 397
ctggcttaga actaacgctg gcagtgcgtc ttaagcatgc aagtcaaacg gaatgtagca 60

atacattcag tggcgaacgg gtgagtaacg cgtggatgat ctgcctatga gatggggata 120

actattagaa atagtagcta ataccgaata aggtcaatta atttgttaat tgatgaaagg 180

aagcctttaa agcttcgctt gtagatgagt ctgcgtctta ttagctagtt ggtagggtaa 240

atgcctacca aggcgatgat aagtaaccgg cctgagaggg tgaacggtca cactggaact 300

gagatacggt ccagactcct acgggaggca gcagctaaga atcttccgca atgggcgaaa 360

gcctgacgga gcgacactgc gtgaatgaag aaggtcgaaa gattgtaaaa ttcttttata 420

aatgaggaat aagctttgta ggaaatgaca aagtgatgac gttaatttat gaataagccc 480

cggctaatta cgtgccagca gccgcggtaa tacgtaaggg gcgagcgttg ttcgggatta 540

ttgggcgtaa agggtgagta ggcggatata taagtctatg cataaaatac cacagctcaa 600

ctgtggacct atgttggaaa ctatatgtct agagtctgat agaggaagtt agaatttctg 660

gtgtaagggt ggaatctgtt gatatcagaa agaataccgg aggcgaaggc gaacttctgg 720

gtcaagactg acgctgagtc acgaaagcgt agggagcaaa caggattaga taccctggta 780

gtctacgctg taaacgatgc acacttggtg ttaactaaaa gttagtaccg aagctaacgt 840

gttaagtgtg ccgcctgggg agtatgctcg caagagtgaa actcaaagga attgacgggg 900

gcccgcacaa gcggtggagc atgtggttta attcgatgat acgcgaggaa ccttaccagg 960

gcttgacata tataggatat agttagagat aattattccc cgtttggggt ctatatacag 1020

gtgctgcatg gttgtcgtca gctcgtgctg tgaggtgttg ggttaagtcc cgcaacgagc 1080

gcaacccttg ttatctgtta ccagcatgta atggtgggga ctcagataag actgccggtg 1140

ataagtcgga ggaaggtgag gatgacgtca aatcatcatg gcccttatgt cctgggctac 1200

acacgtgcta caatggcctg tacaaagcga agcgaaacag tgatgtgaag caaaacgcat 1260

aaagcaggtc tcagtccgga ttgaagtctg aaactcgact tcatgaagtt ggaatcgcta 1320

gtaatcgtat atcagaatga tacggtgaat acgttctcgg gccttgtaca caccgcccgt 1380

cacaccaccc gagttgagga tacccgaagc tattattcta acccgtaagg gaggaaggta 1440

tttaaggtat gtttagtgag gggggtg 1467

<210> 398
<211> 1531
<212> DNA
<213> Borrelia spielmanii

<400> 398
agagtttgat cctggcttag aactaacgct ggcagtgcgt cttaagcatg caagtcaaac 60

gggatgtagc aatacatcta gtggcgaacg ggtgagtaac gcgtggatga tctacctatg 120

agatggggat aactactaga aatagtagct aataccgaat aaggtcaatt aatttgttaa 180

ttgatgaaag gaagccttta aagcttcgct tgtagatgag tctgcgtctt attagttagt 240

tggtggggta aatgcctacc aaggcgatga taagtaaccg gcctgagagg gtgaacggtc 300

acactggaac tgagatacgg tccagactcc tacgggaggc agcagctaag aatcttccgc 360

aatgggcgaa agcctgacgg agcgacactg cgtgaatgaa gaaggtcgaa agattgtaaa 420

attcttttat aaatgaggaa taagctttgt aggaaatgac aaggtgatga cgttaattta 480

tgaataagcc ccggctaatt acgtgccagc agccgcggta atacgtaagg ggcgagcgtt 540

gttcgggatt attgggcgta aagggtgagt aggcggatat ataagtctat gcataaaata 600

ccacagctca actgtggaac tatgttggaa actatatgtc tagagtctga tagaggaagt 660

tagaattcct ggtgtaaggg tggaatctgt tgatatcagg aagaataccg gaggcgaagg 720

cgaacttctg ggtcaagact gacgctgagt cacgaaagcg tagggagcaa acaggattag 780

ataccctggt agtctacgct gtaaacgatg cacacttggt gttaactaaa agttagtacc 840

gaagctaacg tgttaagtgt gccgcctggg gagtatgctc gcaagagtga aactcaaagg 900

aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatga tacgcgagga 960

accttaccag ggcttgacat atataggata tagttagaga taattattcc ccgtttgggg 1020

cctatataca ggtgctgcat ggttgtcgtc agctcgtgct gtgaggtgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt gttatctgtt accagcatgt aatgatgggg actcagataa 1140

gactgccggt gataagtcgg aggaaggtga ggatgacgtc aaatcatcat ggcccttatg 1200

tcctgggcta cacacgtgct acaatggcct gtacaaagcg aagcgaaaca gtgatgtgaa 1260

gcaaaacgca caaagcaggt ctcagtccgg attgaagtct gaaactcgac ttcatgaagt 1320

tggaatcgct agtaatcgta tatcagaatg atacggtgaa tacgttctcg ggccttgtac 1380

acaccgcccg tcacaccacc cgagttgagg atacccgaag ctattattct aacccgtaag 1440

ggaggaaggt atttaaggta tgtttagtga ggggggtgaa gtcgtaacaa ggtagccgta 1500

ctggaaagtg cggctggatc acctcctttc t 1531

<210> 399

<211> 1532
<212> DNA
<213> Borrelia turicatae

<400> 399
agagtttgat cctggcttag aactaacgct ggcagtgcgt cttaagcatg caagtcagac 60

ggaatgtagc aatacattca gtggcgaacg ggtgagtaac gcgtggataa tctacctatg 120

agatggggat aactattaga aatagtagct aataccgaat aaggtcaatt gagatgttaa 180

ttgatgaaag gaagccttta aagcttcgct tgtagatgag tctgcgtctt attagctagt 240

tggtagggta agagcctacc aaggctatga taagtaaccg gcctgagagg gtgaacggtc 300

acactggaac tgagatacgg tccagactcc tacgggaggc agcagctaag aatcttccgc 360

aatgggcgaa agcctgacgg agcgacactg cgtgaacgaa gaaggtcgaa agattgtaaa 420

gttcttttat aaatgaggaa taagctttgt aggaaatgac aaggtgatga cgttaattta 480

tgaataagcc ccggctaatt acgtgccagc agccgcggta atacgtaagg ggcgagcgtt 540

gttcgggatt attgggcgta aagggtgagt aggcggatat gtaagtctat gcgtaaaata 600

ccacagctca actgtggaac tatgctggaa actgcatgac tagagtctga taggggaagt 660

tagaattcct ggtgtaaggg tggaatctgt tgatatcagg aagaatacca gaggcgaagg 720

cgaacttcta ggtcaagact gacgctgagt cacgaaagcg tagggagcga acaggattag 780

ataccctggt agtctacgct gtaaacgatg cacacttggt gttaatcgaa aggttagtac 840

cgaagctaac gtgttaagtg tgccgcctgg ggagtatgct cgcaagagtg aaactcaaag 900

gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg atacgcgagg 960

aaccttacca gggcttgaca tatacaggat gtagttagag ataactattc cccgtttggg 1020

gtctgtatac aggtgctgca tggttgtcgt cagctcgtgc tgtgaggtgt tgggttaagt 1080

cccgcaacga gcgcaaccct tattgtctgt taccagcatg taaagatggg gactcagacg 1140

agactgccgg tgataagccg gaggaaggtg gggatgacgt caaatcatca tggcccttat 1200

gtcctgggct acacacgtgc tacaatggcc tgtacaaagc gatgcgaaac agtgatgtga 1260

agcaaaacgc ataaagcagg tctcagtcca gattgaagtc tgaaactcga cttcatgaag 1320

ttggaatcgc tagtaatcgt atatcagaat gatacggtga atacgttctc gggccttgta 1380

cacaccgccc gtcacaccac ccgagttgag gatacccgaa gctattattc taacccgcaa 1440

gggaggaagg tatctaaggt atgtttagtg agggggggtga agtcgtaaca aggtagccgt 1500

actggaaagt gtggctggat cacctccttt ct 1532

<210> 400
<211> 1533
<212> DNA
<213> Borrelia valaisiana

<400> 400
gaagagtttg atcctggctt agaactaacg ctggcagtgc gtcttaagca tgcaagtcaa 60

acgggatgta gtaatacatc tagtggcgaa cgggtgagta acgcgtggat gatctaccta 120

tgagatgggg ataactacta gaaatagtag ctaataccga ataaggtcaa ttaatttgtt 180

aattgatgaa aggaagcctt taaagcttcg cttgtagatg agtctgcgtc ttattagtta 240

gttggtgggg taaatgccta ccaaggcgat gataagtaac cggcctgaga gggtgaacgg 300

tcacactgga actgagatac ggtccagact cctacgggag gcagcagcta agaatcttcc 360

gcaatgggcg aaagcctgac ggagcgacac tgcgtgaatg aagaaggtcg aaagattgta 420

aaattctttt ataaatgagg aataagcttt gtaggaaatg acaaagtgat gacgttaatt 480

tatgaataag ccccggctaa ttacgtgcca gcagccgcgg taatacgtaa ggggcgagcg 540

ttgttcggga ttattgggcg taaagggtga gtaggcggac atataagtct atgcataaaa 600

taccacagct caactgtgga actatgttgg aaactatatg cctagagtct gatagaggaa 660

gttagaattc ctggtgtaag ggtggaatct gttgatatca ggaagaatac cggaggcgaa 720

ggcgaacttc tgggtcaaga ctgacgctga gtcacgaaag cgtagggagc aaacaggatt 780

agataccctg gtagtctacg ctgtaaacga tgcacacttg gtgttaactg aaagttagta 840

ccgaagctaa cgtgttaagt gtgccgcctg gggagtatgc tcgcaagagt gaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gatacgcgag 960

gaaccttacc agggcttgac atatatagga tatagttaga gataattatt ccccgtttgg 1020

ggtctatata caggtgctgc atggttgtcg tcagctcgtg ctgtgaggtg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttgttatctg ttaccagcat gtaatgatgg ggactcagat 1140

aagactgccg gtgataagtc ggaggaaggt gaggatgacg tcaaatcatc atggccctta 1200

tgtcctgggc tacacacgtg ctacaatggc ctgtacaaag cgaagcgaaa cagtgatgtg 1260

aagcaaaacg cataaagcag gtctcagtcc ggattgaagt ctgaaactcg acttcatgaa 1320

gttggaatcg ctagtaatcg tatatcagaa tgatacggtg aatacgttct cgggccttgt 1380

acacaccgcc cgtcacacca cccgagttga ggatacccga agctattatt ctaacccgta 1440

agggaggaag gtatttaagg tatgtttagt gaggggggtg aagtcgtaac aaggtagccg 1500

tactggaaag tgcggctgga tcacctcctt tct 1533

<210> 401
<211> 1512
<212> DNA
<213> Brachybacterium alimentarium

<220>
<221> modified_base
<222> (11)..(12)
<223> a, c, t, g, unknown or other

<400> 401
agagtttgat nntggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gatgacgacc gagcttgctc ggtctgatta gtggcgaacg ggtgagtaac acgtgagtaa 120

cctgcccccc acttcgggat aacttcgaga aatcgtggct aataccggat atgaacttcc 180

gccgcatggt ggttgttgga aagtttttcg gtgggggatg gactcgcggc ctatcagttt 240

gttggtgagg taatggctca ccaagacgat gacgggtagc cggcctgaga gggcgaccgg 300

ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg aaagcctgat gcagcgacgc cgcgtgaggg atgacggcct ttgggttgta 420

aacctctttc agtagggaag aagcgagagt gacggtacct gcagaagaag cgccggctaa 480

ctacgtgcca gcagccgcgg taatacgtag ggcgcaagcg ttgtccggaa ttattgggcg 540

taaagagctt gtaggtggct tgtcgcgtct gccgtgaaaa cccgaggctc aacctcgggc 600

gtgcggtggg tacgggcagg ctagagtgtg gtaggggaga ctggaactcc tggtgtagcg 660

gtgaaatgcg cagatatcag gaagaacacc gatggcgaag gcaggtctct gggccattac 720

tgacactgag aagcgaaagc atgggtagcg aacaggatta gataccctgg tagtccatgc 780

cgtaaacgtt gggcactagg tgtgggggac attccacgtt ttccgcgccg tagctaacgc 840

attaagtgcc ccgcctgggg agtacggccg caaggctaaa actcaaagga attgacgggg 900

gcccgcacaa gcggcggagc atgctgatta attcgatgca acgcgaagaa ccttaccaag 960

gcttgacatg gaccggacgg ctgcaaaaat gtggctttct tcggactggt tcacaggtgg 1020

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

ccctcgttct atgttgccag cgcgttatgg cggggactca tgggagactg ccggggtcaa 1140

ctcggaggaa ggtggggacg acgtcaaatc atcatgcccc ttatgtcttg ggcttcaagc 1200

atgctacaat ggtcggtaca atgggttgcg aaactgtgag gtggagcgaa tcctaaaaag 1260

ccggcctcag ttcggattgg ggtctgcaac tcgaccccat gaagtcggag tcgctagtaa 1320

tcgcagatca gcaacgctgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcaa 1380

gtcacgaaag tcggtaacac ccgaagccag tggcccatcc tcgtgaggga gctgtcgaag 1440

gtgggatcgg tgattgggac taagtcgtaa caaggtagcc gtaccggaag gtgcggctgg 1500

atcacctcct tt 1512

<210> 402
<211> 1458
<212> DNA
<213> Brachybacterium conglomeratum

<400> 402
tggctcagga cgaacgctgg cggcgtgctt aacacatgca agtcgaacga tgacggtggt 60

gcttgcaccg cctgattagt ggcgaacggg tgagtaacac gtgagtaacc tgccctccac 120

ttcgggataa cctcgggaaa tcgtggctaa taccggatat gagcactcat cgcatggtgg 180

gtgttggaaa gatttatcgg tgggggatgg actcgcggcc tatcagtttg ttggtgaggt 240

gatggctcac caagacgatg acgggtagcc ggcctgagag ggcgaccggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcga 360

aagcctgatg cagcgacgcc gcgtggggga tgacggcctt cgggttgtaa acccctttca 420

gtagggaaga agcgagagtg acggtacctg cagaagaagc gccggctaac tacgtgccag 480

cagccgcggt aatacgtagg gcgcaagcgt tgtccggaat tattgggcgt aaagagcttg 540

taggtggctt gtcgcgtctg ccgtgaaaac ccgaggctca acctcgggcg tgcggtgggt 600

acgggcaggc tagagtgtgg taggggagac tggaactcct ggtgtagcgg tgaaatgcgc 660

agatatcagg aagaacaccg atggcgaagg caggtctctg ggccattact gacactgaga 720

agcgaaagca tgggtagcga acaggattag ataccctggt agtccatgcc gtaaacgttg 780

ggcactaggt gtgggggaca ttccacgttt tccgcgccgt agctaacgca ttaagtgccc 840

cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cggcggagca tgctgattaa ttcgatgcaa cgcgaagaac cttaccaagg cttgacatgc 960

actggacggc tgcagagatg tggctttctt tggactggtg cacaggtggt gcatggttgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcgttcta 1080

tgttgccagc acgtaatggt ggggactcat aggagactgc cggggtcaac tcggaggaag 1140

gtggggacga cgtcaaatca tcatgcccct tatgtcttgg gcttcaagca tgctacaatg 1200

gtcggtacaa tgggttgcga aactgtgagg tggagcgaat cccaaaaagc cggcctcagt 1260

tcggattggg gtctgcaact cgaccccatg aagtcggagt cgctagtaat cgcagatcag 1320

caacgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaag tcacgaaagt 1380

cggtaacacc cgaagccagt ggcccatcct cgtgagggag ctgtctaagg tgggatcggt 1440

gattgggact aagtcgta 1458

<210> 403
<211> 1512
<212> DNA
<213> Brachybacterium tyrofermentans

<220>
<221> modified_base
<222> (11)..(12)
<223> a, c, t, g, unknown or other

<400> 403
agagtttgat nntggctcag gatgaacgct ggctgcgtgc ttaacacatg caagtcgaac 60

gatgacgacc gagcttgctc ggtctgatta gtggcgaacg ggtgagtaac acgtgagtaa 120

cctgcccctc acttcgggat aacctcgaga aattgtggct aataccggat atgaacttcc 180

gccgcatggt ggttgttgga aagtttttcg gtgagggatg gactcgcggc ctatcagttt 240

gttggtgagg taatggctca ccaagacgat gacgggtagc cggcctgaga gggcgaccgg 300

ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg aaagcctgat gcagcgacgc agcgtggggg atgactgcct tcgggttgta 420

aacctctttc agtagggaag aagcgaaagt gacggtacct gcagaagaag cgccggctaa 480

ctacgtgcca gcagccgcgg taatacgtag ggcgcaagcg ttatccgtaa ttattgggcg 540

taaagagctt gtaggtggct tgtcgcgtct gccgtgaaaa cccgaggctc aacctcgggc 600

gtgcggtggg tacgggcagg ctagagtgtg gtaggggaga ctggaactcc tggtgtagcg 660

gtgaaatgcg cagatatcag gaagaacacc gatggcgaag gcaggtctct gggccattac 720

tgacactgag aagcgaaagc atgggtagcg aacaggatta gataccctgg tagtccatgc 780

cgtaaacgtt gggcactaga tgtgggggac attccacgtt ttccgcgtcg tagctaacgc 840

attaagtgcc ccgcctgggg agtacggccg caaggctaaa actcaaagga attgacgggg 900

gcccgcacaa gcggcggagc atgctgatta attcgatgca acgcgaagaa ccttaccaag 960

gcttgacatg gaccggacgg ctgcagaaat gtggctttct tcggactggt tcacaggtgg 1020

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

ccctcgttct atgttgccag cgcgttatgg cggggactca taggagactg ccggggtcaa 1140

ctcggaggaa ggtggggacg acgtcaaatc atcatgcccc ttatgtcttg ggcttcaagc 1200

atgctacaat ggtcggtaca atgggttgcg aaactgtgag gtggagcgaa tcccaaaaag 1260

ccggcctcag ttcggattgg ggtctgcaac tcgaccccat gaagtcggag tcgctagtaa 1320

tcgcagatca gcaacgctgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcaa 1380

gtcacgaaag tcggtaacac ccgaagccag tggcccatcc tcgtgaggga gctgtctaag 1440

gtgggattgg tgattgggac taagtcgtaa caaggtagcc gtaccggaag gtgcggctgg 1500

atcacctcct tt 1512

<210> 404
<211> 1270
<212> DNA
<213> Brachyspira aalborgi

<400> 404
agcgaacgtt ggcgatgcgt cttaagcatg caagtcgagc gagcggcgaa ctggtgagta 60

acacgtaggt aatctgccgt agagtggggg ataacccatg gaaacatgga ctaataccgc 120

atatagaaag ccgctttacg atgagcctgc ggcctattag cctgttggtg agataaaagc 180

ccaccaaagc tacgataggt agccgacctg agagggtgac cggccacatt gggactgaga 240

tacggcccag actcctacgg gaggcagcag ctgagaatct tccacaatgg acgaaagtct 300

gatggagcga catcgcgtga gggatgaagg ccttcgggtt gtaaaccttg gaaattatcg 360

aagatgacag tagataatgt aagcctcggc taactacgtg ccagcagccg cggtaatacg 420

taggaggcaa acgttgctcg gatttactgg gcgtaaaggg tgagtaggcg gaactataag 480

tctaaggtga aatatcgaag ctcaacttcg gagacgcctc ggatactgtg gttcttggat 540

attgtagggg atgatggaat tctcggtgta gcggtggaat gtatagatat cgagaagaac 600

acctatagcg aaggcagtca tctgggcata tcgacgctga atcacgaaag ctgggggagc 660

aaacaggctt agataccctg gtagtcccag ccgtaaacgt tgcacactag gtgctcctag 720

gcgtgccgta gctaacgtct taagtgtgcc gcctgaggag tatgcccgca agggtgaaac 780

tcaaagaaat tgacgggtcc ccgcacaagt ggtggagcat gtggtttaat tcgatgatac 840

gcgaaaaacc ttacctgggt ttgaattgca taggtgctgc atggctgtcg tcagctcgtg 900

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttacccttg ttgctaccga 960

tcgggcactc ttaggggacc gcctacgtta agtaggagga aggtggggat gatgtcaagt 1020

cctcatggcc cttatgtcca gggctacaca cgtgctacaa tggcaaccaa agagaagcga 1080

gaccgcgagg tggagcaaat ctcaagttgc ctcagttcgg atggagtctg aaactcgact 1140

ccagaagttg gaatcactag taatcgtaga tcagaacgct acggtgaata cgttcccggg 1200

gattgtacac accgcccgtc acgccatcgg agttggtttt acctgaagtc gttgcctagg 1260

gcggcgccga 1270

<210> 405
<211> 1506
<212> DNA
<213> Brachyspira pilosicoli

<400> 405
agagtttgat tctggctcag agcgaacgtt ggcgatgcgt cttaagcatg caagtcgagc 60

gggcttattc gggcaactgg ataagttagc ggcgaactgg tgagtaacac gtaggtaatc 120

tgccgtgaag cgggggataa cccatggaaa catggactaa taccgcatat actcttgcta 180

cataagtaga gtagaggaaa gtttttttcgc ttcacgatga gcctgcggcc tattagcctg 240

ttggtagggt aatggcctac caaagctacg ataggtagcc gacctgagag ggtgaccggc 300

cacattggga ctgagatacg gcccagactc ctacgggagg cagcagctga gaatcttcca 360

caatggacga aagtctgatg gagcgacatc gcgtgaggga tgaaggcctt cgggttgtaa 420

acctcggaaa ttatcgaaga atgagtgaca gtagataatg taagcctcgg ctaactacgt 480

gccagcagcc gcggtaatac gtaggaggca aacgttgctc ggatttactg ggcgtaaagg 540

gtgagtaggc ggatttataa gtctaaggtg aaagaccgaa gctcaacttc gggaacgcct 600

cggatactgt aagtcttgga tattgtaggg gatgatggaa ttctcggtgt agcggtggaa 660

tgcgcagata tcgagaggaa cacctatagc gaaggcagtc atctgggcat ttatcgacgc 720

tgaatcacga aagctagggg agcaaacagg cttagatacc ctggtagtcc tagccgtaaa 780

cgttgtacac taggtgcttc tatttaaata ggagtgccgt agctaacgtc ttaagtgtac 840

cgcctgagga gtatgcccgc aagggtgaaa ctcaaagaaa ttgacgggtc cccgcacaag 900

tggtggagca tgtggtttaa ttcgatgata cgcgaaaaac cttacctggg tttgaattgt 960

tagatgaatg atttagagat aagtcagacc gcaaggacgt ttaacatagg tgctgcatgg 1020

ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctcac 1080

cctctgttgc taccgagtaa tgtcgagcac tcttagggga ctgcctacgt tcaagtagga 1140

ggaaggtggg gatgatgtca agtcctcatg gcccttatgt ccagggctac acacgtgcta 1200

caatggcaag tacaaagaga agcaagaccg cgaggtggag caaaactcaa aaaagttgcc 1260

tcagttcgga ttggagtctg aaactcgact ccatgaagtt ggaatcacta gtaatcgtag 1320

atcagaacgc tacggtgaat acgttcccgg ggattgtaca caccgcccgt cacgccatcg 1380

gagttggttt tacctgaagc cgttagccta accgcaagga gggcggcgtc gaaggtggga 1440

ctgatgatga gggtgaagtc gtaacaaggc agccgtaccg gaaggtgtgg ctggatcacc 1500

tccttt 1506

<210> 406
<211> 1272
<212> DNA
<213> Brachyspira sp. HIS3

<400> 406
agcgaacgtt ggcgatgcgt cttaagcatg caagtcgagc gagcggcgaa ctggtgagta 60

acacgtaggt aatctgccgt gaagtggggg ataacccatg gaaacatgga ctaataccgc 120

atatagaaag tcgcttcacg atgagcctgc ggcctattag cctgttggta gggtaatggc 180

ctaccaaagc tacgataggt agccgacctg agagggtgac cggccacatt gggactgaga 240

tacggcccag actcmtacgg gaggcagcag ctgagaatct tccacaatgg acgaaagtct 300

gatggagcga catcgcgtga gggatgaagg ccttcgggtt gtaaacctcg gaaattatcg 360

aagatgacag tagataatgt aagcctcggc taactacgtg ccagcagccg cggtaatacg 420

taggaggcaa acgttgctcg gatttactgg gcgtaaaggg tgagtaggcg gatttataag 480

tctaaggtga aagaccgaag ctcaacttcg ggaacgcctc ggatactgta gatcttggat 540

attgtagggg atgatggaat tctcggtgta gcggtggaat gcgcagatat cgagaggaac 600

acctatagcg aaggcagtca tctgggcata tcgacgctga atcacgaaag ctaggggagc 660

aaacaggctt agataccctg gtagtcctag ccgtaaacgt tgtacactag gtgcttctat 720

aggagtgccg tagctaacgt cttaagtgta ccgcctgagg agtatgcccg caagggtgaa 780

actcaaagaa attgacgggt ccccgcacaa gtggtggagc atgtggttta attcgatgat 840

acgcgaaaaa ccttacctgg gtttgaattg cataggtgct gcatgcctgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcaccctc tgttgctacc 960

gatcgagtac tcttagggga ctgcctacgt caagtaggag gaaggtgggg atgatgtcaa 1020

gtcctcatgg cccttatgtc cagggctaca cacgtgctac aatggcaagc aaagagaagc 1080

aagaccgcga ggtggagcaa aactcaagtt gcctcagttc ggatggagtc tgaaactcga 1140

ctccagaagt tggaatcact agtaatcgta gatcagaacg ctacggtgaa tacgttcccg 1200

gggattgtac acaccgcccg tcacgccatc ggagttggtt ttacctgaag ccgttgccta 1260

gggcggcgtc ga 1272

<210> 407
<211> 1325
<212> DNA
<213> Brachyspira sp. HIS4

<400> 407
agcgaacgtt ggcgatgcgt cttaagcatg caagtcgagc gagcggcgaa ctggtgagta 60

acacgtaggt aatctgccgt gaagtggggg ataacccatg gaaacatgga ctaataccgt 120

atatagaaag tcgcttcacg atgagcctgc ggcctattag cctgttggta gggtaatggc 180

ctaccaaagc tacgataggt agccgacctg agagggtgac cggccacatt gggactgaga 240

tacggcccag actcctacgg gaggcagcag ctgagaatct tccacaatgg acgaaagtct 300

gatggagcga catcgcgtga gggatgaagg ccttcgggtt gtaaacctcg gaaattatcg 360

aagatgacag tagataatgt aagcctcggc taactacgtg ccagcagccg cggtaatacg 420

taggaggcaa acgttgctcg gatttactgg gcgtaaaggg tgagtaggcg gatttataag 480

tctaaggtga aagaccgaag ctcaacttcg ggaacgcctc ggatactgta gatcttggat 540

attgcagggg atgatggaat tctcggtgta gcggtggaat gcgcagatat cgagaggaac 600

acctatagcg aaggcagtca tctgggcata tcgacgctga atcacgaaag ctaggggagc 660

aaacaggctt agataccctg gtagtcctag ccgtaaacgt tgtacactag gtgcttctat 720

aggagtgccg tagctaacgt cttaagtgta ccgcctgagg agtatgcccg caagggtgaa 780

actcaaagaa attgacgggt ccccgcacaa gtggtggagc atgtggttta attcgatgat 840

acgcgaaaaa ccttacctgg gtttgaattg cataggtgct gcatgcctgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcaccctc tgttgctacc 960

gatcgagtac tcttagggga ctgcctacgt caagtaggag gaaggtgggg atgatgtcaa 1020

gtcctcatgg cccttatgtc cagggctaca cacgtgctac aatggcaagc aaagagaagc 1080

aagaccgcga ggtggagcaa aactcaagtt gcctcagttc ggatggagtc tgaaactcga 1140

ctccagaagt tggaatcact agtaatcgta gatcagaacg ctacggtgaa tacgttcccg 1200

gggattgtac acaccgcccg tcacgccatc ggagttggtt ttacctgaag ccgttgccta 1260

gggcggcgtc gaaggtggga ctgatgatga gggtgaagtc gtaacaaggc agccgtaccg 1320

gaagg 1325

<210> 408
<211> 1278
<212> DNA
<213> Brachyspira sp. HIS5

<400> 408
gaacgttggc gatgcgtctt aagcatgcaa gtcgagcgag cggcgaactg gtgagtaaca 60

cgtaggtaat ctgccgtgaa gtgggggata acccatggaa acatggacta ataccgcata 120

tagaaagtcg cttcacgatg agcctgcggc ctattagcct gttggtaggg taatggccta 180

ccaaagctac gataggtagc cgacctgaga gggtgaccgg ccacattggg actgagatac 240

ggcccagact cctacgggag gcagcagctg agaatcttcc acaatggacg aaagtctgat 300

ggagcgacat cgcgtgaggg atgaaggcct tcgggttgta aacctcggaa attatcgaag 360

atgacagtag ataatgtaag cctcggctaa ctacgtgcca gcagccgcgg taatacgtag 420

gaggcaaacg ttgctcggat ttactgggcg taaagggtga gtaggcggat ttataagtct 480

aaggtgaaag accgaagctc aacttcggga acgcctcgga tactgtagat cttggatatt 540

gtaggggatg atggaattct cggtgtagcg gtggaatgcg cagatatcga gaggaacacc 600

tatagcgaag gcagtcatct gggcatatcg acgctgaatc acgaaagcta ggggagcaaa 660

caggcttaga taccctggta gtcctagccg taaacgttgt acactaggtg cttctatagg 720

agtgccgtag ctaacgtctt aagtgtaccg cctgaggagt atgcccgcaa gggtgaaact 780

caaagaaatt gacgggtccc cgcacaagtg gtggagcatg tggtttaatt cgatgatacg 840

cgaaaaacct tacctgggtt tgaattgcat aggtgctgca tgcctgtcgt cagctcgtgt 900

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct caccctctgt tgctaccgat 960

cgagtactct taggggactg cctacgtcaa gtaggaggaa ggtggggatg atgtcaagtc 1020

ctcatggccc ttatgtccag ggctacacac gtgctacaat ggcaagcaaa gagaagcaag 1080

accgcgaggt ggagcaaaac tcaagttgcc tcagttcgga tggagtctga aactcgactc 1140

cagaagttgg aatcactagt aatcgtagat cagaacgcta cggtgaatac gttcccgggg 1200

attgtacaca ccgcccgtca cgccatcgga gttggtttta cctgaagccg ttgcctaggg 1260

cggcgtcgaa ggtgggac 1278

<210> 409
<211> 1029
<212> DNA
<213> Brevibacillus agri

<220>
<221> modified_base
<222> (9)..(9)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (11)..(11)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (22)..(22)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (58)..(60)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (70)..(70)
<223> a, c, t, g, unknown or other

<400> 409
aaagttctnt ntcagagacg ancaagtacc gttcgaacag ggcggtacct tgacggtnnn 60

gacgagaaan ccacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg 120

ttgtccggaa ttattgggcg taaagcgcgc gcaggcggct atgtaagtct ggtgttaaag 180

cccggggctc aaccccggtt cgcatcggaa actgtgtagc ttgagtgcag aagaggaaag 240

cggtattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaacacca gtggcgaagg 300

cggctttctg gtctgtaact gacgctgagg cgcgaaagcg tggggagcaa acaggattag 360

ataccctggt agtccacgcc gtaaacgatg agtgctaggt gttgggggtt tcaataccct 420

cagtgccgca gctaacgcaa taagcactcc gcctggggag tacgctcgca agagtgaaac 480

tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac 540

gcgaagaacc ttaccaggtc ttgacatccc gctgaccgtc ctagagatag ggcttccctt 600

cggggcagcg gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt 660

taagtcccgc aacgagcgca acccttatct ttagttgcca gcattcagtt gggcactcta 720

gagagactgc cgtcgacaag acggaggaag gcggggatga cgtcaaatca tcatgcccct 780

tatgacctgg gctacacacg tgctacaatg gctggtacaa cgggaagcta gctcgcgaga 840

gtatgccaat ctcttaaaac cagtctcagt tcggattgca ggctgcaact cgcctgcatg 900

aagtcggaat cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt 960

gtacacaccg cccgtcacac cacgggagtt tgcaacaccc gaagtcggtg aggtaaccgc 1020

aaggagcca 1029

<210> 410
<211> 1461
<212> DNA
<213> Brevibacillus brevis

<220>
<221> modified_base
<222> (44)..(45)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (54)..(55)
<223> a, c, t, g, unknown or other

<400> 410
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gagnntcttc ggannctagc 60

ggcggacggg tgagtaacac gtaggcaacc tgcctctcag actgggataa catagggaaa 120

cttatgctaa taccggatag gtttttggat cgcatgatcc gaaaagaaaa ggcggcttcg 180

gctgtcactg ggagatgggc ctgcggcgca ttagctagtt ggtggggtaa cggcctacca 240

aggcgacgat gcgtagccga cctgagaggg tgaccggcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtaggga attttccaca atggacgaaa gtctgatgga 360

gcaacgccgc gtgaacgatg aaggtcttcg gattgtaaag ttctgttgtt agggacgaat 420

aagtaccgtt cgaatagggc ggtaccttga cggtacctga cgagaaagcc acggctaact 480

acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggattt attgggcgta 540

aagcgcgcgc aggcggctat gtaagtctgg tgttaaagcc cggggctcaa ccccggttcg 600

catcggaaac tgtgtagctt gagtgcagaa gaggaaagcg gtattccacg tgtagcggtg 660

aaatgcgtag agatgtggag gaacaccagt ggcgaaggcg gctttctggt ctgtaactga 720

cgctgaggcg cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgag tgctaggtgt tgggggtttc aataccctca gtgccgcagc taacgcaata 840

agcactccgc ctggggagta cgctcgcaag agtgaaactc aaaggaattg acgggggccc 900

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt 960

gacatcccgc tgaccgctct ggagacagag cttcccttcg gggcagcggt gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttatcttt agttgccagc attcagttgg gcactctaga gagactgccg tcgacaagac 1140

ggaggaaggc ggggatgacg tcaaatcatc atgcccctta tgacctgggc tacacacgtg 1200

ctacaatggt tggtacaacg ggatgctacc tcgcgagagg acgccaatct cttaaaacca 1260

atctcagttc ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg 1320

cggatcagca tgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1380

cgggagtttg caacacccga agtcggtgag gtaaccgcaa ggagccagcc gccgaaggtg 1440

gggtagatga ctggggtgaa g 1461

<210> 411
<211> 1419
<212> DNA
<213> Brevibacillus centrosporus

<220>
<221> modified_base
<222> (23)..(23)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (27)..(27)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (156)..(156)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (162)..(162)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (180)..(181)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (198)..(198)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (200)..(200)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (212)..(212)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (321)..(321)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (411)..(411)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (450)..(450)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (478)..(478)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (644)..(644)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (717)..(717)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (870)..(870)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1403)..(1403)
<223> a, c, t, g, unknown or other

<400> 411
gagagtttga tcctggctca ggncgancgc tggcggcgtg cctaatacat gcaagtcgag 60

cgagtctctt cggaggctag cggcggacgg gtgagtaaca cgtaggcaac ctgcctctca 120

gactgggata acatagggaa acttatgcta ataccngata gngtcttgtc tcgcatgagn 180

naagacggaa aggtagcncn ggctatcact tncggatggg cctgcggcgc attagctagt 240

tggtggggta atggcctacc aaggcgacga tgcgtagccg acctgagagg gtgaccggcc 300

acactgggac tgagacacgg nccagactcc tacgggaggc agcagtaggg aattttccac 360

aatggacgaa agtctgatgg agcaacgccg cgtgaacgat gaaggtcttc ngattgtaaa 420

gttctgttgt tagggacgaa caagtaccgn tcgaataggg cggtaccttg acggtacntg 480

acgagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt 540

tgtccggatt tattgggcgt aaagcgcgcg caggcggcta tgtaagtctg gtgttaaagc 600

ccggagctca actccggttc gcatcggaaa ctgtgtagct tgantgcaga agaggaaagc 660

ggtattccac gtgtagcggt gaaatgcgta gagatgtgga ggaacaacag tggcganggc 720

ggctttctgg tctgtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg caaacgatga gtgctaggtg ttgggggttt caataccctc 840

agtgccgcag ctaacgcaat aagcactccn cctggggagt acgctcgcaa gagtgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaggtct tgacatcccg ctgaccgctc tggagacaga gcttcccttc 1020

ggggcagcgg tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa cccttatttc tagttgccag cattcagttg ggcactctag 1140

agagactgcc gtcgacaaga cggaggaagg cggggatgac gtcaaatcat catgcccctt 1200

atgacctggg ctacacacgt gctacaatgg ttggtacaac gggatgctac ctcgcgagag 1260

gacgccaatc tcttaaaacc aatctcagtt cggattgtag gctgcaactc gcctacatga 1320

agtcggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcacacc acnggagttt gcaacaccc 1419

<210> 412
<211> 1486
<212> DNA
<213> Brevibacillus choshinensis

<220>
<221> modified_base
<222> (44)..(44)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (51)..(51)
<223> a, c, t, g, unknown or other

<400> 412
cgaacgctgg cggcgtgcct aatacatgca agtcgagcga gtcncttcgg nggctagcgg 60

cggacgggtg agtaacacgt aggcaacctg cctctcagac tgggataaca tagggaaact 120

tatgctaata ccggataggt ttttggatcg catgatccga aaagaaaagg cggcttcggc 180

tgtcactggg agatgggcct gcggcgcatt agctagttgg tggggtaacg gcctaccaag 240

gcgacgatgc gtagccgacc tgagagggtg accggccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtagggaat tttccacaat ggacgaaagt ctgatggagc 360

aacgccgcgt gaacgatgaa ggtcttcgga ttgtaaagtt ctgttgttag ggacgaacaa 420

gtaccgttcg aatagggcgg taccttgacg gtacctgacg agaaagccac ggctaactac 480

gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt ccggatttat tgggcgtaaa 540

gcgcgcgcag gcggctatgt aagtctggtg ttaaagcccg gagctcaact ccggttcgca 600

tcggaaactg tgtagcttga gtgcagaaga ggaaagcggt attccacgtg tagcggtgaa 660

atgcgtagag atgtggagga acaccagtgg cgaaggcggc tttctggtct gtaactgacg 720

ctgaggcgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgagtg ctaggtgttg ggggtttcaa taccctcagt gccgcagcta acgcaataag 840

cactccgcct ggggagtacg ctcgcaagag tgaaactcaa aggaattgac gggggcccgc 900

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga 960

catcccgctg accgctctgg agacagagct tcccttcggg gcagcggtga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttatttctag ttgccagcat tcagttgggc actctagaga gactgccgtc gacaagacgg 1140

aggaaggcgg ggatgacgtc aaatcatcat gccccttatg acctgggcta cacacgtgct 1200

acaatggttg gtacaacggg atgctacctc gcgaggggac gccaatctct taaaaccaat 1260

ctcagttcgg attgtaggct gcaactcgcc tacatgaagt cggaatcgct agtaatcgcg 1320

gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg 1380

ggagtttgca acacccgaag tcggtgaggt aaccgcaagg agccagccgc cgaaggtggg 1440

gtagatgact ggggtgaagt cgtaacaagg tatccgtacc ggaagg 1486

<210> 413
<211> 1391
<212> DNA
<213> Brevibacillus invocatus

<400> 413
tcgagcgagt cccttcgggg gctagcggcg gacgggtgag taacacgtag gcaacctgcc 60

cgtaagctcg ggataacatg gggaaactca tgctaatacc ggatagggtc ttctctcgca 120

tgagaggaga cggaaaggtg gcgcaagcta ccacttacgg atgggcctgc ggcgcattag 180

ctagttggtg gggtaacggc ctaccaaggc gacgatgcgt agccgacctg agagggtgac 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaattt 300

tccacaatgg acgaaagtct gatggagcaa cgccgcgtga acgatgaagg tcttcggatt 360

gtaaagttct gttgtcagag acaacaagta ccgttcgaac agggcggtac cttgcggtac 420

ctgacgagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag 480

cgttgtccgg aattattggg cgtaaagcgc gcgcaggcgg ctatgtaagt ctggtgttaa 540

agcccggggc tcaaccccgg ttcgcatcgg aaactgtgta gcttgagtgc agaagaggaa 600

agcggtattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac cagtggcgaa 660

ggcggctttc tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc aaacaggatt 720

agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttggggg tttcaatacc 780

ctcagtgccg cagctaacgc aataagcact ccgcctgggg agtacgctcg caagagtgaa 840

actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 900

acgcgaagaa ccttaccagg tcttgacatc ccgctgaccg tcctacatat agggcttccc 960

ttcggggcag cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg 1020

gttaagtccc gcaacgagcg caacccttat ctttagttgc cagcattcag ttgggcactc 1080

tagagagact gccgtcgaca agacggagga aggcggggat gacgtcaaat catcatgccc 1140

cttatgacct gggctacaca cgtgctacaa tggctggtac aacgggaagc tagctcgcga 1200

gagtatgcca atctcttaaa accagtctca gttcggattg caggctgcaa ctcgcctgca 1260

tgaagtcgga atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc 1320

ttgtacacac cgcccgtcac accacgggag tttgcaacac ccgaagtcgg tgaggtaacc 1380

gcaaggagcc a 1391

<210> 414
<211> 1470
<212> DNA
<213> Brevibacillus laterosporus

<220>
<221> modified_base
<222> (231)..(231)
<223> a, c, t, g, unknown or other

<400> 414
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gagggtcttc ggaccctagc 60

ggcggacggg tgagtaacac gtaggcaacc tgcctgtaag actgggataa catagggaaa 120

cttatgctaa taccggatag ggttttgctt cgcctgaagc gaaacggaaa gatggcgcaa 180

gctatcactt acagatgggc ctgcggcgca ttagctagtt ggtgaggtaa nggctcacca 240

aggcgacgat gcgtagccga cctgagaggg tgaccggcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtaggga attttccaca atggacgaaa gtctgatgga 360

gcaacgccgc gtgaacgatg aaggctttcg ggtcgtaaag ttctgttgtt agggaagaaa 420

cagtgctatt taaataaggt agcaccttga cggtacctaa ccagaaagcc acggctaact 480

acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggaatt attgggcgta 540

aagcgcgcgc aggtggctat gtaagtctga tgttaaagcc cgaggctcaa cctcggttcg 600

cattggaaac tgtgtagctt gagtgcagga gaggaaagtg gtattccacg tgtagcggtg 660

aaatgcgtag agatgtggag gaacaccagt ggcgaaggcg actttctggc ctgtaactga 720

cactgaggcg cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgag tgctaggtgt taggggtttc aataccctta gtgccgcagc taacgcaata 840

agcactccgc ctggggagta cgctcgcaag agtgaaactc aaaggaattg acgggggccc 900

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt 960

gacatcccac tgaccgctct agagatagag cttcccttcg gggcagtggt gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttatcttt agttgccagc attcagttgg gcactctaga gagactgccg tcgacaagac 1140

ggaggaaggc ggggatgacg tcaaatcatc atgccccctta tgacctgggc tacacacgtg 1200

ctacaatggt tggtacaacg ggatgctact tcgcgagaag atgctaatct cttaaaacca 1260

atctcagttc ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg 1320

cggatcagca tgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1380

cgggagtttg caacacccga agtcggtgag gtaaccgtaa ggagccagcc gccgaaggtg 1440

gggtagataa ctggggtgaa gtcgtaacaa 1470

<210> 415
<211> 1486
<212> DNA
<213> Brevibacillus parabrevis

<400> 415
cgaacgctgg cggcgtgcct aatacatgca agtcgagcga gggttttcgg accctagcgg 60

cggacgggtg agtaacacgt aggcaacctg cctctcagac cgggataaca tagggaaact 120

tatgctaata ccggataggt ttttggattg catgatccga aaagaaaaga tggcttcggc 180

tatcactggg agatgggcct gcggcgcatt agctagttgg tggggtaacg gcctaccaag 240

gcgacgatgc gtagccgacc tgagagggtg accggccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtagggaat ttccacaat ggacgaaagt ctgatggagc 360

aacgccgcgt gaacgatgaa ggtcttcgga ttgtaaagtt ctgttgtcag ggacgaacac 420

gtgccgttcg aatagggcgg taccttgacg gtacctgacg agaaagccac ggctaactac 480

gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt ccggatttat tgggcgtaaa 540

gcgcgcgcag gcggctatgt aagtctggtg ttaaagcccg gagctcaact ccggttcgca 600

tcggaaactg tgtagcttga gtgcagaaga ggaaagcggt attccacgtg tagcggtgaa 660

atgcgtagag atgtggagga acaccagtgg cgaaggcggc tttctggtct gtaactgacg 720

ctgaggcgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgagtg ctaggtgttg ggggtttcaa taccctcagt gccgcagcta acgcaataag 840

cactccgcct ggggagtacg ctcgcaagag tgaaactcaa aggaattgac gggggcccgc 900

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga 960

catcccgctg accgctctgg agacagagct tcccttcggg gcagcggtga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttatctttag ttgccagcat tcagttgggc actctagaga gactgccgtc gacaagacgg 1140

aggaaggcgg ggatgacgtc aaatcatcat gccccttatg acctgggcta cacacgtgct 1200

acaatggttg gtacaacggg atgctacctc gcgagaggac gccaatctct gaaaaccaat 1260

ctcagttcgg attgtaggct gcaactcgcc tacatgaagt cggaatcgct agtaatcgcg 1320

gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg 1380

ggagtttgca acacccgaag tcggtgaggt aaccgcaagg agccagccgc cgaaggtggg 1440

gtagatgact ggggtgaagt cgtaacaagg tatccgtacc ggaagg 1486

<210> 416
<211> 1486
<212> DNA

<213> Brevibacillus reuszeri

<220>
<221> modified_base
<222> (994)..(994)
<223> a, c, t, g, unknown or other

<400> 416
cgaacgctgg cggcgtgcct aatacatgca agtcgagcga gtctcttcgg aggctagcgg 60

cggacgggtg agtaacacgt aggcaacctg cctctcagac tgggataaca tagggaaact 120

tatgctaata ccggataggt ttttggaccg catggtccga aaagaaaaga tggcttcggc 180

tatcactggg agatgggcct gcggcgcatt agctagttgg tggggtaacg gcctaccaag 240

gcgacgatgc gtagccgacc tgagagggtg accggccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtagggaat ttccacaat ggacgaaagt ctgatggagc 360

aacgccgcgt gaacgatgaa ggtcttcgga ttgtaaagtt ctgttgttag ggacgaataa 420

gtaccgttcg aatagggcgg taccttgacg gtacctgacg agaaagccac ggctaactac 480

gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt ccggatttat tgggcgtaaa 540

gcgcgcgcag gcggctatgt aagtctggtg ttaaagcccg gagctcaact ccggttcgca 600

tcggaaactg tgtagcttga gtgcagaaga ggaaagcggt attccacgtg tagcggtgaa 660

atgcgtagag atgtggagga acaccagtgg cgaaggcggc tttctggtct gtaactgacg 720

ctgaggcgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgagtg ctaggtgttg ggggtttcaa taccctcagt gccgcagcta acgcaataag 840

cactccgcct ggggagtacg ctcgcaagag tgaaactcaa aggaattgac gggggcccgc 900

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga 960

catcccgctg accgctctgg agacagagct tccnttcggg gcagcggtga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttatctttag ttgccagcat tcagttgggc actctagaga gactgccgtc gacaagacgg 1140

aggaaggcgg ggatgacgtc aaatcatcat gccccttatg acctgggcta cacacgtgct 1200

acaatggttg gtacaacggg acgctagccc gcgagggtat gccaatctct taaaaccaat 1260

ctcagttcgg attgtaggct gcaactcgcc tacatgaagt cggaatcgct agtaatcgcg 1320

gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg 1380

ggagtttgca acacccgaag tcggtgaggt aaccgcaagg agccagccgc cgaaggtggg 1440

gtagatgact ggggtgaagt cgtaacaagg tatccgtacc ggaagg 1486

<210> 417
<211> 1477
<212> DNA
<213> Brevibacillus sp. phR

<400> 417
gatcctggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg agcgaaggac 60

ttcggtcctt agcggcggac gggtgagtaa cacgtaggca acctgcccgt cagacyggga 120

taacataggg aaacttatgc taataccaga taggtttcts gactgcatgg taggaraagg 180

aaagayggcg caagctgtca cttggggatg ggcctgcggc gcattagctg gttggcgggg 240

taacggccca ccaaggcgac gatgcgtagc cgacctgaga gggtgaccgg ccacactggg 300

actgagacac ggcccagact cctacgggag gcagcagtag ggaattttcc acaatggacg 360

aaagtctgat ggagcaacgc cgcgtgaacg atgaaggcct tcgggttgta aagttctgtt 420

gtcagggacg aacaagtacc tgttcgaaca gggcggtacc ttgacggtac ctgacgagaa 480

agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg 540

aattattggg cgtaaagcgc gcgcaggcgg ctatgtaagt ctgatgttaa agcccggggc 600

tcaactccgg ttcgcattgg aaactgcgta gcttgagtgc agaagaggaa agcggtattc 660

cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac cagtggcgaa ggcggctttc 720

tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc aaacaggatt agataccctg 780

gtagtccacg ccgtaaacga tgagtgctag gtgttggggg tttcgatacc ctcagtgccg 840

cagctaacgc aataagcact ccgcctgggg agtacgctcg caagagtgaa actcaaagga 900

attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccagg tcttgacatc ccgctgaccg tcctggagac agggcttccc ttcggggcag 1020

cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttat ctttagttgc cagcattcgg ttgggcactc tagagagact 1140

gccgtcgaca agacggagga aggcggggat gacgtcaaat catcatgccc cttatgacct 1200

gggctacaca cgtgctacaa tggctggtac aacgggacgc gagcccgcga gggttagcca 1260

atctctgaaa accagtctca gttcggattg caggctgcaa ctcgcctgca tgaagtcgga 1320

atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac accacgagag tttgcaacac ccgaagtcgg tgaggtaacc gcaaggagcc 1440

agccgccgaa ggtggggtag atgattgggg tgaagtc 1477

<210> 418
<211> 1385
<212> DNA
<213> Brevibacillus thermoruber

<220>
<221> modified_base
<222> (1374)..(1374)
<223> a, c, t, g, unknown or other

<400> 418
tttgaagctt gcttcagaca ggttagcggc ggacgggtga gtaacacgta ggcaacctgc 60

ccgcaagacc gggataacgt agggaaactt acgctaatac cggatagggc accttctcgc 120

atgagagggt gcggaaaggt ggcgcaagct accacttgcg gatgggcctg cggcgcatta 180

gctagttggt ggggtaacgg cctaccaagg cgacgatgcg tagccgacct gagagggtga 240

ccggccacac tgggactgag acacggccca gactcctacg ggaggcagca gtagggaatt 300

ttccacaatg ggcgaaagcc tgatggagca acgccgcgtg aacgatgaag gtcttcggat 360

tgtaaagttc tgttgtcagg gacgaacaag taccgttcga acagggcggt accttgacgg 420

tacctgacga gaaagccccg gctaactacg tgccagcagc cgcggtaata cgtaggggc 480

aagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggtcgggta agtctgatgt 540

caaagcccgg ggctcaaccc cggtacgcat tggaaactgc tcgacttgag tgcagaagag 600

gaaagcggaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa caccagtggc 660

gaaggcggct ttctggtctg taactgcgct gaggcgcgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgccgtaaac gatgagtgta ggtgttgggg gtttcaatcc 780

tcagtgccgc agtaacgcaa taagcactcc gcctggggag tacgctcgca agagtgaaac 840

tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac 900

gcgaagaacc ttaccggtct tgacatcccg ctgaccgcct agagataggg cttcccttcg 960

gggcagcggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttatcttt agttgccagc attcagttgg gcactctaga 1080

gagactgccg tcgacaagac ggaggaaggc ggggatgacg tcaaatcatc atgcccctta 1140

tgacctgggc tacacacgtg ttacaatggt tggtacaacg ggacgcaagc ccgcgagggt 1200

aagccaatct cttaaaacca gtctcagttc ggattgcagg ctgcaactcg cctgcatgaa 1260

gtcggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca cgagagtttg caacacccga agtcggtgag gtanccgcaa 1380

ggagc 1385

<210> 419
<211> 1474
<212> DNA
<213> Brevibacterium aurantiacum

<220>
<221> modified_base
<222> (10)..(10)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (35)..(35)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (418)..(419)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (421)..(421)
<223> a, c, t, g, unknown or other

<400> 419
ctgcgtgctn aacacatgca agtcgaacgc tgaanccctg gtgcttgcac ggggtggatg 60

agtggcgaac gggtgagtaa cacgtgagta acctgccccc gacttcggga taagcccggg 120

aaactgggtc taataccgga tatgaccatc actcgcatga gtgatggtgg aaagtttttt 180

cggttgggga tgggctcgcg gcctatcagt ttgttggtga ggtaatggct caccaagacg 240

acgacgggta gccggcctga gagggcgacc ggccacactg ggactgagac acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt gcacaatggg ggaaaccctg atgcagcgac 360

gcagcgtgcg ggatgacggc cttcgggttg taaaccgctt tcagcaggga agaagccnnt 420

nggggtgacg gtacctgcag aagaagtacc ggctaactac gtgccagcag ccgcggtaat 480

acgtagggta caagcgttgt ccggaattat tgggcgtaaa gagctcgtag gtggttggtc 540

acgtctgctg tggaaacgca acgcttaacg ttgcgcgtgc agtgggtacg ggctgactag 600

agtgcagtag gggagtctgg aattcctggt gtagcggtga aatgcgcaga tatcaggagg 660

aacaccggtg gcgaaggcgg gactctgggc tgtaactgac actgaggagc gaaagcatgg 720

ggagcgaaca ggattagata ccctggtagt ccatgccgta aacgttgggc actaggtgtg 780

ggggacattc cacgttctcc gcgccgtacg taacgcatta agtgccccgc ctggggagta 840

cggtcgcaag gctaaaactc aaaggaattg acgggggccg cacaagcggc ggagcatgcg 900

gattaattcg atgcaacgcg aagaacctta ccaaggcttg acatacacca gaccgttctg 960

gaaacagttc ctccctttgg ggttggtgta caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgttctatg ttgccagcac 1080

gtgatggtgg gaactcatag gagactgccg gggtcaactc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccttta tgtcttgggc ttcacgcatg ctacaatggc tggtacagag 1200

agatgcgaga ccgcgaggtt ttagcgaatc ccttaaagcc agtctcagtt cggatcgtag 1260

tctgcaattc gactacgtga agtcggagtc gctagtaatc gcagatcagc aacgctgcgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcaagt cacgaaagtc ggtaacaccc 1380

gaagccggtg gcccaaccct tgtggagggg gccgtctaag gtgggactgg tgattgggac 1440

taagtcgtaa caaggtagcc gtaccggaag gtgc 1474

<210> 420
<211> 1389
<212> DNA
<213> Brevibacterium casei

<400> 420
tgcagtcgta cgctgaagcc tgtagcttgc accgggtgga tgagtggcga acgggtgagt 60

aacacgtgag taacctgccc ctgacttcgg gataagcccg ggaaactggg tctaataccg 120

gatacgactg ccggacgcat gtctggtggt ggaaagtttt ttcggttggg gatgggctcg 180

cggcctatca gtttgttggt gaggtaatgg ctcaccaaga cgacgacggg tagccggcct 240

gagagggcga ccggccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg acgcagcgtg cgggatgacg 360

gccttcgggt tgtaaaccgc tttcagcagg gaagaagcgc aagtgacggt acctgcagaa 420

gaagtaccgg ctaactacgt gccagcagcc gcggtaatac gtagggtacg agcgttgtcc 480

ggaattattg ggcgtaaaga gctcgtaggt ggttggtcac gtctgctgtg gaaacgcaac 540

gcttaacgtt gcgcgtgcag tgggtacggg ctgactagag tgcagtaggg gagtctggaa 600

ttcctggtgt agcggtgaaa tgcgcagata tcaggaggaa caccggtggc gaaggcggga 660

ctctgggctg taactgacac tgaggagcga aagcatgggg agcgaacagg attagatacc 720

ctggtagtcc atgccgtaaa cgttgggcac taggtgtggg gggcattcca cgttctccgc 780

gccgtagcta acgcattaag tgccccgcct ggggagtacg gtcgcaaggc taaaactcaa 840

aggaattgac gggggcccgc acaagcggcg gagcatgcgg attaattcga tgcaacgcga 900

agaaccttac caaggcttga catacaccgg accgtcctgg aaacaggtcc tcttctttga 960

agctggtgta caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1020

tcccgcaacg agcgcaaccc tcgttctatg ttgccagcac gtgatggtgg gaactcatag 1080

gagactgccg gggtcaactc ggaggaaggt ggggatgacg tcaaatcatc atgcccttta 1140

tgtcttgggc ttcacgcatg ctacaatggc tggtacagag agaggcgaac ccgtgagggc 1200

aagcgaatcc cttaaagcca gtctcagttc ggatcgtagt ctgcaattcg actacgtgaa 1260

gtcggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc ccgggccttg 1320

tacacaccgc ccgtcaagtc acgaaagtcg gtaacacccg aagccggtgg cctaaccgta 1380

aggaggggg 1389

<210> 421
<211> 1480
<212> DNA
<213> Brevibacterium epidermidis

<220>
<221> modified_base
<222> (162)..(162)
<223> a, c, t, g, unknown or other

<400> 421
ctgcgtgctt aacacatgca agtcgaacgc tgaagccgac agcttgctgt tggtggatga 60

gtggcgaacg ggtgagtaac acgtgagtaa cctgcccctg atttcgggat aagcctggga 120

aactgggtct aataccggat acgaccacct gacgcatgtt gngtggtgga aagtttttcg 180

atcggggatg ggctcgcggc ctatcagctt gttggtgggg taatggccta ccaaggcgac 240

gacgggtagc cggcctgaga gggcgaccgg ccacactggg actgagacac ggcccagact 300

cctacgggag gcagcagtgg ggaatattgc acaatggggg aaaccctgat gcagcgacgc 360

agcgtgcggg atgacggcct tcgggttgta aaccgctttc agcagggaag aagcgaaagt 420

gacggtacct gcagaagaag taccggctaa ctacgtgcca gcagccgcgg taatacgtag 480

ggtacgagcg ttgtccggaa ttattgggcg taaagagctc gtaggtggtt ggtcacgtct 540

gctgtggaaa cgcaacgctt aacgttgcgc gtgcagtggg tacgggctga ctagagtgca 600

gtaggggagt ctggaattcc tggtgtagcg gtgaaatgcg cagatatcag gaggaacacc 660

ggtggcgaag gcgggactct gggctgtaac tgacactgag gagcgaaagc atggggagcg 720

aacaggatta gataccctgg tagtccatgc cgtaaacgtt gggcactagg tgtgggggac 780

attccacgtt ctccgcgccg tacgtaacgc attaagtgcc ccgcctgggg agtacggtcg 840

caaggctaaa actcaaagga attgacgggg gccgcacaag cggcggagca tgcggattaa 900

ttcgatgcaa cgcgaagaac cttaccaagg cttgacatac actggaccgt tctggaaaca 960

gttcttctct ttggagctgg tgtacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca accctcgttc tatgttgcca gcacgtgatg 1080

gtgggaactc ataggagact gccggggtca actcggagga aggtggggat gacgtcaaat 1140

catcatgccc tttatgtctt gggcttcacg catgctacaa tggctggtac agagagaggc 1200

gaacccgtga gggtaagcga atcccttaaa gccagtctca gttcggatcg tagtctgcaa 1260

ttcgactacg tgaagtcgga gtcgctagta atcgcagatc agcaacgctg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca agtcacgaaa gtcggtaaca cccgaagccg 1380

gtgtcccaac ccttttggga gggggccgtc taaggtggga ctggtgattg ggactaagtc 1440

gtaacaaggt agccgtaccg gaaggtgcgc tggatcacct 1480

<210> 422
<211> 1540
<212> DNA
<213> Brevibacterium frigoritolerans

<400> 422
gtttgatcct ggctcaggac gaacgctggc ggcgtgccta atacatgcaa gtcgagcgaa 60

tcgacgggag cttgctccct gagattagcg gcggacgggt gagtaacacg tgggcaacct 120

gcctataaga ctgggataac ttcgggaaac cggagctaat accggatacg ttcttttctc 180

gcatgagaga agatggaaag acggtttacg ctgtcactta tagatgggcc cgcggcgcat 240

tagctagttg gtgaggtaat ggctcaccaa ggcgacgatg cgtagccgac ctgagagggt 300

gatcggccac actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa 360

tcttccgcaa tggacgaaag tctgacggag caacgccgcg tgaacgaaga aggccttcgg 420

gtcgtaaagt tctgttgtta gggaagaaca agtaccagag taactgctgg taccttgacg 480

gtacctaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg 540

caagcgttgt ccggaattat tgggcgtaaa gcgcgcgcag gtggttcctt aagtctgatg 600

tgaaagccca cggctcaacc gtggagggtc attggaaact ggggaacttg agtgcagaag 660

aggaaagtgg aattccaagt gtagcggtga aatgcgtaga gatttggagg aacaccagtg 720

gcgaaggcga ctttctggtc tgtaactgac actgaggcgc gaaagcgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt agagggtttc 840

cgccctttag tgctgcagct aacgcattaa gcactccgcc tggggagtac ggccgcaagg 900

ctgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

aagcaacgcg aagaacctta ccaggtcttg acatcctctg acaaccctag agatagggct 1020

ttccccttcg ggggacagag tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgatct tagttgccag cattcagttg 1140

ggcactctaa ggtgactgcc ggtgacaaac cggaggaagg tggggatgac gtcaaatcat 1200

catgcccctt atgacctggg ctacacacgt gctacaatgg atggtacaaa gggctgcaaa 1260

cctgcgaagg taagcgaatc ccataaagcc attctcagtt cggattgcag gctgcaactc 1320

gcctgcatga agccggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg aagtcggtga 1440

ggtaaccttc atggagccag ccgcctaagg tgggacagat gattggggtg aagtcgtaac 1500

aaggtagccg tatcggaagg tgcggctgga tcacctcctt 1540

<210> 423
<211> 1515
<212> DNA
<213> Brevibacterium linens

<400> 423
tcaggacgaa cgctggctgc gtgcttaaca catgcaagtc gaacgctgaa gccctggtgc 60

ttgcaccggg gtggatgagt ggcgaacggg tgagtaacac gtgagtaacc tgcccccgac 120

ttcgggataa gcccgggaaa ctgggtctaa taccggatat gacsaysrmt sgcatswktg 180

rtkgtggaaa gttttttcgg ttggggatgg gctcgcggcc tatcagtttg ttggtgaggt 240

aatggctcac caagacgacg acgggtagcc ggcctgagag ggcgaccggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatattgca caatggggga 360

aaccctgatg cagcgacgca gcgtgcggga tgacggcctt cgggttgtaa accgctttca 420

gcagggaaga agcctttcgg ggtgacggta cctgcagaag aagtaccggc taactacgtg 480

ccagcagccg cggtaatacg tagggtacaa gcgttgtccg gaattattgg gcgtaaagag 540

ctcgtaggtg gttggtcacg tctgctgtgg aaacgcaacg cttaacgttg cgcgtgcagt 600

gggtacgggc ttgactagag tgcagtaggg gagtctggaa ttcctggtgt agcggtgaaa 660

tgcgcagata tcaggaggaa caccggtggc gaaggcggga ctctgggctg taactgacac 720

tgaggagcga aagcatgggg agcgaacagg attagatacc ctggtagtcc atgccgtaaa 780

cgttgggcac taggtgtggg ggacattcca cgttctccgc gccgtagcta acgcattaag 840

tgccccgcct ggggagtacg gtcgcaaggc taaaactcaa aggaattgac gggggcccgc 900

acaagcggcg gagcatgcgg attaattcga tgcaacgcga agaaccttac caaggcttga 960

ctatacacca gaccgttctg gaaacagttc ctccccttg gggttggtgt acaggtggtg 1020

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

ctcgttctat gttgccagca cgtaatggtg ggaactcata ggagactgcc ggggtcaact 1140

cggaggaagg tggggatgac gtcaaatcat catgcccttt atgtcttggg cttcacgcat 1200

gctacaatgg ctggtacaga gagatgcgag accgcgaggt tttagcgaat cccttaaagc 1260

cagtctcagt tcggatcgta gtctgcaatt cgactacgtg aagtcggagt cgctagtaat 1320

cgcagatcag caacgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaag 1380

tcacgaaagt cggtaacacc cgaagccggt ggcccaaccc ttgtggaggg ggccgtctaa 1440

ggtgggactg gtgattggga ctaagtcgta acaaggtagc cgtaccggaa ggtgcggctg 1500

gatcacctcc tttct 1515

<210> 424
<211> 1527
<212> DNA
<213> Brevibacterium mcbrellneri

<400> 424
tttttgtgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ctgaagcttg gtgttttcac tgggtggatg agtggcgaac gggtgagtaa 120

cacgtgagta acctgccctt tacttcggga taagcttggg aaactgggtc taataccgga 180

tattctgcgt gatcgtatgg ttgtgtagga aagatttttt ggtaagggat gggctcgcgg 240

cctatcagtt tgttggtggg gtgatggcct accaagacga cgacgggtag ccggcctgag 300

agggcgaccg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggg gaaaccctga tgcagcgacg ccgcgtgggg gatgacggcc 420

ttcgggttgt aaacctcttt cagtagggaa gaagcgtaag tgacggtacc tgcagaagaa 480

gtaccggcta actacgtgcc agcagccgcg gtaatacgta gggtactagc gttgtccgga 540

attattgggc gtaaagagct cgtaggtggt ttgtcgcgtc tgctgtggaa acgtgccgct 600

taacggtgcg cgtgcagtgg gtacgggcgg actagagtgc agtaggggag tctggaattc 660

ctggtgtagc ggtgaaatgc gcagatatca ggaggaacac cggtggcgaa ggcgggactc 720

tgggctgtta ctgacgctga ggagcgaaag catggggagc gaacaggatt agataccctg 780

gtagtccatg ccgtaaacgt tgggcactag gtgtggggtc cattccacgg attctgcgcc 840

gtagctaacg cattaagtgc cccgcctggg gagtacggcc gcaaggctaa aactcaaagg 900

aattgacggg ggcccgcaca agcggcggag catgcggatt aattcgatgc aacgcgaaga 960

accttaccaa ggcttgacat gcactggatc gctgcagaga tgtggttttc tttttgactg 1020

gtgtacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

caacgagcgc aaccctcgtt ctatgttgcc agcacgtgat ggtgggaact catgggagac 1140

tgccggggtc aactcggagg aaggtgggga tgacgtcaaa tcatcatgcc ctttatgtct 1200

tgggcttcac gcatgctaca atggccggta cagagggtgg cgataccgtg aggtggagcg 1260

aatctcttaa agccggtctc agttcggatc gtagtctgca actcgactac gtgaagtcgg 1320

agtcgctagt aatcgcagat cagcaatgct gcggtgaata cgttcccggg ccttgtacac 1380

accgcccgtc aagtcacgaa agtcggtaac acccgaagcc ggtggcctaa ccttttgggg 1440

ggagccgtcg aaggtgggac tggtgattgg gactaagtcg taacaaggta gccgtaccgg 1500

aaggtgcggc tggatcacct cctttct 1527

<210> 425
<211> 1441
<212> DNA
<213> Brevibacterium paucivorans

<400> 425
gaagctggcg gcgtgcttaa cacatgcaag tcgaacgatg aagctctagc ttgctggggt 60

ggattagtgg cgaacgggtg agtaacacgt gagtaacctg ccctttactt cgggataagc 120

ttgggaaact gggtctaata ccggatattc tgcatggtcg gatggttgtg taggaaagat 180

tttttggtaa gggatgggct cgcggcctat cagtttgttg gtggggtgat ggcctaccaa 240

gacgacgacg ggtagccggc ctgagagggc gaccggccac actgggactg agacacggcc 300

cagactccta cgggaggcag cagtggggaa tattgcacaa tgggggaaac cctgatgcag 360

cgacgccgcg tgggggatga cggccttcgg gttgtaaacc tctttcagta gggaagaagc 420

gaaagtgacg gtacctgcag aagaagtacc ggctaactac gtgccagcag ccgcggtaat 480

acgtagggta ctagcgttgt ccggaattat tgggcgtaaa gagctcgtag gtggtttgtc 540

gcgtctgctg tggaaacgtg ccgcttaacg gtgcgcgtgc agtgggtacg ggcggactag 600

agtgcagtag gggagtctgg aattcctggt gtagcggtga aatgcgcaga tatcaggagg 660

aacaccggtg gcgaaggcgg gactctgggc tgttactgac gctgaggagc gaaagcatgg 720

ggagcgaaca ggattagata ccctggtagt ccatgccgta aacgttgggc actaggtgtg 780

gggtccattc cacggattct gcgccgtagc taacgcatta agtgccccgc ctggggagta 840

cggccgcaag gctaaaactc aaaggaattg acgggggccc gcacaagcgg cggagcatgc 900

ggattaattc gatgcaacgc gaagaacctt accaaggctt gacatgcact agaccatcgc 960

agagatgtgg ttttcttttt gactggtgta caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgttctatg ttgccagcac 1080

gtgatggtgg gaactcatgg gagactgccg gggtcaactc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccttta tgtcttgggc ttcacgcatg ctacaatggc cggtacagag 1200

ggtggcgata ccgtgaggtg gagcgaatct cttaaagccg gtctcagttc ggatcgtagt 1260

ctgcaactcg actacgtgaa gtcggagtcg ctagtaatcg cagatcagca atgctgcggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcaagtc acgaaagtcg gtaacacccg 1380

aagccggtgg cctaaccctg tgtgggggga gccgtcgaag gtgggactgg tgattgggac 1440

t 1441

<210> 426
<211> 1341
<212> DNA
<213> Brevibacterium sanguinis

<400> 426
gagtttgatc ctggctcagg acgaacgctg gctgcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgagta acctgcccct gacttcggga taagcccggg 120

aaactgggtc taataccgga tacggaaagt cggttgggga tgggctcgcg gcctatcagt 180

ttgttggtga ggtaatggct caccaagacg acgacgggta gccggcctga gagggcgacc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg ggaaaccctg atgcagcgac gcagcgtgcg ggatgacggc cttcgggttg 360

taaaccgctt tcagcaggga agatgacggt acctgcagaa gaagtaccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggtacg agcgttgtcc ggaattattg ggcgtaaaga 480

gctcgtaggt ggttggtcac gtctgctgtg gaaacgcaac gcttaacgtt gcgcgtgcag 540

tgggtacggg ctgactagag tgcagtaggg gagtctggaa ttcctggtgt agcggtgaaa 600

tgcgcagata tcaggaggaa caccggtggc gaaggcggga ctctgggctg actgacactg 660

aggagcgaaa gcatggggag cgaacaggat tagataccct ggtagtccat gccgtaaacg 720

ttgggcacta ggtgtggggg tctccgcgcc gtagctaacg cattaagtgc cccgcctggg 780

gagtacggtc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 840

catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat atacaggtgg 900

tgcatgttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

cctcgttcta tgttgccagc acgtgggaac tcataggaga ctgccggggt caactcggag 1020

gaaggtgggg atgacgtcaa atcatcatgc cctttatgtc ttgggcttca cgcatgctac 1080

aatggctggc aaagagaagc gaacccgtga gggtcagcga atcccttcca gtctcagttc 1140

ggacgtagtc tgcaattcga ctacggaagt cggagtcgct agtaatcgca gatcagcaac 1200

gctgcggtga atacgttccc gggccttgta cacaccgccc gtcaagtcac gaaagtcggt 1260

aacacccgaa gccggtgcct agggggccgt ctaaggtggg actggtgatt gggactaagt 1320

cgtaacaagg tagccgtacc g 1341

<210> 427
<211> 1367
<212> DNA
<213> Brevibacterium sp. H15

<400> 427
gagtttgatc ctggctcagg acgaacgctg gctgcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgagta acctgcccct gacttcggga taagcccggg 120

aaactgggtc taataccgga tacggaaagt cggttgggga tgggctcgcg gcctatcagt 180

ttgttggtga ggtaatggct caccaagacg acgacgggta gccggcctga gagggcgacc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg ggaaaccctg atgcagcgac gcagcgtgcg ggatgacggc cttcgggttg 360

taaaccgctt tcagcaggga agatgacggt acctgcagaa gaagtaccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggtacg agcgttgtcc ggaattattg ggcgtaaaga 480

gctcgtaggt ggttggtcac gtctgctgtg gaaacgcaac gcttaacgtt gcgcgtgcag 540

tgggtacggg ctgactagag tgcagtaggg gagtctggaa ttcctggtgt agcggtgaaa 600

tgcgcagata tcaggaggaa caccggtggc gaaggcggga ctctgggctg actgacactg 660

aggagcgaaa gcatggggag cgaacaggat tagataccct ggtagtccat gccgtaaacg 720

ttgggcacta ggtgtggggg tctccgcgcc gtagctaacg cattaagtgc cccgcctggg 780

gagtacggtc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 840

catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat atacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

ccctcgttct atgttgccag cacgtgggaa ctcataggag actgccgggg tcaactcgga 1020

ggaaggtggg gatgacgtca aatcatcatg ccctttatgt cttgggcttc acgcatgcta 1080

caatggctgg cagagagagg cgaacccgtg agggcaagcg aatcccttcc agtctcagtt 1140

cggacgtagt ctgcaattcg actacggaag tcggagtcgc tagtaatcgc agatcagcaa 1200

cgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagtca cgaaagtcgg 1260

taacacccga agccggtgcc taggggccg tctaatgtgg gactggtgat tgggactaat 1320

tcgtaacaag gtagccgtac cggaaggtgc ggctggatca cctcctt 1367

<210> 428
<211> 1491
<212> DNA
<213> Brevibacterium sp. JC43

<400> 428
tagagtttga tcctggctca ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cgatgaagct cctgcttgca ggagtggatt agtggcgaac gggtgagtaa cacgtgagta 120

acctgcccct gactgcggga taagcccggg aaactgggtc taataccgca tatgacacct 180

ggccgcatgg tctgggtgtg gaaagttttt cggttgggga tgggctcgcg gcctatcagc 240

ttgttggtgg ggtaacggcc taccaaggcg acgacgggta gccggcctga gagggcgacc 300

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg ggaaaccctg atgcagcgac gccgcgtgag ggatgacggc cttcgggttg 420

taaacctctt tcagtaggga agaagccttc gggtgacggt acctgcagaa gaagtaccgg 480

ctaactacgt gccagcagcc gcggtaatac gtagggtaca agcgttgtcc ggaattattg 540

ggcgtaaaga gctcgtaggc ggttcgtcgc gtctgctgtg gaaacgcaag gctcaacctt 600

gcgcgtgcag tgggtacggg cggactagag tgcagtaggg gagtctggaa ttcctggtgt 660

agcggtgaaa tgcgcagata tcaggaggaa caccggtggc gaaggcggga ctctgggctg 720

taactgacgc tgaggagcga aagcatgggg agcgaacagg attagatacc ctggtagtcc 780

atgccgtaaa cgttgggcac taggtgtggg gctcattcca cgagttccgc gccgcagcta 840

acgcattaag tgccccgcct ggggagtacg gccgcaaggc taaaactcaa aggaattgac 900

gggggcccgc acaagcggcg gagcatgcgg attaattcga tgcaacgcga agaaccttac 960

caaggcttga catacactgg aatgtgccag agatggttca gccctttgg gctggtgtac 1020

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct cgttctatgt tgccagcacg tgatggtggg aactcatagg agactgccgg 1140

ggtcaactcg gaggaaggtg gggatgacgt caaatcatca tgccctttat gtcttgggct 1200

tcacgcatgc tacaatggtc ggtacaaagg gttgcgatgc cgtgaggtgg agcgaatccc 1260

agaaagccga tctcagttcg gatcgtagtc tgcaactcga ctacgtgaag tcggagtcgc 1320

tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcaagtca cgaaagtcgg taacacccga agccggtggc ccaacccttg tgggggagc 1440

cgtcgaaggt gggactggtg attgggacta agtcgtaaca aggtagccgt a 1491

<210> 429
<211> 1449
<212> DNA
<213> Brevundimonas subvibrioides

<400> 429
agagtttgat cctggctcag agcgaacgct ggcggcaggc ctaacacatg caagtcgaac 60

ggacctctcg gggttagtgg cggacgggtg agtaacacgt gggaacgtgc cttttggttc 120

ggaatagctc ctggaaacgg gtggtaatgc cgaatgtgcc ctttggggga aagatttatc 180

gccattagag cggcccgcgt ctgattagct agttggtgag gtaaaggctc accaaggcta 240

cgatcagtag ctggtctgag aggatgacca gccacattgg gactgagaca cggcccaaac 300

tcctacggga ggcagcagtg gggaatcttg cgcaatgggc gaaagcctga cgcagccatg 360

ccgcgtgtat gatgaaggtc ttaggattgt aaaatacttt caccggtgaa gataatgact 420

gtagccggag aagaagcccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg 480

ctagcgttgc tcggaattac tgggcgtaaa gggagcgtag gcggacattt aagtcagggg 540

tgaaatccca gagctcaact ctggaactgc ctttgatact gggtgtcttg agtgtgagag 600

aggtatgtgg aactccgagt gtagaggtga attcgtaga tattcggaag aacaccagtg 660

gcgaaggcga catactggct cattactgac gctgaggctc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgatt gctagttgtc gggatgttta 780

catctcggtg acgcagctaa cgcattaagc aatccgcctg gggagtacgg tcgcaagatt 840

aaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa 900

gcaacgcgca gaaccttacc acctttgac atgcctggac cgccagagag atctggcttt 960

cccttcgggg actaggacac aggtgctgca tggctgtcgt cagctcgtgt cgtgagatgt 1020

tgggttaagt cccgcaacga gcgcaaccct cgccattagt tgccatcatt tagttgggaa 1080

ctctaatggg actgccggtg ctaagccgga ggaaggtggg gatgacgtca agtcctcatg 1140

gcccttacag ggtgggctac acacgtgcta caatggcgac tacagagggt taatccttaa 1200

aagtcgtctc agttcggatt gtcctctgca actcgagggc atgaagttgg aatcgctagt 1260

aatcgcggat cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1320

caccatggga gttggttcta cccgaaggcg atgcgctaac cgcaaggagg cagtcgacca 1380

cggtagggtc agcgactggg gtgaagtcgt aacaaggtag ccgtagggga acctgcggct 1440

ggatcacct 1449

<210> 430
<211> 1493
<212> DNA
<213> Brucella abortus

<400> 430
aacttgagag tttgatcctg gctcagaacg aacgctggcg gcaggcttaa cacatgcaag 60

tcgagcgccc cgcaagggga gcggcagacg ggtgagtaac gcgtgggaac gtaccatttg 120

ctacggaata actcagggaa acttgtgcta ataccgtatg tgcccttcgg gggaaagatt 180

tatcggcaaa tgatcggccc gcgttggatt agctagttgg tggggtaaag gctcaccaag 240

gcgacgatcc atagctggtc tgagaggatg atcagccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtggggaat attggacaat gggcgcaagc ctgatccagc 360

catgccgcgt gagtgatgaa ggccctaggg ttgtaaagct ctttcaccgg tgaagataat 420

gacggtaacc ggagaagaag ccccggctaa cttcgtgcca gcagccgcgg taatacgaag 480

ggggctagcg ttgttcggat ttactgggcg taaagcgcac gtaggcggac ttttaagtca 540

ggggtgaaat cccggggctc aaccccggaa ctgcctttga tactggaagt cttgagtatg 600

gtagaggtga gtggaattcc gagtgtagag gtgaaattcg tagatattcg gaggaacacc 660

agtggcgaag gcggctcact ggaccattac tgacgctgag gtgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatgttagc cgtcggggtg 780

tttacacttc ggtggcgcag ctaacgcatt aaacattccg cctggggagt acggtcgcaa 840

gattaaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgaagcaacg cgcagaacct taccagccct tgacatcccg gtcgcggtta gtggagacac 960

tatccttcag ttaggctgga ccggagacag gtgctgcatg gctgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg cccttagttg ccagcattca 1080

gttgggcact ctaaggggac tgccggtgat aagccgagag gaaggtgggg atgacgtcaa 1140

gtcctcatgg cccttacggg ctgggctaca cacgtgctac aatggtggtg acagtgggca 1200

gcgagcacgc gagtgtgagc taatctccaa aagccatctc agttcggatt gcactctgca 1260

actcgagtgc atgaagttgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca caccatggga gttggtttta cccgaaggcg 1380

ctgtgctaac cgcaaggagg caggcgacca cggtagggtc agcgactggg gtgaagtcgt 1440

aacaaggtag ccgtagggga acctgcggct ggatcacctc ctttctaagg aag 1493

<210> 431
<211> 981
<212> DNA
<213> Brucella canis

<400> 431
tgacggtaac cggagaagaa gccccggcta acttcgtgcc agcagccgcg gtaatacgaa 60

gggggctagc gttgttcgga tttactgggc gtaaagcgca cgtaggcgga cttttaagtc 120

aggggtgaaa tcccggggct caaccccgga actgcctttg atactggaag tcttgagtat 180

ggaagaggta agtggaattg cgagtgtaga ggtgaaattc gtagatattc gcaggaacac 240

cagtggcgaa ggcggcttac tggtccatta ctgacgctga ggtgcgaaag cgtggggagc 300

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgaatgttag ccgtcggggt 360

gtttacactt cggtggcgca gctaacgcat taaacattcc gcctggggag tacggtcgca 420

agattaaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 480

tcgaagcaac gcgcagaacc ttaccagctc ttgacatgcc tatgaatgtt agtggagaca 540

ctttcagcct ttcggggcgt aggacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 600

gagatgttgg gttaagtccc gcaacgagcg caaccctcgc ctttagttgc catcatttag 660

ttgggcactc taaagggact gccagtgata agctggagga aggtggggat gacgtcaagt 720

cctcatggcc cttacgggct gggctacaca cgtgctacaa tggtggtgac agtgggcagc 780

gagaccgcga ggtcgagcta atctccaaaa gccatctcag ttcggattgc actctgcaac 840

tcgagtgcat gaagttggaa tcgctagtaa tcgcggatca gaatgccgcg gtgaatacgt 900

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt tggttttacc cgaaggcgct 960

gtgctaaccg caaggaggca g 981

<210> 432
<211> 1485
<212> DNA
<213> Brucella ceti

<400> 432
caacttgaga gtttgatcct ggctcagaac gaacgctggc ggcaggctta acacatgcaa 60

gtcgagcgcc ccgcaagggg agcggcagac gggtgagtaa cgcgtgggaa cgtaccattt 120

gctacggaat aactcaggga aacttgtgct aataccgtat gtgcccttcg ggggaaagat 180

ttatcggcaa atgatcggcc cgcgttggat tagctagttg gtggggtaaa ggctcaccaa 240

ggcgacgatc catagctggt ctgagaggat gatcagccac actgggactg agacacggcc 300

cagactccta cgggaggcag cagtggggaa tattggacaa tgggcgcaag cctgatccag 360

ccatgccgcg tgagtgatga aggccctagg gttgtaaagc tctttcaccg gtgaagataa 420

tgacggtaac cggagaagaa gccccggcta acttcgtgcc agcagccgcg gtaatacgaa 480

gggggctagc gttgttcgga tttactgggc gtaaagcgca cgtaggcgga cttttaagtc 540

aggggtgaaa tcccggggct caaccccgga actgcctttg atactggaag tcttgagtat 600

ggtagaggtg agtggaattc cgagtgtaga ggtgaaattc gtagatattc ggaggaacac 660

cagtggcgaa ggcggctcac tggaccatta ctgacgctga ggtgcgaaag cgtggggagc 720

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgaatgttag ccgtcggggt 780

gtttacactt cggtggcgca gctaacgcat taaacattcc gcctggggag tacggtcgca 840

agattaaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 900

tcgaagcaac gcgcagaacc ttaccagccc ttgacatccc ggtcgcggtt agtggagaca 960

ctatccttca gttaggctgg accggagaca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gcccttagtt gccagcattc 1080

agttgggcac tctaagggga ctgccggtga taagccgaga ggaaggtggg gatgacgtca 1140

agtcctcatg gcccttacgg gctgggctac acacgtgcta caatggtggt gacagtgggc 1200

agcgagcacg cgagtgtgag ctaatctcca aaagccatct cagttcggat tgcactctgc 1260

aactcgagtg catgaagttg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata 1320

cgttcccggg ccttgtacac accgcccgtc acaccatggg agttggtttt acccgaaggc 1380

gctgtgctaa ccgcaaggag gcaggcgacc acggtagggt cagcgactgg ggtgaagtcg 1440

taacaaggta gccgtagggg aacctgcggc tggatcacct ccttt 1485

<210> 433
<211> 1500
<212> DNA
<213> Brucella melitensis

<400> 433
aattttcaac ttgagagttt gatcctggct cagaacgaac gctggcggca ggcttaacac 60

atgcaagtcg agcgccccgc aaggggagcg gcagacgggt gagtaacgcg tgggaacgta 120

ccatttgcta cggaataact cagggaaact tgtgctaata ccgtatgtgc ccttcggggg 180

aaagatttat cggcaaatga tcggcccgcg ttggattagc tagttggtgg ggtaaaggct 240

caccaaggcg acgatccata gctggtctga gaggatgatc agccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgcaagcctg 360

atccagccat gccgcgtgag tgatgaaggc cctagggttg taaagctctt tcaccggtga 420

agataatgac ggtaaccgga gaagaagccc cggctaactt cgtgccagca gccgcggtaa 480

tacgaagggg gctagcgttg ttcggattta ctgggcgtaa agcgcacgta ggcggacttt 540

taagtcaggg gtgaaatccc ggggctcaac cccggaactg cctttgatac tggaagtctt 600

gagtatggta gaggtgagtg gaattccgag tgtagaggtg aaattcgtag atattcggag 660

gaacaccagt ggcgaaggcg gctcactgga ccattactga cgctgaggtg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgaa tgttagccgt 780

cggggtgttt acacttcggt ggcgcagcta acgcattaaa cattccgcct ggggagtacg 840

gtcgcaagat taaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcgc agaaccttac cagcccttga catcccggtc gcggttagtg 960

gagacactat ccttcagtta ggctggaccg gagacaggtg ctgcatggct gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgccc ttagttgcca 1080

gcattcagtt gggcactcta aggggactgc cggtgataag ccgagaggaa ggtggggatg 1140

acgtcaagtc ctcatggccc ttacgggctg ggctacacac gtgctacaat ggtggtgaca 1200

gtgggcagcg agcacgcgag tgtgagctaa tctccaaaag ccatctcagt tcggattgca 1260

ctctgcaact cgagtgcatg aagttggaat cgctagtaat cgcggatcag catgccgcgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgggagtt ggttttaccc 1380

gaaggcgctg tgctaaccgc aaggaggcag gcgaccacgg tagggtcagc gactggggtg 1440

aagtcgtaac aaggtagccg tagggGaacc tgcggctgga tcacctcctt tctaaggaag 1500

<210> 434
<211> 1390
<212> DNA
<213> Brucella microti

<400> 434
caggcttaac acatgcaagt cgagcgcccc gcaaggggag cggcagacgg gtgagtaacg 60

cgtgggaacg taccatttgc tacggaataa ctcagggaaa cttgtgctaa taccgtatgt 120

gcccttcggg ggaaagattt atcggcaaat gatcggcccg cgttggatta gctagttggt 180

ggggtaaagg ctcaccaagg cgacgatcca tagctggtct gagaggatga tcagccacac 240

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttggacaatg 300

ggcgcaagcc tgatccagcc atgccgcgtg agtgatgaag gccctagggt tgtaaagctc 360

tttcaccggt gaagataatg acggtaaccg gagaagaagc cccggctaac ttcgtgccag 420

cagccgcggt aatacgaagg gggctagcgt tgttcggatt tactgggcgt aaagcgcacg 480

taggcggact tttaagtcag gggtgaaatc ccggggctca accccggaac tgcctttgat 540

actggaagtc ttgagtatgg tagaggtgag tggaattccg agtgtagagg tgaaattcgt 600

agatattcgg aggaacacca gtggcgaagg cggctcactg gaccattact gacgctgagg 660

tgcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 720

aatgttagcc gtcggggtgt ttacacttcg gtggcgcagc taacgcatta aacattccgc 780

ctggggagta cggtcgcaag attaaaactc aaaggaattg acgggggccc gcacaagcgg 840

tggagcatgt ggtttaattc gaagcaacgc gcagaacctt accagccctt gacatcccgg 900

tcgcggttag tggagacact atccttcagt taggctggac cggagacagg tgctgcatgg 960

ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctcgc 1020

ccttagttgc cagcattcag ttgggcactc taaggggact gccggtgata agccgagagg 1080

aaggtgggga tgacgtcaag tcctcatggc ccttacgggc tgggctacac acgtgctaca 1140

atggtggtga cagtgggcag cgagcacgcg agtgtgagct aatctccaaa agccatctca 1200

gttcggattg cactctgcaa ctcgagtgca tgaagttgga atcgctagta atcgcggatc 1260

agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag 1320

ttggttttac ccgaaggcgc tgtgctaacc gcaaggaggc aggcgaccac ggtagggtca 1380

gcgactgggg 1390

<210> 435
<211> 1489
<212> DNA
<213> Brucella ovis

<400> 435
ttcaacttga gagtttgatc ctggctcaga acgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg ccccgcaagg ggagcggcag acgggtgagt aacgcgtggg aacgtaccat 120

ttgctacgga ataactcagg gaaacttgtg ctaataccgt atgtgccctt cgggggaaag 180

atttatcggc aaatgatcgg cccgcgttgg attagctagt tggtggggta aaggctcacc 240

aaggcgacga tccatagctg gtctgagagg atgatcagcc acactgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatattggac aatgggcgca agcctgatcc 360

agccatgccg cgtgagtgat gaaggcccta gggttgtaaa gctctttcac cggtgaagat 420

aatgacggta accggagaag aagccccggc taacttcgtg ccagcagccg cggtaatacg 480

aaggggcta gcgttgttcg gatttactgg gcgtaaagcg cacgtaggcg gacttttaag 540

tcaggggtga aatcccgggg ctcaaccccg gaactgcctt tgatactgga agtcttgagt 600

atggtagagg tgagtggaat tccgagtgta gaggtgaaat tcgtagatat tcggaggaac 660

accagtggcg aaggcggctc actggaccat tactgacgct gaggtgcgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatgtt agccgtcggg 780

gtgtttacac ttcggtggcg cagctaacgc attaaacatt ccgcctgggg agtacggtcg 840

caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgcagaa ccttaccagc ccttgacatc ccggtcgcgg ttagtggaga 960

cactatcctt cagttaggct ggaccggaga caggtgctgc atggctgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgcccttag ttgccagcat 1080

tcagttgggc actctaaggg gactgccggt gataagccga gaggaaggtg gggatgacgt 1140

caagtcctca tggcccttac gggctgggct acacacgtgc tacaatggtg gtgacagtgg 1200

gcagcgagca cgcgagtgtg agctaatctc caaaagccat ctcagttcgg attgcactct 1260

gcaactcgag tgcatgaagt tggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa 1320

tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagttggtt ttacccgaag 1380

gcgctgtgct aaccgcaagg aggcaggcga ccacggtagg gtcagcgact ggggtgaagt 1440

cgtaacaagg tagccgtagg ggaacctgcg gctggatcac ctcctttct 1489

<210> 436
<211> 1489
<212> DNA
<213> Brucella sp. 83/13

<400> 436
ttcaacttga gagtttgatc ctggctcaga acgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg ccccgcaagg ggagcggcag acgggtgagt aacgcgtggg aacgtaccat 120

ttgctacgga ataactcagg gaaacttgtg ctaataccgt atgtgcccga aaggggaaag 180

atttatcggc aaatgatcgg cccgcgttgg attagctagt tggtggggta aaggcccacc 240

aaggcgacga tccatagctg gtctgagagg atgatcagcc acactgggac tgagacacgg 300

cccagactct tacgggaggc agcagtgggg aatattggac aatgggcgca agcctgatcc 360

agccatgccg cgtgagtgat gaaggcccta gggttgtaaa gctctttcac cggtgaagat 420

aatgacggta accggagaag aagccccggc taacttcgtg ccagcagccg cggtaatacg 480

aaggggcta gcgttgttcg gatttactgg gcgtaaagcg cacgtaggcg gacttttaag 540

tcaggggtga aatcccgggg ctcaaccccg gaactgcctt tgatactgga agtcttgagt 600

atggtagagg tgagtggaat tccgagtgta gaggtgaaat tcgtagatat tcggaggaac 660

accagtggcg aaggcggctc actggaccat tactgacgct gaggtgcgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatgtt agccgtcggg 780

gtgtttacac ttcggtggcg cagctaacgc attaaacatt ccgcctgggg agtacggtcg 840

caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgcagaa ccttaccagc ccttgacatc ccggtcgcgg ttagtggaga 960

cactatcctt cagttaggct ggaccggaga caggtgctgc atggctgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgcccttag ttgccagcat 1080

tcagttgggc actctaaggg gactgccggt gataagccga gaggaaggtg gggatgacgt 1140

caagtcctca tggcccttac gggctgggct acacacgtgc tacaatggtg gtgacagtgg 1200

gcagcgagca cgcgagtgtg agctaatctc caaaagccat ctcagttcgg attgcactct 1260

gcaactcgag tgcatgaagt tggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa 1320

tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagttggtt ttacccgaag 1380

gcgctgtgct aaccgcaagg aggtaggcga ccacggtagg gtcagcgact ggggtgaagt 1440

cgtaacaagg tagccgtagg ggaacctgcg gctggatcac ctcctttct 1489

<210> 437
<211> 1412
<212> DNA
<213> Brucella sp. BO1

<400> 437
ctcagaacga acgctggcgg caggcttaac acatgcaagt cgagcgcccc gcaaggggag 60

cggcagacgg gtgagtaacg cgtgggaacg taccatttgc tacggaataa ctcagggaaa 120

cttgtgctaa taccgtatgt gcccgaaagg ggaaagattt atcggcaaat gatcggcccg 180

cgttggatta gctagttggt ggggtaaagg cccaccaagg cgacgatcca tagctggtct 240

gagaggatga tcagccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtggggaata ttggacaatg ggcgcaagcc tgatccagcc atgccgcgtg agtgatgaag 360

gccctagggt tgtaaagctc tttcaccggt gaagataatg acggtaaccg gagaagaagc 420

cccggctaac ttcgtgccag cagccgcggt aatacgaagg gggctagcgt tgttcggatt 480

tactgggcgt aaagcgcacg taggcggact tttaagtcag gggtgaaatc ccggggctca 540

accccggaac tgcctttgat actggaagtc ttgagtatgg tagaggtgag tggaattccg 600

agtgtagagg tgaaattcgt agatattcgg aggaacacca gtggcgaagg cggctcactg 660

gaccattact gacgctgagg tgcgaaagcg tggggagcaa acaggattag ataccctggt 720

agtccacgcc gtaaacgatg aatgttagcc gtcggggtgt ttacacttcg gtggcgcagc 780

taacgcatta aacattccgc ctggggagta cggtcgcaag attaaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gcagaacctt 900

accagccctt gacatcccgg tcgcggttag tggagacact atccttcagt taggctggac 960

cggagacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1020

gcaacgagcg caaccctcgc ccttagttgc cagcattcag ttgggcactc taaggggact 1080

gccggtgata agccgagagg aaggtgggga tgacgtcaag tcctcatggc ccttacgggc 1140

tgggctacac acgtgctaca atggtggtga cagtgggcag cgagcacgcg agtgtgagct 1200

aatctccaaa agccatctca gttcggattg cactctgcaa ctcgagtgca tgaagttgga 1260

atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac 1320

cgcccgtcac accatgggag ttggttttac ccgaaggcgc tgtgctaacc gcaaggaggc 1380

aggcgaccac ggtagggtca gcgactgggg tg 1412

<210> 438
<211> 1493
<212> DNA
<213> Brucella suis

<400> 438
aacttgagag tttgatcctg gctcagaacg aacgctggcg gcaggcttaa cacatgcaag 60

tcgagcgctc cgcaagggga gcggcagacg ggtgagtaac gcgtgggaac gtaccatttg 120

ctacggaata actcagggaa acttgtgcta ataccgtatg tgcccttcgg gggaaagatt 180

tatcggcaaa tgatcggccc gcgttggatt agctagttgg tggggtaaag gctcaccaag 240

gcgacgatcc atagctggtc tgagaggatg atcagccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtggggaat attggacaat gggcgcaagc ctgatccagc 360

catgccgcgt gagtgatgaa ggccctaggg ttgtaaagct ctttcaccgg tgaagataat 420

gacggtaacc ggagaagaag ccccggctaa cttcgtgcca gcagccgcgg taatacgaag 480

ggggctagcg ttgttcggat ttactgggcg taaagcgcac gtaggcggac ttttaagtca 540

ggggtgaaat cccggggctc aaccccggaa ctgcctttga tactggaagt cttgagtatg 600

gtagaggtga gtggaattcc gagtgtagag gtgaaattcg tagatattcg gaggaacacc 660

agtggcgaag gcggctcact ggaccattac tgacgctgag gtgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatgttagc cgtcggggtg 780

tttacacttc ggtggcgcag ctaacgcatt aaacattccg cctggggagt acggtcgcaa 840

gattaaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgaagcaacg cgcagaacct taccagccct tgacatcccg gtcgcggtta gtggagacac 960

tatccttcag ttaggctgga ccggagacag gtgctgcatg gctgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg cccttagttg ccagcattca 1080

gttgggcact ctaaggggac tgccggtgat aagccgagag gaaggtgggg atgacgtcaa 1140

gtcctcatgg cccttacggg ctgggctaca cacgtgctac aatggtggtg acagtgggca 1200

gcgagcacgc gagtgtgagc taatctccaa aagccatctc agttcggatt gcactctgca 1260

actcgagtgc atgaagttgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca caccatggga gttggtttta cccgaaggcg 1380

ctgtgctaac cgcaaggagg caggcgacca cggtagggtc agcgactggg gtgaagtcgt 1440

aacaaggtag ccgtagggga acctgcagct ggatcacctc ctttctaagg aag 1493

<210> 439
<211> 1535
<212> DNA
<213> Bryantella formatexigens

<400> 439
ttttatttga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgagcg aagcatttta aatgaagttt tcggacggaa tttaaaatga ctgagcggcg 120

gacgggtgag taacgcgtgg ataacctgcc ttatacaggg ggataacagc cagaaatggc 180

tgctaatacc gcataagcgc acggtaccgc atggtacagt gtgaaaaact ccggtggtat 240

aagatgggtc cgcgttggat taggcagttg gcggggtaaa ggcccaccaa accgacgatc 300

catagccggc ctgagagggt ggacggccac attgggactg agacacggcc cagactccta 360

cgggaggcag cagtggggaa tattgcacaa tgggggaaac cctgatgcag cgacgccgcg 420

tgggtgaaga agtatttcgg tatgtaaagc cctatcagca gggaagaaaa tgacggtacc 480

tgaccaagaa gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc 540

gttatccgga tttactgggt gtaaagggag cgtagacggc catgcaagtc tggtgtgaaa 600

ggcgggggct caacccccgg actgcattgg aaactgtatg gcttgagtgc cggagaggta 660

agcggaattc ctggtgtagc ggtgaaatgc gtagatatca ggaggaacac cagtggcgaa 720

ggcggcttac tggacggtaa ctgacgttga ggctcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgaataccag gtgtcggggg acacggtcct 840

tcggtgccgc agcaaacgca ctaagtattc cacctgggga gtacgttcgc aagaatgaaa 900

ctcaaaggaa ttgacgggga cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 960

cgcgaagaac cttaccaggt cttgacatcc ggacgaccgg acagtaacgt gtccttccct 1020

tcggggcgtc cgagacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccctgtt cccagtagcc agcattcagg atgggcactc 1140

tggggagact gccagggata acctggagga aggcggggat gacgtcaaat catcatgccc 1200

cttatgatct gggctacaca cgtgctacaa tggcgtgaac agagggaagc gaacccgcga 1260

gggggagcaa atcccagaaa taacgtccca gttcggattg tagtctgcaa cccggctaca 1320

tgaagctgga atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggtc 1380

ttgtacacac cgcccgtcac accatgggag tcggaaatgc ccgaagtcag tgacccaacc 1440

ggaaggaggg agctgccgaa ggcggggccg gtaactgggg tgaagtcgta acaaggtagc 1500

cgtatcggaa ggtgcggctg gatcacctcc tttct 1535

<210> 440
<211> 1519
<212> DNA
<213> Buchnera aphidicola

<400> 440
agagtttgat catggctcag attgaacgct ggcggcaagc ttaacacatg caagtcgagc 60

ggcatcgaag aaaagtttac ttttctggcg gcgagcggca aacgggtgag taacatctgg 120

ggatctacct aaaagagggg gacaaccatt ggaaacgatg gctaataccg cataatgttt 180

ttaaataaac caaagtaggg gactaaaatt tttagcctta tgcttttaga tgaacccaga 240

cgagattagc ttgatggtaa ggtaatggct taccaaggcg acgatctcta gctggtctga 300

gaggataacc agccacactg gaactgagat acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ctaaagcctg atgcagctat gccgcgtgta tgaagaaggc 420

cttagggttg taaagtactt tcagcgggga ggaaagaatt atgtctaata tacatatttt 480

gtgacgttac ccgaagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcag aattactggg cgtaaagagc acgtaggcgg tttattaagt 600

cagatgtgaa atccctaggc ttaacttagg aactgcattt gaaactaata gactagagtc 660

tcatagaggg aggtagaatt ctaggtgtag cggtgaaatg cgtagatatc tagaggaata 720

cccgtggcga aagcgacctc ctaaatgaaa actgacgctg aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccat gctgtaaacg atgtcgactt ggaggttgtt 840

tcctagagaa gtggcttccg aagctaacgc attaagtcga ccgcctgggg agtacggtcg 900

caaggctaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc catagaattt tttagagata 1020

aaagagtgcc ttagggaact atgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccctat cctttgttgc catcaggtta 1140

tgctgggaac tcagaggaga ctgccggtta taaaccggag gaaggtgggg atgacgtcaa 1200

gtcatcatgg cccttacgac cagggctaca cacgtgctac aatggcatat acaaagagat 1260

gcaactctgc gaagataagc aaacctcata aagtatgtcg tagtccggac tggagtctgc 1320

aactcgactc cacgaagtag gaatcgctag taatcgtgga tcagaatgcc acggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagca 1440

ggtagcttaa ccagattatt ttattggagg gcgcttacca ctttgtgatt catgactggg 1500

gtgaagtcgt aacaaggta 1519

<210> 441
<211> 1528
<212> DNA
<213> Bulleidia extructa

<400> 441
tcaaatgaag agtttgatcc tggctcagga taaacgctgg cggcgtgcct aatacatgca 60

agtcgaacgc cggacaccta gcttgctagg gagaaggagt ggcgaacggg tgagtaatac 120

ataagcaatc tgcccacaaa gactgggata acctctggaa acggggacta ataccggata 180

ggtaggagag aggcatcttt cttctattaa agatgagaag cactagtgga tgagcttatg 240

gcgcattagt tagttggtga ggtaacggcc caccaagacg atgatgcgta gccggcctga 300

gagggtgaac ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

agggaatttt cggcaatggg gggaaccctg accgagcaac gccgcgtgag tgaagacggc 420

cttcgggttg taaagctctg ttgtaagaaa agataaacta ggagaggatc ttagtcagac 480

attatcttac cagaaagcca cggctaacta cgtgccagca gccgcggtaa tacgtaggtg 540

gcgagcgtta tccggaatta ttgggcgtaa agggtgcgta ggcggtctgt taagttcatg 600

gtcaaattgt ggggctcaac cccatcgcgc catggatact ggcagactag agtattggag 660

aggcaagtgg aattccatgt gtagcggtaa aatgcgtaga tatatggagg aacaccggtg 720

gcgaaggcga cttgctagcc aaagactgac gctgaggcac gaaagcgtgg ggagcaaata 780

ggattagata ccctagtagt ccacgctgta aacgatgaat actaagtatt ggggagactc 840

agtgctgcag ctaacgcatt aagtattccg cctgtggagt atgcacgcaa gtgtgaaaca 900

taaaggaatt gacgggggcc cgcacaagcg gtggagtatg tggtttaatt cgacgcaacg 960

cgaagaacct taccaggcct tgacatccct tgcgaagttc tagagatagg atagaggtta 1020

tcaaggagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tgtcttcagt taccatcatt aagttgggga ctctggagag 1140

actgccggtg ataaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatgg 1200

cctgggctac acacgtacta caatggctat tacaacgtgg agcgactgtg cgaacagaag 1260

cgaatcactg aaagatagtc tcagttcgga ttggagtctg caactcgact ccatgaagtt 1320

ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat acgttctcgg gccttgtaca 1380

caccgcccgt cataccatga gagttggtaa tacccgaagc cggtggccta accgaaagga 1440

aggagccgtc gaaggtagga ctaatgattg gggtcaagtc gtaacaaggt atccctacga 1500

gaacgtgggg atggatcacc tcctttct 1528

<210> 442
<211> 1537
<212> DNA
<213> Burkholderia ambifaria

<400> 442
ttaaactgaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgcc ttacacatgc 60

aagtcgaacg gcagcacggg tgcttgcacc tggtggcgag tggcgaacgg gtgagtaata 120

catcggaaca tgtcctgtag tgggggatag cccggcgaaa gccggattaa taccgcatac 180

gatccacgga tgaaagcggg ggaccttcgg gcctcgcgct atagggttgg ccgatggctg 240

attagctagt tggtggggta aaggcctacc aaggcgacga tcagtagctg gtctgagagg 300

acgaccagcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aattttggac aatgggcgaa agcctgatcc agcaatgccg cgtgtgtgaa gaaggccttc 420

gggttgtaaa gcacttttgt ccggaaagaa atccttggtt ctaatacagc cgggggatga 480

cggtaccgga agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 540

tgcgagcgtt aatcggaatt actgggcgta aagcgtgcgc aggcggtttg ctaagaccga 600

tgtgaaatcc ccgggctcaa cctgggaact gcattggtga ctggcaggct agagtatggc 660

agagggggt agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga 720

tggcgaaggc agccccctgg gccaatactg acgctcatgc acgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgccc taaacgatgt caactagttg ttggggattc 840

atttccttag taacgtagct aacgcgtgaa gttgaccgcc tggggagtac ggtcgcaaga 900

ttaaaactca aaggaattga cggggacccg cacaagcggt ggatgatgtg gattaattcg 960

atgcaacgcg aaaaacctta cctacccttg acatggtcgg aatcctgctg agaggcggga 1020

gtgctcgaaa gagaaccggc gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgtcct tagttgctac gcaagagcac 1140

tctaaggaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg 1200

cccttatggg tagggcttca cacgtcatac aatggtcgga acagagggtt gccaacccgc 1260

gaggggagc taatcccaga aaaccgatcg tagtccggat tgcactctgc aactcgagtg 1320

catgaagctg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata cgttcccggg 1380

tcttgtacac accgcccgtc acaccatggg agtgggtttt accagaagtg gctagtctaa 1440

ccgcaaggag gacggtcacc acggtaggat tcatgactgg ggtgaagtcg taacaaggta 1500

gccgtatcgg aaggtgcggc tggatcacct cctttcc 1537

<210> 443
<211> 1537
<212> DNA
<213> Burkholderia cenocepacia

<400> 443
ttgaactgaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgcc ttacacatgc 60

aagtcgaacg gcagcacggg tgcttgcacc tggtggcgag tggcgaacgg gtgagtaata 120

catcggaaca tgtcctgtag tgggggatag cccggcgaaa gccggattaa taccgcatac 180

gatccatgga tgaaagcggg ggaccttcgg gcctcgcgct atagggttgg ccgatggctg 240

attagctagt tggtggggta aaggcctacc aaggcgacga tcagtagctg gtctgagagg 300

acgaccagcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aattttggac aatgggcgaa agcctgatcc agcaatgccg cgtgtgtgaa gaaggccttc 420

gggttgtaaa gcacttttgt ccggaaagaa atccttggct ctaatacagc cgggggatga 480

cggtaccgga agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 540

tgcgagcgtt aatcggaatt actgggcgta aagcgtgcgc aggcggtttg ctaagaccga 600

tgtgaaatcc ccgggctcaa cctgggaact gcattggtga ctggcaggct agagtatggc 660

agagggggt agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga 720

tggcgaaggc agccccctgg gccaatactg acgctcatgc acgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgccc taaacgatgt caactagttg ttggggattc 840

atttccttag taacgtagct aacgcgtgaa gttgaccgcc tggggagtac ggtcgcaaga 900

ttaaaactca aaggaattga cggggacccg cacaagcggt ggatgatgtg gattaattcg 960

atgcaacgcg aaaaacctta cctacccttg acatggtcgg aatcctgctg agaggtggga 1020

gtgctcgaaa gagaaccggc gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgtcct tagttgctac gcaagagcac 1140

tctaaggaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg 1200

cccttatggg tagggcttca cacgtcatac aatggtcgga acagagggtt gccaacccgc 1260

gagggggagc taatcccaga aaaccgatcg tagtccggat tgcactctgc aactcgagtg 1320

catgaagctg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata cgttcccggg 1380

tcttgtacac accgcccgtc acaccatggg agtgggtttt accagaagtg gctagtctaa 1440

ccgcaaggag gacggtcacc acggtaggat tcatgactgg ggtgaagtcg taacaaggta 1500

gccgtatcgg aaggtgcggc tggatcacct cctttcc 1537

<210> 444
<211> 1494
<212> DNA
<213> Burkholderia cepacia

<400> 444
agtttgatcc tggctcagat tgaacgctag cggcatgcct tacacatgca agtcgaacgg 60

cagcacgggt gcttgcacct ggtggcgagt ggcgaacggg tgagtaatac atcggaacat 120

gtcctgtagt gggggatagc ccggcgaaag ccggattaat accgcatacg atctatggat 180

gaaagcgggg gaccttcggg cctcgcgcta tagggttggc cgatggctga ttagctagtt 240

ggtggggtaa aggcctacca aggcgacgat cagtagctgg tctgagagga cgaccagcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga attttggaca 360

atgggcgaaa gcctgttcca gcaatgccgc gtgtgtgaag aaggccttcg ggttgtaaag 420

cacttttgtc cggaaagaaa tccttggttc taatacagcc gggggatgac ggtaccggaa 480

gaataagcac cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgtta 540

atcggaatta ctgggcgtaa agcgtgcgca ggcggtttgc taagaccgat gtgaaatccc 600

cgggctcaac ctgggaactg cattggtgac tggcaggcta gagtatggca gaggggggta 660

gaattccacg tgtagcagtg aaatgcgtag agatgtggag gaataccgat ggcgaaggca 720

gccccctggg ccaatactga cgctcatgca cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgccct aaacgatgtc aactagttgt tggggattca tttccttagt 840

aacgtagcta acgcgtgaag ttgaccgcct ggggagtacg gtcgcaagat taaaactcaa 900

aggaattgac ggggacccgc acaagcggtg gatgatgtgg attaattcga tgcaacgcga 960

aaaaccttac ctacccttga catggtcgga atcctgctga gaggtgggag tgctcgaaag 1020

agaaccgata cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttgtcctt agttgctacg caagagcact ctaaggagac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaag tcctcatggc ccttatgggt 1200

agggcttcac acgtcataca atggtcggaa cagagggttg ccaacccgcg aggggagct 1260

aatcccagaa aaccgatcgt agtccggatt gcactctgca actcgagtgc atgaagctgg 1320

aatcgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gtgggtttta ccagaagtgg ctagtctaac cgcaaggagg 1440

acggtcacca cggtaggatt catgactggg gtgaagtcgt aacaaggtaa ccaa 1494

<210> 445
<211> 1538
<212> DNA
<213> Burkholderia mallei

<400> 445
tgaactgaag agtttgatcc tggctcagat tgaacgctgg cggcatgcct tacacatgca 60

agtcgaacgg cagcacgggc ttcggcctgg tggcgagtgg tgaacgggtg agtaatacat 120

cggaacatgt cctgtagtgg gggatagccc ggcgaaagcc ggattaatac cgcatacgat 180

ctgaggatga aagcggggga ccttcgggcc tcgcgctata gggttggccg atggctgatt 240

agctagttgg tggggtaaag gcctaccaag gcgacgatca gtagctggtc tgagaggacg 300

accagccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

tttggacaat gggcgcaagc ctgatccagc aatgccgcgt gtgtgaagaa ggccttcggg 420

ttgtaaagca cttttgtccg gaaagaaatc attctggcta atacccggag tggatgacgg 480

taccggaaga ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 540

gagcgttaat cggaattact gggcgtaaag cgtgcgcagg cggtttgcta agaccgatgt 600

gaaatccccg ggctcaacct gggaactgca ttggtgactg gcaggctaga gtatggcaga 660

gggggtaga attccacgtg tagcagtgaa atgcgtagag atgtggagga ataccgatgg 720

cgaaggcagc cccctgggcc aatactgacg ctcatgcacg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccctaa acgatgtcaa ctagttgttg gggattcatt 840

tccttagtaa cgtagctaac gcgtgaagtt gaccgcctgg ggagtacggt cgcaagatta 900

aaactcaaag gaattgacgg ggacccgcac aagcggtgga tgatgtggat taattcgatg 960

caacgcgaaa aaccttacct acccttgaca tggtcggaag cccgatgaga gttgggcgtg 1020

ctcgaaagag aaccggcgca caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgtccttag ttgctacgca agagcactct 1140

aaggagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc ctcatggccc 1200

ttatgggtag ggcttcacac gtcatacaat ggtcggaaca gagggtcgcc aacccgcgag 1260

ggggagccaa tcccagaaaa ccgatcgtag tccggattgc actctgcaac tcgagtgcat 1320

gaagctggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggtct 1380

tgtacacacc gcccgtcaca ccatgggagt gggttttacc agaagtggct agtctaaccg 1440

caaggaggac ggtcaccacg gtaggattca tgactggggt gaagtcgtaa caaggtagcc 1500

gtatcggaag gtgcggctgg atcacctcct ttctcgag 1538

<210> 446
<211> 1537
<212> DNA
<213> Burkholderia multivorans

<400> 446
ttgaactgaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgcc ttacacatgc 60

aagtcgaacg gcagcacggg tgcttgcacc tggtggcgag tggcgaacgg gtgagtaata 120

catcggaaca tgtcctgtag tgggggatag cccggcgaaa gccggattaa taccgcatac 180

gatctacgga tgaaagcggg ggaccttcgg gcctcgcgct atagggttgg ccgatggctg 240

attagctagt tggtggggta aaggcctacc aaggcgacga tcagtagctg gtctgagagg 300

acgaccagcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aattttggac aatgggcgaa agcctgatcc agcaatgccg cgtgtgtgaa gaaggccttc 420

gggttgtaaa gcacttttgt ccggaaagaa atccttggtc ctaatacgat cgggggatga 480

cggtaccgga agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 540

tgcgagcgtt aatcggaatt actgggcgta aagcgtgcgc aggcggtctg ttaagacaga 600

tgtgaaatcc ccgggctcaa cctgggaact gcatttgtga ctggcaggct agagtatggc 660

agagggggt agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga 720

tggcgaaggc agccccctgg gccaatactg acgctcatgc acgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgccc taaacgatgt caactagttg ttggggattc 840

atttccttag taacgtagct aacgcgtgaa gttgaccgcc tggggagtac ggtcgcaaga 900

ttaaaactca aaggaattga cggggacccg cacaagcggt ggatgatgtg gattaattcg 960

atgcaacgcg aaaaacctta cctacccttg acatggtcgg aatcctgaag agattcggga 1020

gtgctcgaaa gagaaccggc gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgtcct tagttgctac gcaagagcac 1140

tctaaggaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg 1200

cccttatggg tagggcttca cacgtcatac aatggtcgga acagagggtt gccaacccgc 1260

gaggggagc taatcccaga aaaccgatcg tagtccggat tgcactctgc aactcgagtg 1320

catgaagctg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata cgttcccggg 1380

tcttgtacac accgcccgtc acaccatggg agtgggtttt accagaagtg gctagtctaa 1440

ccgcaaggag gacggtcacc acggtaggat tcatgactgg ggtgaagtcg taacaaggta 1500

gccgtatcgg aaggtgcggc tggatcacct cctttcc 1537

<210> 447
<211> 1499
<212> DNA
<213> Burkholderia oklahomensis

<400> 447
agattgaacg ctggcggcat gccttacaca tgcaagtcga acggcagcac gggtgcttgc 60

acctggtggc gagtggcgaa cgggtgagta atacatcgga acatgtcctg tagtggggga 120

tagcccggcg aaagccggat taataccgca tacgatctga ggatgaaagc gggggacctt 180

cgggcctcgc gctatagggt tggccgatgg ctgattagct agttggtggg gtaaaggcct 240

accaaggcga cgatcagtag ctggtctgag aggacgacca gccacactgg gactgagaca 300

cggcccagac tcctacggga ggcagcagtg gggaattttg gacaatgggc gcaagcctga 360

tccagcaatg ccgcgtgtgt gaagaaggcc ttcgggttgt aaagcacttt gtccggaaa 420

gaaatcctac cgactaatac tgggtgggga tgacggtacc ggaagaataa gcaccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggtgcgagc gttaatcgga attactgggc 540

gtaaagcgtg cgcaggcggt ttgttaagac cgatgtgaaa tccccgggct caacctggga 600

actgcattgg tgactggcaa gctagagtat ggcagagggg ggtagaattc cacgtgtagc 660

agtgaaatgc gtagagatgt ggaggaatac cgatggcgaa ggcagccccc tgggccaata 720

ctgacgctca tgcacgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 780

ccctaaacga tgtcaactag ttgttgggga ttcatttcct tagtaacgta gctaacgcgt 840

gaagttgacc gcctggggag tacggtcgca agattaaaac tcaaaggaat tgacggggac 900

ccgcacaagc ggtggatgat gtggattaat tcgatgcaac gcgaaaaacc ttacctaccc 960

ttgacatggt cggaatcctg ctgagaggtg ggagtgctcg aaagagaacc gatacacagg 1020

tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccttgt ccttagttgc tacgcaagag cactctaagg agactgccgg tgacaaaccg 1140

gaggaaggtg gggatgacgt caagtcctca tggcccttat gggtagggct tcacacgtca 1200

tacaatggtc ggaacagagg gtcgccaacc cgcgaggggg agccaatccc agaaaaccga 1260

tcgtagtccg gattgcactc tgcaactcga gtgcatgaag ctggaatcgc tagtaatcgc 1320

ggatcagcat gccgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat 1380

gggagtgggt ttaccagaa gtggctagtc taaccgcaag gaggacggtc accacggtag 1440

gattcatgac tggggtgaag tcgtaacaag gtagccgtat cggaaggtgc ggctggatc 1499

<210> 448
<211> 1538
<212> DNA
<213> Burkholderia pseudomallei

<400> 448
tgaactgaag agtttgatcc tggctcagat tgaacgctgg cggcatgcct tacacatgca 60

agtcgaacgg cagcacgggc ttcggcctgg tggcgagtgg cgaacgggtg agtaatacat 120

cggaacatgt cctgtagtgg gggatagccc ggcgaaagcc ggattaatac cgcatacgat 180

ctgaggatga aagcggggga ccttcgggcc tcgcgctata gggttggccg atggctgatt 240

agctagttgg tggggtaaag gcctaccaag gcgacgatca gtagctggtc tgagaggacg 300

accagccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

tttggacaat gggcgcaagc ctgatccagc aatgccgcgt gtgtgaagaa ggccttcggg 420

ttgtaaagca cttttgtccg gaaagaaatc attctggcta atacccggag tggatgacgg 480

taccggaaga ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 540

gagcgttaat cggaattact gggcgtaaag cgtgcgcagg cggtttgcta agaccgatgt 600

gaaatccccg ggctcaacct gggaactgca ttggtgactg gcaggctaga gtatggcaga 660

gggggggtaga attccacgtg tagcagtgaa atgcgtagag atgtggagga ataccgatgg 720

cgaaggcagc cccctgggcc aatactgacg ctcatgcacg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccctaa acgatgtcaa ctagttgttg gggattcatt 840

tccttagtaa cgtagctaac gcgtgaagtt gaccgcctgg ggagtacggt cgcaagatta 900

aaactcaaag gaattgacgg ggacccgcac aagcggtgga tgatgtggat taattcgatg 960

caacgcgaaa aaccttacct acccttgaca tggtcggaag cccgatgaga gttgggcgtg 1020

ctcgaaagag aaccggcgca caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgtccttag ttgctacgca agagcactct 1140

aaggagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc ctcatggccc 1200

ttatgggtag ggcttcacac gtcatacaat ggtcggaaca gagggtcgcc aacccgcgag 1260

ggggagccaa tcccagaaaa ccgatcgtag tccggattgc actctgcaac tcgagtgcat 1320

gaagctggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggtct 1380

tgtacacacc gcccgtcaca ccatgggagt gggttttacc agaagtggct agtctaaccg 1440

caaggaggac ggtcaccacg gtaggattca tgactggggt gaagtcgtaa caaggtagcc 1500

gtatcggaag gtgcggctgg atcacctcct ttctcgag 1538

<210> 449
<211> 1474
<212> DNA
<213> Burkholderia rhizoxinica

<400> 449
gttgatcctg gctcagattg aacgctggcg gcatgcctta cacatgcaag tcggacggca 60

gcgcgggttt cggcctggcg gcgagtggcg aacgggtgag taagacatcg gaacgtgtcc 120

tggagtgggg gatagcccgg cgaaagccgg attaataccg catacgctct gaggaggaaa 180

gcgggggacc ttagggcctc gcgctcaagg ggcggccgat ggcagattag ctagttggta 240

gggtaaaggc ctaccaaggc gacgatctgt agctggtctg agaggacgac cagccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tggggaattt tggacaatgg 360

gggcaaccct gatccagcaa tgccgcgtgt gtgaagaagg ccttcgggtt gtaaagcact 420

tttgtccgga aagaaaacgg cctggctaat acctgggctg gatgacggta ccggaagaat 480

aagcaccggc taactacgtg ccagcagccg cggtaatacg tagggtgcga gcgttaatcg 540

gaattactgg gcgtaaagcg tgcgcaggcg gtttgctaag accgatgtga aatccccggg 600

cttaacctgg gaactgcatt ggtgactggc aggctagagt atggcagagg gaggtagaat 660

tccacgtgta gcagtgaaat gcgtagagat gtggaggaat accgatggcg aaggcagcct 720

cctgggccaa tactgacgct catgcacgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgccctaaac gatgtcaact agttgttggg gattcatttc cttagtaacg 840

tagctaacgc gtgaagttga ccgcctgggg agtacggtcg caagattaaa actcaaagga 900

attgacgggg acccgcacaa gcggtggatg atgtggatta attcgatgca acgcgaaaaa 960

ccttacctac ccttgacatg gtcggaaccc tgctgagagg tgggggtgct cgaaagagaa 1020

ccggcgcaca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt gtccttagtt gctacgcaag agcactctag ggagactgcc 1140

ggtgacaaac cggaggaagg tggggatgac gtcaagtcct catggccctt atgggtaggg 1200

cttcacacgt catacaatgg tcggaacaga gggttgccaa cccgcgaggg ggagctaatc 1260

ccagaaaacc gatcgtagtc cggattgcag tctgcaactc gactgcatga agctggaatc 1320

gctagtaatc gcggatcagc atgtcgcggt gaatacgttc ccgggtcttg tacacaccgc 1380

ccgtcacacc atgggagtgg gttttaccag aagtggctag tctaaccgca aggaggacgg 1440

tcaccacggt aggattcatg actggggtga agtc 1474

<210> 450
<211> 1537
<212> DNA
<213> Burkholderia sp. 383

<400> 450
ttaaactgaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgcc ttacacatgc 60

aagtcgaacg gcagcacggg tgcttgcacc tggtggcgag tggcgaacgg gtgagtaata 120

catcggaaca tgtcctgtag tgggggatag cccggcgaaa gccggattaa taccgcatac 180

gatctacgga tgaaagcggg ggaccttcgg gcctcgcgct atagggttgg ccgatggctg 240

attagctagt tggtggggta aaggcctacc aaggcgacga tcagtagctg gtctgagagg 300

acgaccagcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aattttggac aatgggcgaa agcctgatcc agcaatgccg cgtgtgtgaa gaaggccttc 420

gggttgtaaa gcacttttgt ccggaaagaa atccttggcc ctaatacggt cgggggatga 480

cggtaccgga agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 540

tgcgagcgtt aatcggaatt actgggcgta aagcgtgcgc aggcggtttg ctaagaccga 600

tgtgaaatcc ccgggctcaa cctgggaact gcattggtga ctggcaggct agagtatggc 660

agaggggggt agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga 720

tggcgaaggc agcccctgg gccaatactg acgctcatgc acgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgccc taaacgatgt caactagttg ttggggattc 840

atttccttag taacgtagct aacgcgtgaa gttgaccgcc tggggagtac ggtcgcaaga 900

ttaaaactca aaggaattga cggggacccg cacaagcggt ggatgatgtg gattaattcg 960

atgcaacgcg aaaaacctta cctacccttg acatggtcgg aattccgctg agaggtggaa 1020

gtgctcgaaa gagaaccggc gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgtcct tagttgctac gcaagagcac 1140

tctaaggaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg 1200

cccttatggg tagggcttca cacgtcatac aatggtcgga acagagggtc gccaacccgc 1260

gaggggagc taatcccaga aaaccgatcg tagtccggat tgcactctgc aactcgagtg 1320

catgaagctg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata cgttcccggg 1380

tcttgtacac accgcccgtc acaccatggg agtgggtttt accagaagtg gctagtctaa 1440

ccgcaaggag gacggtcacc acggtaggat tcatgactgg ggtgaagtcg taacaaggta 1500

gccgtatcgg aaggtgcggc tggatcacct cctttct 1537

<210> 451
<211> 1462
<212> DNA
<213> Burkholderia xenovorans

<400> 451
gaacgctggc ggcatgcctt acacatgcaa gtcgaacggc agcacggggg caaccctggt 60

ggcgagtggc gaacgggtga gtaatacatc ggaacgtgtc ctgtagtggg ggatagcccg 120

gcgaaagccg gattaatacc gcatacgctc tgcggaggaa agcgggggat cttcggacct 180

cgcgctacag gggcggccga tggcagatta gctggttggt ggggtaaagg cctaccaagg 240

cgacgatctg tagctggtct gagaggacga ccagccacac tgggactgag acacggccca 300

gactcctacg ggaggcagca gtggggaatt ttggacaatg ggcgcaagcc tgatccagca 360

atgccgcgtg tgtgaagaag gccttcgggt tgtaaagcac ttttgtccgg aaagaaaacc 420

tctgccctaa tacggtgggg ggatgacggt accggaagaa taagcaccgg ctaactacgt 480

gccagcagcc gcggtaatac gtagggtgca agcgttaatc ggaattactg ggcgtaaagc 540

gtgcgcaggc ggttcgctaa gacagatgtg aaatccccgg gcttaacctg ggaactgcat 600

ttgtgactgg cgggctagag tatggcagag gggggtagaa ttccacgtgt agcagtgaaa 660

tgcgtagaga tgtggaggaa taccgatggc gaaggcagcc ccctgggcca atactgacgc 720

tcatgcacga aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccctaaa 780

cgatgtcaac tagttgtcgg gtcttcattg acttggtaac gtagctaacg cgtgaagttg 840

accgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg gacccgcaca 900

agcggtggat gatgtggatt aattcgatgc aacgcgaaaa accttaccta cccttgacat 960

gtatggaagt ctgctgagag gtggatgtgc ccgaaaggga gccataacac aggtgctgca 1020

tggctgtcga cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcacccct 1080

tgtccctagt tgctacgcaa gagcactcca gggagactgc cggtgacaac ccggaggaag 1140

gtggggatga cgtcaagtcc tcatggccct tatgggtagg gcttcacacg tcatacaatg 1200

gtcggaacag agggtcgcca acccgcgagg gggagccaat cccagaaaac cgatcgtagt 1260

ccggatcgca ctctgcaact cgggtgcgtg aagctggaat cgctagtaat cgcggatcag 1320

catgccgcgg tgaatacgtt cccgggtctt gtacacaccg cccgtcacac catgggagtg 1380

ggttttacca gaagtggcta gtctaaccgc aaggaggacg gtcaccacgg taggattcat 1440

gactgggtga agtcgtaaca ag 1462

<210> 452
<211> 1543
<212> DNA
<213> Burkholderiales bacterium 1_1_47

<400> 452
ttaaacaata gagtttgatc ctggctcaga ttgaacgctg gcggaacgct ttacacatgc 60

aagtcgaacg gtaacgcggg agaagcttgc ttctcccggc gacgagtggc gaacgggtga 120

gtaatacatc ggaacgtgtc cgctcgtggg ggacaaccag ccgaaaggtt ggctaatacc 180

gcatgagttc tacggaagaa agaggggac ccgcaagggc ctctcgcgag cggagcggcc 240

gatgactgat tagccggttg gtgaggtaac ggctcaccaa agcaacgatc agtagctggt 300

ctgagaggac gaccagccac actgggactg agacacggcc cagactccta cgggaggcag 360

cagtggggaa ttttggacaa tgggcgcaag cctgatccag ctattccgcg tgtgggatga 420

aggccctcgg gttgtaaacc acttttgtag agaacgaaaa gacaccttcg aataaagggt 480

gttgctgacg gtactctaag aataagcacc ggctaactac gtgccagcag ccgcggtaat 540

acgtagggtg cgagcgttaa tcggaattac tgggcgtaaa gggtgcgcag gcggttgagt 600

aagacagatg tgaaatcccc gagcttaact cgggaatggc atatgtgact gctcgactag 660

agtgtgtcag agggaggtgg aattccacgt gtagcagtga aatgcgtaga tatgtggaag 720

aacaccgatg gcgaaggcag cctcctggga cataactgac gctcaggcac gaaagcgtgg 780

ggagcaaaca ggattagata ccctggtagt ccacgcccta aacgatgtta actagttgtt 840

gggaagtaaa attctcagta acgcagccaa cgcgagaagt taaccgcctg ggaagtacgg 900

tcgcaagact aaaactcaaa ggaattgacg gggacccgca caagcggtgg atgatgtgga 960

ttaattcgat gcaacgcgaa aaaccttacc tacccttgac atgtcaggaa gctcttgtaa 1020

tgagagtgtg cccgcaaggg agcctgaaca caggtgctgc atggctgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgtcactag ttgctacgaa 1140

agggcactct agtgagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgggtag ggcttcacac gtcatacaat ggtcggaaca gagggcagcg 1260

aagtcgtgag acggagccaa tcccagaaaa ccgatcgtag tccggattgc agtctgcaac 1320

tcgactgcat gaagtcggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaaa caatgggagt ggtgtttacc agaagtcgtt 1440

agcctaaccg caaggagggc ggcgaccacg gtgagcaccg tgactaatgt taagtcgtaa 1500

caaggtagcc gtaccggaag gtgcggctgg atcacctcct ttc 1543

<210> 453
<211> 1481
<212> DNA
<213> Butyricicoccus pullicaecorum

<400> 453
agtttgatcc tggctcagga tgaacgctgg cggcgtgcct aacacatgca agtcgaacgg 60

agttgtttga ggaaatcctt cgggatggaa tcttccaact tagtggcgga cgggtgagta 120

acgcgtgagc aatctgcctt tcagaggggg ataacagccg gaaacggctg ctaataccgc 180

ataatgcatt gaattcgcat gtttttgatg ccaaagattt tatcgctgaa agatgagctc 240

gcgtctgatt agctagttgg cggggtaacg gcccaccaag gcgacgatca gtagccggac 300

tgagaggttg aacggccaca ttgggactga ggacacggcc cagactccta ccgggaggca 360

gcagtgggga atattgcgca atgggggcaa ccctgacgca gcaacgccgc gtgattgatg 420

aaggtcttcg gattgtaaaa atctttaatc agggacgaaa caaatgacgg tacctgaaga 480

ataagctccg gctaactacg tgccagcagc cgcggtaata cgtagggagc aagcgttatc 540

cggatttact gggtgtaaag ggcgtgtagg cgggcttgta agttggaagt gaaatctcgg 600

ggcttaaccc cgaaactgct ttcaaaactg cgagtcttga gtgatggaga ggcaggcgga 660

attcccagtg tagcggtgaa atgcgtagat attgggagga acaccagtgg cgaaggcggc 720

ctgctggaca ttaactgacg ctgaggcgcg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgccgtaa acgatggata ctaggtgtgg gaggtattga ccccttccgt 840

gccggagtta acacaataag tatcccacct ggggagtacg gccgcaaggt tgaaactcaa 900

aggaattgac gggggcccgc acaagcagtg gagtatgtgg tttaattcga agcaacgcgc 960

aagaacctta ccaagtcttg acatcccgat gaccgctcya gagatagggc ttttcttcgg 1020

aacatcggtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttacgggtt agttgctacg caagagcact ctagccggac 1140

tgccgttgac aaaacggagg aaggtgggga cgacgtcaaa tcatcatgcc ccttatgact 1200

tgggctacac acgtactaca atggcagtca tacagaggga agcaaaaccg cgaggtggag 1260

caaatcccta aaagctgtcc cagttcagat tgcaggctgc aactcgcctg catgaagtcg 1320

gaattgctag taatcgcgga tcagcatgcc gcggtgaata cgttcccggg ccttgtacac 1380

accgcccgtc acaccatgag agccggtaat acccgaagtc cgtagtctaa ccgcaaggag 1440

gacgcggccg aaggtaggac tggtaattgg gacgaagtcg t 1481

<210> 454
<211> 1379
<212> DNA
<213> Butyricimonas virosa

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<400> 454
ggggcagcgc gggnagtagc aatactctcg ccggcgaccg gcgcacgggt gagtaacacg 60

tgtgcaacca accccgtacc gggagataac ccgcggaaac gtggactaac atcccataag 120

actctagagc cgcatggctc tggatttaaa attccggtgg tacgggacgg gcacgcgcga 180

cattaggtag ttggcggggt aacggcccac caagccgacg atgtctaggg gttctgagag 240

gaaggtcccc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtgag 300

gaatattggt caatgggcga gagcctgaac cagccaagtc gcgtgaggga agaatggtct 360

atggcctgta aacctctttt gtcaaggaag aataaaaggt acgtgtacct tcttgccagt 420

acttgacgaa taagcatcgg ctaactccgt gccagcagcc gcggtaatac gggggatgcg 480

agcgttatcc ggatttattg ggtttaaagg gcgcgtaggc gggacccaag tcagcggtaa 540

aagactgcag ctaaactgta gcacgccgtt gaaactggcg acctcgagac gagacgaggg 600

aggcggaaca agtgaagtag cggtgaaatg cttagatatc acttggaacc ccgatagcga 660

aggcagcttc ccaggctcga tctgacgtga tgcgcgagag cgtgggtagc gaacaggatt 720

agataccctg gtagtccacg ccgtaaacga tgctcactgg atcttggcga tacactgcca 780

gggttcaagc gaaagtatta agtgagccac ctggggagta cgtcggcaac gatgaaactc 840

aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc gatgatacgc 900

gaggaacctt acccgggttt aaatgtattt tgcatttctt ggaaacagga attcccttcg 960

gggctagata caaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcgggttaa 1020

gtcccataac gagcgcaacc cctatcgcca gttgccagcg gctgaggccg ggcactctgt 1080

cgagactgcc accgtaaggt gcgaggaagg cggggatgac gtcaaatcag cacggccctt 1140

acacccgggg cgacacacgt gttacaatgg ccggtacaga gggcagccac ggggtgaccc 1200

ggagcgaatc tctaaagccg gtcgtagttc ggactggagt ctgcaacccg actccacgaa 1260

gttggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc ccgggccttg 1320

tacacaccgc ccgtcaagcc atggaagccg ggagtacctg aagatcgtga ccgcgagga 1379

<210> 455
<211> 1526
<212> DNA
<213> Butyrivibrio crossotus

<400> 455
tttatatgag agtttgatcc tggctcagga tgaacgctgg cggcgtgctt aacacatgca 60

agtcgaacga agcacttcat aaagcttgct ttaagaagtg acttagtggc ggacgggtga 120

gtaacgcgtg ggtaacctgc cttacacagg gggataacag ttagaaatga ctgctaatac 180

cgcataaaac agcagagtcg catgactcaa ctgtcaaaga tttatcggtg taagatggac 240

ccgcgtctga ttagcttgtt ggtggggtaa cggcctacca aggcgacgat cagtagccgg 300

cctgagaggg tgaacggcca cattgggact gagacacggc ccaaactcct acgggaggca 360

gcagtgggga atattggaca atgggcgaaa gcctgatcca gcgacgccgc gtgagcgatg 420

aagtatttcg gtatgtaaag ctctatcagc agggaagaaa acgacggtac ctgactaaga 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt agggggcaag cgttatccgg 540

atttactggg tgtaaaggga gcgtagacgg catcacaagt cagaagtgaa aatccggggc 600

tcaaccccgg aactgctttt gaaactgtgg agctggagtg caggagaggt aagcggaatt 660

cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccagtggcga aggcggctta 720

ctggactgta actgacgttg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatacta ggtgttgggt ttcataagaa gctcggtgcc 840

ggcgcaaacg cattaagtat tccacctggg gagtacgttc gcaagaatga aactcaaagg 900

aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccaa gtcttgacat cccgttgacc tgttatgtaa tgtaacatct cttcggagca 1020

acggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg tccttagtag ccagcagtaa gatgggcact ctagggagac 1140

tgccggggat aactcggagg aaggtgggga cgacgtcaaa tcatcatgcc ccttatgact 1200

tgggctacac acgtgctaca atggcgtaaa caaagggaag cgaacctgtg aaggcaagca 1260

aatcccaaaa ataacgtctc agttcggatt gtagtctgca actcgactac atgaagctgg 1320

aatcgctagt aatcgcagat cagaatgctg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gtcgtaaatg cccgaagtcg gtgacctaac cgtaaggaag 1440

gagccgccga aggcaggtat gataactggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtgcggct ggatcacctc ctttct 1526

<210> 456
<211> 1477
<212> DNA
<213> Butyrivibrio fibrisolvens

<400> 456
tggcggcgtg cctaacacat gcaagtcgaa cggagttatt cgctgatgaa gcttcggcag 60

aatcttgaat aacttagtgg cggacgggtg agtaacgcgt gggtaacctg cctcatacag 120

ggggatagca gttggaaacg actgataaca ccgcataagc gcacagtgtc gcatgacaca 180

gtgtgaaaat atttataggt atgagatgga cccgcgtctg attagctagt tggtgaggta 240

acggcccacc aaggcgacga tcagtagccg gcctgagagg gcggacggcc acattgggac 300

tgagacacgg cccaaactcc tacgggaggc agcagtgggg gatattgcac aatgggcgaa 360

agcctgatgc agcgacgccg cgtgagtgaa gaagtatttc ggtatgtaaa gctctatcag 420

cagggaagaa agacctcgta agaggggatg acggtacctg agtaagaagc cccggctaac 480

tacgtgccag cagccgcggt aatacgtagg gggcaagcgt tatccggatt tactgggtgt 540

aaagggagcg tagacggtgt atcaagtctg aagtgaaacc ccacggctca accgtgggct 600

tgctttggaa actggtagac tagagtactg gagaggtaag cggaattcct ggtgtagtag 660

tgaaatgcgt agatatcagg aagaacatca gtggcgaagg cggcttactg gacagcaact 720

gacgttgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 780

gtaaacgatg aatactaggt gttgggagac atagtctttc agtgccggcg ctaacgcaat 840

aagtattcca cctggggagt acgttcgcaa gaatgaaact caaaggaatt gacggggacc 900

cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaaatct 960

tgagatccag atgaatgatg ggtaatgcca tcagtccttc gggacatctg agacaggtgg 1020

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtc aagtcccgca acgagcgcaa 1080

cccttgtcca tagtagccag cagtaagatg ggcactctat ggagactgcc agggataacc 1140

tggaggaagg tggggatgac gtcaaatcat catgcccctt atgatttggg ccacacacgt 1200

gctacaatgt cgtaacaaag ggaagcaacc ctgcgaaggt gagcaaatcc caaaaataac 1260

gacccagttc ggactgtagg ctgcaacccg cctgcacgaa gctggaatcg ctagtaatcg 1320

cagatcagaa tgctgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcacacca 1380

tgggagtcgg aaatgcccaa agtcagtggc ctaaccgtaa ggagggagct tgctaaggca 1440

ggtcggataa ctggggtgaa gtcgtaacaa ggtagcc 1477

<210> 457
<211> 1466
<212> DNA
<213> Caldimonas manganoxidans

<400> 457
attgaacgct ggcggcatgc tttacacatg caagtcgaac ggcagcgggt ccttcgggat 60

gccggcgagt ggcgaacggg tgagtaatgc atcggaacgt acccagtcgt gggggataac 120

tactcgaaag agtagctaat accgcatacg acctgagggt gaaagcgggg gaccgcaagg 180

cctcgcgcga ttggagcggc cgatgtcgga ttagctagtt ggtggggtaa aggcttacca 240

aggcgacgat ccgtagctgg tctgagagga cggccagcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtgggga attttggaca atgggcgcaa gcctgatcca 360

gccatgccgc gtgcgggaag aaggccttcg ggttgtaaac cgcttttgtc agggaagaaa 420

agctctgggc taatacctcg gagtgatgac ggtacctgaa gaataagcac cggctaacta 480

cgtgccagca gccgcggtaa tacgtagggt gcgagcgtta atcggaatta ctgggcgtaa 540

agcgtgcgca ggcggttgtg caagacagat gtgaaatccc cgggcttaac ctgggaactg 600

catttgtgac tgcacggcta gagtgcggca gaggggatg gaattccgcg tgtagcagtg 660

aaatgcgtag atatgcggag gaacaccgat ggcgaaggca gtcccctggg cctgcactga 720

cgctcatgca cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccct 780

aaacgatgtc aactggttgt tggggattca tttcctcagt aacgaagcta acgcgtgaag 840

ttgaccgcct ggggagtacg gccgcaaggt tgaaactcaa aggaattgac ggggacccgc 900

acaagcggtg gatgatgtgg tttaattcga tgcaacgcga aaaaccttac ctacccttga 960

catgccagga accctgcaga gatgtggggg tgctcgaaag agagcctgga cacaggtgct 1020

gcatggccgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttgccatt agttgctacg aaagggcact ctaatgggac tgccggtgac aaaccggagg 1140

aaggtgggga tgacgtcagg tcctcatggc ccttatgggt agggctacac acgtcataca 1200

atggccggta cagagggctg ccaacccgcg aggggggagcc aatcccagaa aaccggtcgt 1260

agtccggatc gcagtctgca actcgactgc gtgaagtcgg aatcgctagt aatcgcggat 1320

cagcatgtcg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccatggga 1380

gcgggttctg ccagaagtgg gtagcctaac cgcaaggagg gcgcttacca cggcagggtt 1440

cgtgactggg gtgaagtcgt aacaag 1466

<210> 458
<211> 1456
<212> DNA
<213> Caminicella sporogenes

<400> 458
tgatcatggc tcaggatgaa cgctggcggc gtgcctaaca catgcaagtc gagcggagct 60

ttaatctttt cagcttagct gaaaagatta aagcttagcg gcggacgggt gagtaacgcg 120

tgggcaacct gccctgtgca gggggataac acatcgaaag gtgtgctaat accccataag 180

actacgatgt cgcatggcat agtagtaaaa gctgaggcgg cacaggatgg gcccgcgtct 240

gattagctag ttggtagggt aacggcctac caaggcaacg atcagtagcc gacctgagag 300

ggtgaacggc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 360

gaatattgca caatggggga aaccctgatg cagcaacgcc gcgtgagcga agaaggcctt 420

cgggtcgtaa agctctgtcc taagggaaga aagatgacgg taccttagga ggaagccccg 480

gctaactacg tgccagcagc cgcggtaaaa cgtagggggc gagcgttatc cggaatgact 540

gggcgtaaag ggtgtgtagg cggccggtaa agtctggggt gaaaggctac ggcttaaccg 600

tagtaagcct tggaaactta tcggcttgag tgcaggagag gagagcggaa ttcctagtgt 660

agcggtgaaa tgcgtagata ttaggaggaa caccagtggc gaaggcggct ctctggactg 720

caactgacgc tgaggcacga aagcgtgggg agcgaacagg attagatacc ctggtagtcc 780

acgccgtaaa cgatgagtgc taggtgttgg aggttcatac tttcagtgcc gcagttaacg 840

cattaagcac tccgcctggg gagtacggtc gcaagactga aactcaaagg aattgacggg 900

gacccgcaca agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccag 960

gacttgacat ccctgtgaca gcttcttaat cgaagccttc ccttcgggga cacaggagac 1020

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct tgtctttagt tgccagcact tagggtgggc actctaaaga gactgccggt 1140

gataaaccgg aggaaggtgg gggatgacgt caaatcatca tgccccttat gttctgggct 1200

acacacgtgc tacaatggct ggtacaaagg gaagcgaagg agtaatccgg agcgaatccc 1260

aaaaagccag tcccagttcg gattgtgggc tgcaactcgc ccacatgaag ccggagttgc 1320

tagtaatcgc gaatcagaat gtcgcggtga atacgttccc gggtcttgta cacaccgccc 1380

gtcacaccat gggagcccat ggcacccgaa gtcagtgagt caaccgtaaa ggagacagct 1440

gccgaaggtg aaatgg 1456

<210> 459
<211> 1517
<212> DNA
<213> Campylobacter coli

<400> 459
tttttatgga gagtttgatc ctggctcaga gtgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg atgaagcttc tagcttgcta gaagtggatt agtggcgcac gggtgagtaa 120

ggtatagtta atctgcccta cacaagagga caacagttgg aaacgactgc taatactcta 180

tactcctgct taacacaagt tgagtaggga aagtttttcg gtgtaggatg agactatata 240

gtatcagcta gttggtaagg taatggctta ccaaggctat gacgcttaac tggtctgaga 300

ggatgatcag tcacactgga actgagacac ggtccagact cctacgggag gcagcagtag 360

ggaatattgc gcaatggggg aaaccctgac gcagcaacgc cgcgtggagg atgacacttt 420

tcggagcgta aactcctttt cttagggaag aattctgacg gtacctaagg aataagcacc 480

ggctaactcc gtgccagcag ccgcggtaat acggagggtg caagcgttac tcggaatcac 540

tgggcgtaaa gggcgcgtag gcggattatc aagtctcttg tgaaatctaa tggcttaacc 600

attaaactgc ttgggaaact gatagtctag agtgagggag aggcagatgg aattggtggt 660

gtaggggtaa aatccgtaga tatcaccaag aatacccatt gcgaaggcga tctgctggaa 720

ctcaactgac gctaaggcgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 780

ccacgcccta aacgatgtac actagttgtt ggggtgctag tcatctcagt aatgcagcta 840

acgcattaag tgtaccgcct ggggagtacg gtcgcaagat taaaactcaa aggaatagac 900

ggggacccgc acaagcggtg gagcatgtgg tttaattcga ggatacgcga agaaccttac 960

ctgggcttga tatcctaaga acctttaga gataagaggg tgctagcttg ctagaactta 1020

gagacaggtg ctgcacggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccacgtat ttagttgcta acggttcggc cgagcactct aaatagactg 1140

ccttcgtaag gaggaggaag gtgtggacga cgtcaagtca tcatggccct tatgcccagg 1200

gcgacacacg tgctacaatg gcatatacaa tgagacgcaa taccgcgagg tggagcaaat 1260

ctataaaata tgtcccagtt cggattgttc tctgcaactc gagagcatga agccggaatc 1320

gctagtaatc gtagatcagc catgctacgg tgaatacgtt cccgggtctt gtactcaccg 1380

cccgtcacac catgggagtt gatttcactc gaagccggaa tactaaacta gttaccgtcc 1440

acagtggaat cagcgactgg ggtgaagtcg taacaaggta accgtaggag aacctgcggt 1500

tggatcacct cctttct 1517

<210> 460
<211> 1458
<212> DNA
<213> Campylobacter concisus

<400> 460
aatatggaga gtttgatcct ggctcagagt gaacgctggc ggcgtgccta atacatgcaa 60

gtcgaacgga caagtaagag cttgctctta tgagttagtg gcgcacgggt gagtaatgta 120

tagctaatct gccctacact agaggacaac agttggaaac gactgctaat actctatact 180

cctgtcttac ataagttaga tagggaaagt ttttcggtgt aggatgaggc tatattgtat 240

cagctagttg gtgaggtaat ggctcaccaa ggctatgacg cataactggt ctgagaggat 300

gatcagtcac actggaactg agacacggtc cagactccta cgggaggcag cagtagggaa 360

tattgctcaa tgggggaaac cctgaagcag caacgccgcg tggaggatga cacttttcgg 420

agcgtaaact ccttttgtta gggaagaaca atgacggtac ctaacgaata agcaccggct 480

aactccgtgc cagcagccgc ggtaatacgg agggtgcaag cgttactcgg aatcactggg 540

cgtaaaggac gcgtaggcgg attatcaagt ctcttgtgaa atcctatggc ttaaccatag 600

aactgcttgg gaaactgata atctagagtg agggagaggc agatggaatt ggtggtgtag 660

gggtaaaatc cgtagagatc accaggaata cccattgcga aggcgatctg ctggaactca 720

actgacgcta atgcgtgaaa gcgtggggag caaacaggat tagataccct ggtagtccac 780

gccctaaacg atgtatacta gttgttgcta agctagtctt ggcagtaatg cacctaacgg 840

attaagtata ccgcctgggg agtacggtcg caagattaaa actcaaagga atagacgggg 900

acccgcacaa gcggtggagc atgtggttta attcgaagat acgcgaagaa ccttacccgg 960

acttgatatc taacaaatca tctagagata gaagagtgtc tgcttgcaga aatgttaaga 1020

caggtgctgc acggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc acgtcattag ttgctaacag ttcggctgag cactctaatg agactgcctt 1140

cgtaaggagg aggaaggtgt ggacgacgtc aagtcatcat ggcccttatg tccggggcga 1200

cacacgtgct acaatggcat atacaatgag aagcaatatc gcgagatgga gcaaatctat 1260

aaaatatgtc ccagttcgga ttggagtctg caactcgact ccatgaagcc ggaatcgcta 1320

gtaatcgtag atcagccatg ctacggtgaa tacgttcccg ggtcttgtac tcaccgcccg 1380

tcacaccatg ggagttgatt tcactcgaag ccggaatact aaattagtta ccgtccacag 1440

tggaatcagc gactgggg 1458

<210> 461
<211> 1355
<212> DNA
<213> Campylobacter curvus

<400> 461
gtctgcgaag tcgtaatatt taattgcgaa gcaagtaaat attacatagg gtttctcgct 60

atgggatgag gctatatcgt atcagctagt tggtagggta atggcttacc aaggctatga 120

cgcgtaactg gtctgagagg atgatcagtc acactggaac tgagacacgg tccagactcc 180

tacgggaggc agcagtaggg aatattgctc aatgggggaa accctgaagc agcaacgccg 240

cgtggaggat gacacttttc ggagcgtaaa ctccttttct tggggaagaa atttgacggt 300

acccaaggaa taagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgca 360

agcgttactc ggaatcactg ggcgtaaagg acgcgtaggc ggattatcaa gtctcttgtg 420

aaatccaatg gcttaaccat tgaactgctt gagaaactga taatctagag tgagggagag 480

gcagatggaa ttggtggtgt aggggtaaaa tccgtagaga tcaccaggaa tacccattgc 540

gaaggcgatc tgctggaact caactgacgc taatgcgtga aagcgtgggg agcaaacagg 600

attagatacc ctggtagtcc acgccctaaa cgatgtatac tagttgttgc taagctagtc 660

ttggcagtaa tgcacctaac ggattaagta taccgcctgg ggagtacggt cgcaagatta 720

aaactcaaag gaatagacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 780

atacgcgaag aaccttaccc ggacttgata tctaacaaat catctagaga tagaagagtg 840

tctgcttgca gaaatgttaa gacaggtgct gcacggctgt cgtcagctcg tgtcgtgaga 900

tgttgggtta agtcccgcaa cgagcgcaac ccacgtcatt agttgctaac ggttcggccg 960

agcactctaa tgagactgcc ttcgcaagga ggaggaaggt gtggacgacg tcaagtcatc 1020

atggcccttа tgtccggggc gacacacgtg ctacaatggc atatacaatg agacgcaata 1080

tcgcgagatg gagcaaatct ataaaatatg tcccagttcg gattggagtc tgcaactcga 1140

ctccatgaag ccggaatcgc tagtaatcgt agatcagcca tgctacggtg aatacgttcc 1200

cgggtcttgt actcaccgcc cgtcacacca tgggagttga tttcactcga agcccaaata 1260

ccaaaccggt tatggtccac agtggaatca gcgactgggg tgaagtcgta acaaggtaac 1320

cgtaggagaa cctgcggttg gatcacctcc tttct 1355

<210> 462
<211> 1521
<212> DNA
<213> Campylobacter fetus

<400> 462
ttttatgga gagtttgatc ctggctcaga gtgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg gagtattaag agagcttgct cttttaatac ttagtggcgc acgggtgagt 120

aatgtatagt taatctgccc tacactggag gacaacagtt agaaatgact gctaatactc 180

catactcctt cttaacataa gttaagtcgg gaaagttttt cggtgtagga tgagactata 240

ttgtatcagc tagttggtaa ggtaatggct taccaaggct ttgacgcata actggtctga 300

gaggatgatc agtcacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

agggaatatt gctcaatggg ggaaaccctg aagcagcaac gccgcgtgga ggatgacact 420

tttcggagcg taaactcctt ttgttaggga agaaccatga cggtacctaa cgaataagca 480

ccggctaact ccgtgccagc agccgcggta atacggaggg tgcaagcgtt actcggaatc 540

actgggcgta aaggacgcgt aggcggatta tcaagtcttt tgtgaaatct aacagcttaa 600

ctgttaaact gcttgagaaa ctgataatct agagtgaggg agaggcagat ggaattggtg 660

gtgtaggggt aaaatccgta gagatcacca ggaataccca ttgcgaaggc gatctgctgg 720

aactcaactg acgctaatgc gtgaaagcgt ggggagcaaa caggattaga taccctggta 780

gtccacgccc taaacgatgt atactagttg ttgctgtgct agtcacggca gtaatgcacc 840

taacggatta agtataccgc ctggggagta cggtcgcaag attaaaactc aaaggaatag 900

acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagatacgc gaagaacctt 960

acctgggctt gatatccaac taatctctta gagataagag agtgctagct tgctagaaag 1020

ttgagacagg tgctgcacgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccacgt atttagttgc taacagttcg gctgagcact ctaaatagac 1140

tgccttcgca aggaggagga aggtgtggac gacgtcaagt catcatggcc cttatgccca 1200

gggcgacaca cgtgctacaa tggcatatac aatgagatgc aatatcgcga gatggagcaa 1260

atctataaaa tatgtcccag ttcggattgg agtctgcaac tcgactccat gaagccggaa 1320

tcgctagtaa tcgtagatca gccatgctac ggtgaatacg ttcccgggtc ttgtactcac 1380

cgcccgtcac accatgggag ttgatttcac tcgaagtcgg aatgctaaac tagctaccgc 1440

ccacagtgga atcagcgact ggggtgaagt cgtaacaagg taaccgtagg agaacctgcg 1500

gttggatcac ctcctttcta g 1521

<210> 463
<211> 1515
<212> DNA
<213> Campylobacter gracilis

<400> 463
aatatggaga gtttgatcct ggctcagagt gaacgctggc ggcgtgccta atacatgcaa 60

gtcgaacgga atttaagaga gcttgctctt ttaaatttag tggcgcacgg gtgagtaata 120

tatagctaat ctgccccttg ctggaggaca acagttagaa atgactgcta atactccata 180

ctccttttta ccataagata aatcgggaaa gaatttcggc aagggatgag actatatcgt 240

atcagctagt cggtggggta acggcctacc gaggctatga cgcgtaactg gtctgagagg 300

atgatcagtc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtaggg 360

aatattgcgc aatgggggaa accctgacgc agcaacgccg cgtggaggat gacacttttc 420

ggagcgtaaa ctccttttgt tagggaagaa taatgacggt acctaacgaa taagcaccgg 480

ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttactc ggaatcactg 540

ggcgtaaagg acgcgtaggc ggattatcaa gtctcttgtg aaatctaacg gcttaaccgt 600

taaactgctt gggaaactga taatctagag taagggagag gcagatggaa ttcttggtgt 660

aggggtaaaa tccgtagata tcaagaagaa tacctattgc gaaggcgatc tgctggaact 720

taactgacgc taatgcgtga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgccctaaa cgatgtatac cggttgttgc tgtgctagtc acggcagtaa tccacctaac 840

ggattaagta taccgcctgg ggagtacggt cgcaagatta aaactcaaag gaatagacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgaag atacgcgaag aaccttaccc 960

ggacttgata tctaacaaat catccagaga tggaagagtg tctgcttgca gaaatgttaa 1020

gacaggtgct gcacggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccacgtcatt agttgctaac ggttcggccg agcactctaa tgagactgcc 1140

ttcgtaagga ggaggaaggt gtggacgacg tcaagtcatc atggcccttа tgtccggggc 1200

gacacacgtg ctacaatggc atatacaata agacgcaata tcgtaagatg gagcaaatct 1260

aaaaaatatg tcccagttcg gattggagtc tgcaactcga ctccatgaag ccggaatcgc 1320

tagtaatcgt agatcagcca tgctacggtg aatacgttcc cgggtcttgt actcaccgcc 1380

cgtcacacca tgggagttga tttcactcga agcgggaatg cgaaattcgc taccctccac 1440

agtggaatca gcgactgggg tgaagtcgta acaaggtaac cgtaggagaa cctgcggttg 1500

gatcacctcc tttct 1515

<210> 464
<211> 1515
<212> DNA
<213> Campylobacter hominis

<400> 464
tttatatgga gagtttgatc ctggctcaga gtgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg aacgaataag agcttgctct tataagttag tggcgcacgg gtgagtaata 120

tatagctaat ctgcctctta gtagaggata acagtcggaa acgattgcta atactctata 180

cttctgcttt acataagtaa agtagagaaa gtttttcgct aagagatgag gctatactgt 240

atcagctagt tggtaaggta acggcttacc aaggctatga cgcataactg gtctgagagg 300

atgatcagtc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtaggg 360

aatattgcgc aatgggggaa accctgacgc agcaacgccg cgtggaggat gacacttttc 420

ggagcgtaaa ctccttttat cgggaaagaa taatgacggt acccgatgaa taagcaccgg 480

ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttactc ggaatcactg 540

ggcgtaaagg gtgcgtaggt ggattatcaa gtctcttgtg aaatctaata gcttaactat 600

taaattgctt gggaaactga tagtctagag taggggagag gcagatggaa ctcttggtgt 660

aggagtaaaa tccgtagata tcaagaagaa tacctattgc gaaagcgatc tgctagaacc 720

taactgacac tgatgcacga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgccctaaa cgatgtatac cggttgttgc tttgctagtc aaggcagtaa tccagctaac 840

gcattaagta taccgcctgg ggagtacggt cgcaagatta aaactcaaag gaatagacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgaag atacgcgaag aaccttaccc 960

ggacttgata tctaacaaat catccagaga tggaagagtg tctgcttgca gaaatgttaa 1020

gacaggtgct gcacggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccacgtattt agttgctaac agttaggctg agttctctaa atagactgcc 1140

ttcgtaagga ggaggaaggt gtggacgacg tcaagtcatc atggccctta tgtccggggc 1200

gacacacgtg ctacaatgac atatacaatg agatgcaata tcgcaagatg gagcaaatct 1260

ataaaatatg tcccagttcg gattggagtc tgcaactcga ctccatgaag ccggaatcgc 1320

tagtaatcgt agatcagcca tgctacggtg aatacgttcc cgggtcttgt actcaccgcc 1380

cgtcacacca tgggagttga tttcactcga agcggggatg caaaatttgc taccctccac 1440

agtggaatca gcgactgggg tgaagtcgta acaaggtaac cgtaggagaa cctgcggttg 1500

gatcacctcc tttct 1515

<210> 465
<211> 1519
<212> DNA
<213> Campylobacter jejuni

<400> 465
tttttatgga gagtttgatc ctggctcaga gtgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg atgaagcttt tagcttgcta gaagtggatt agtggcgcac gggtgagtaa 120

ggtatagtta atctgcccta cacaagagga caacagttgg aaacgactgc taatactcta 180

tactcctgct taacacaagt tgagtaggga aagtttttcg gtgtaggatg agactatata 240

gtatcagcta gttggtaagg taatggctta ccaaggctat gacgcttaac tggtctgaga 300

ggatgatcag tcacactgga actgagacac ggtccagact cctacgggag gcagcagtag 360

ggaatattgc gcaatggggg aaaccctgac gcagcaacgc cgcgtggagg atgacacttt 420

tcggagcgta aactcctttt cttagggaag aattctgacg gtacctaagg aataagcacc 480

ggctaactcc gtgccagcag ccgcggtaat acggagggtg caagcgttac tcggaatcac 540

tgggcgtaaa gggcgcgtag gcggattatc aagtctcttg tgaaatctaa tggcttaacc 600

attaaactgc ttgggaaact gatagtctag agtgagggag aggcagatgg aattggtggt 660

gtaggggtaa aatccgtaga tatcaccaag aatacccatt gcgaaggcga tctgctggaa 720

ctcaactgac gctaaggcgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 780

ccacgcccta aacgatgtac actagttgtt ggggtgctag tcatctcagt aatgcagcta 840

acgcattaag tgtaccgcct ggggagtacg gtcgcaagat taaaactcaa aggaatagac 900

ggggacccgc acaagcggtg gagcatgtgg tttaattcga agatacgcga agaaccttac 960

ctgggcttga tatcctaaga accttataga gatatgaggg tgctagcttg ctagaactta 1020

gagacaggtg ctgcacggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccacgtat ttagttgcta acggttcggc cgagcactct aaatagactg 1140

ccttcgtaag gaggaggaag gtgtggacga cgtcaagtca tcatggccct tatgcccagg 1200

gcgacacacg tgctacaatg gcatatacaa tgagacgcaa taccgcgagg tggagcaaat 1260

ctataaaata tgtcccagtt cggattgttc tctgcaactc gagagcatga agccggaatc 1320

gctagtaatc gtagatcagc catgctacgg tgaatacgtt cccgggtctt gtactcaccg 1380

cccgtcacac catgggagtt gatttcactc gaagccggaa tactaaacta gttaccgtcc 1440

acagtggaat cagcgactgg ggtgaagtcg taacaaggta accgtaggag aacctgcggt 1500

tggatcacct cctttctag 1519

<210> 466
<211> 1519
<212> DNA
<213> Campylobacter lari

<400> 466
tttttatgga gagtttgatc ctggctcaga gtgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg atgaagcgac tagcttgcta gttgtggatt agtggcgcac gggtgagtaa 120

ggtatagtta atctgcccta cacaagagga caacagttgg aaacggctgc taatactcta 180

tactcctgct taacacaagt tgagtaggga aagtttttcg gtgtaggatg agactatata 240

gtatcagcta gttggtgagg taatggctca ccaaggctat gacgcttaac tggtctgaga 300

ggatgatcag tcacactgga actgagacac ggtccagact cctacgggag gcagcagtag 360

ggaatattgc gcaatggggg aaaccctgac gcagcaacgc cgcgtggagg atgacacttt 420

tcggagcgta aactcctttt cttagggaag aattctgacg gtacctaagg aataagcacc 480

ggctaactcc gtgccagcag ccgcggtaat acggagggtg caagcgttac tcggaatcac 540

tgggcgtaaa gggcgcgtag gcggattatc aagtctcttg tgaaatccaa cggcttaacc 600

gttgaactgc ttgggaaact ggtaatctag agtgggggag aggcagatgg aattggtggt 660

gtaggggtaa aatccgtaga tatcaccaag aatacccatt gcgaaggcga tctgctggaa 720

cttaactgac gctaaggcgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 780

ccacgcccta aacgatgtat gctagttgtt ggggtgctag tcatctcagt aatgcagcta 840

acgcattaag cataccgcct ggggagtacg gtcgcaagat taaaactcaa aggaatagac 900

ggggacccgc acaagcggtg gagcatgtgg tttaattcga agatacgcga agaaccttac 960

ctgggcttga tatcctaaga accttataga gatatgaggg tgctagcttg ctagaactta 1020

gagacaggtg ctgcacggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccacgtat ttagttgcta acacttcggg tgagcactct aaatagactg 1140

ccttcgtaag gaggaggaag gtgtggacga cgtcaagtca tcatggccct tatgcccagg 1200

gcgacacacg tgctacaatg gcatatacaa tgagacgcaa taccgcgagg tggagcaaat 1260

ctataaaata tgtcccagtt cggattgttc tctgcaactc gagagcatga agccggaatc 1320

gctagtaatc gtagatcagc catgctacgg tgaatacgtt cccgggtctt gtactcaccg 1380

cccgtcacac catgggagtt gatttcactc gaagccggaa tactaaacta gttaccgtcc 1440

acagtggaat cagcgactgg ggtgaagtcg taacaaggta accgtaggag aacctgcggt 1500

tggatcacct cctttctag 1519

<210> 467
<211> 1515
<212> DNA
<213> Campylobacter rectus

<400> 467
ttaatatgga gagtttgatc ctggctcaga gtgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg gagattaagt agcttgctat ttaatcttag tggcgcacgg gtgagtaata 120

tatagctaat ctgccctaca ctagaggaca acagttggaa acgactgcta atactctata 180

ctccttcttt acataagtta agtcgggaaa gtttttcggt gtaggatgag gctatatcgt 240

atcagctagt tggtagggta acggcctacc aaggctatga cgcgtaactg gtctgagagg 300

atgatcagtc acactggaac tgagacacgg tccagactcc tacgggaggc agcagtaggg 360

aatattgctc aatgggggaa accctgaagc agcaacgccg cgtggaggat gacacttttc 420

ggagcgtaaa ctccttttct tgggaaagaa ttatgacggt acccaaggaa taagcaccgg 480

ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttactc ggaatcactg 540

ggcgtaaagg acgcgtaggc ggattatcaa gtctcttgtg aaatctaacg gcttaaccgt 600

taaactgctt gggaaactga taatctagag taagggagag gcagatggaa ttcttggtgt 660

aggggtaaaa tccgtagaga tcaagaagaa tacccattgc gaaagcgatc tgctggaact 720

taactgacgc taatgcgtga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgccctaaa cgatgtatac tagttgttgc ttcgctagtc gaggcagtaa tgcacctaac 840

ggattaagta taccgcctgg ggagtacggt cgcaagatta aaactcaaag gaatagacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgaag atacgcgaag aaccttaccc 960

ggacttgata tctaacaaat catccagaga tggaagagtg tctgcttgca gaaatgttaa 1020

gacaggtgct gcacggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccacgtcatt agttgctaac ggttcggccg agcactctaa tgagactgcc 1140

ttcgtaagga ggaggaaggt gtggacgacg tcaagtcatc atggccctta tgtccggggc 1200

gacacacgtg ctacaatggc gtatacaata agacgcaata tcgcgagatg gagcaaatct 1260

ataaaatacg tcccagttcg gattggagtc tgcaactcga ctccatgaag ccggaatcgc 1320

tagtaatcgt agatcagcca tgctacggtg aatacgttcc cgggtcttgt actcaccgcc 1380

cgtcacacca tgggagttga tttcactcga agcccaaata ccaaaccggt tatggtccac 1440

agtggaatca gcgactgggg tgaagtcgta acaaggtaac cgtaggagaa cctgcggttg 1500

gatcacctcc tttct 1515

<210> 468
<211> 1515
<212> DNA
<213> Campylobacter showae

<400> 468
ttaatatgga gagtttgatc ctggctcaga gtgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg gagattaagt agcttgctat ttaatcttag tggcgcacgg gtgagtaata 120

tatagctaac ttgcccatta ctaagggaca acagttggaa acgactgcta ataccttata 180

ctccgtatct atataagtag atacgggaaa gtttttcggt aatggatagg gctatatcgt 240

atcagctagt tggtaaggta atggcttacc aaggctatga cgcgtaactg gtctgagagg 300

atgatcagtc acactggaac tgagacacgg tccagactcc tacgggaggc agcagtaggg 360

aatattgctc aatgggggaa accctgaagc agcaacgccg cgtggaggat gacacttttc 420

ggagcgtaaa ctccttttct tgggaaagaa ttatgacggt acccaaggaa taagcaccgg 480

ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttactc ggaatcactg 540

ggcgtaaagg acgcgtaggc ggattatcaa gtctcttgtg aaatctaacg gcttaaccgt 600

taaactgctt gggaaactga taatctagag taagggagag gcagatggaa ttcttggtgt 660

aggggtaaaa tccgtagaga tcaagaagaa tacccattgc gaaagcgatc tgctggaact 720

taactgacgc taatgcgtga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgccctaaa cgatgtatac tagttgttgc ttcgctagtc gaggcagtaa tgcacctaac 840

ggattaagta taccgcctgg ggagtacggt cgcaagatta aaactcaaag gaatagacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgaag atacgcgaag aaccttaccc 960

ggacttgata tctaacaaat catccagaga tggaagagtg tctgcttgca gaaatgttaa 1020

gacaggtgct gcacggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccacgtcatt agttgctaac ggttcggccg agcactctaa tgagactgcc 1140

ttcgcaagga ggaggaaggt gtggacgacg tcaagtcatc atggccctta tgtccggggc 1200

gacacacgtg ctacaatggc atatacaatg agacgcaata tcgcgagatg gagcaaatct 1260

ataaaatatg tcccagttcg gattggagtc tgcaactcga ctccatgaag ccggaatcgc 1320

tagtaatcgt agatcagcca tgctacggtg aatacgttcc cgggtcttgt actcaccgcc 1380

cgtcacacca tgggagttga tttcactcga agcccaaata ccaaaccggt tatggtccac 1440

agtggaatca gcgactgggg tgaagtcgta acaaggtaac cgtaggagaa cctgcggttg 1500

gatcacctcc tttct 1515

<210> 469
<211> 1420
<212> DNA
<213> Campylobacter sp. FOBRC14

<400> 469
agagtgaacg ctggcggcgt gcctaataca tgcaagtcga acggagatta agtagcttgc 60

tatttaatct tagtggcgca cgggtgagta atatatagct aacttgccca ttactaaggg 120

acaacagttg gaaacgactg ctaatacctt atactccgta tctatataag tagatacggg 180

aaagtttttc ggtaatggat agggctatat cgtatcagct agttggtagg gtaatggctt 240

accaaggcta tgacgcgtaa ctggtctgag aggatgatca gtcacactgg aactgagaca 300

cggtccagac tcctacggga ggcagcagta gggaatattg ctcaatgggg gaaaccctga 360

agcagcaacg ccgcgtggag gatgacactt ttcggagcgt aaactccttt tcttggggaa 420

gaaatttgac ggtacccaag gaataagcac cggctaactc cgtgccagca gccgcggtaa 480

tacggagggt gcaagcgtta ctcggaatca ctgggcgtaa aggacgcgta ggcggattat 540

caagtctctt gtgaaatcca atggcttaac cattgaactg cttgagaaac tgataatcta 600

gagtgaggga gaggcagatg gaattggtgg tgtaggggta aaatccgtag agatcaccag 660

gaatacccat tgcgaaggcg atctgctgga actcaactga cgctaatgcg tgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccct aaacgatgta tactagttgt 780

tgctaagcta gtcttggcag taatgcacct aacggattaa gtataccgcc tggggagtac 840

ggtcgcaaga ttaaaactca aaggaataga cggggacccg cacaagcggt ggagcatgtg 900

gtttaattcg aagatacgcg aagaacctta cccggacttg atatctaaca aatcatctag 960

agatagaaga gtgtctgctt gcagaaatgt taagacaggt gctgcacggc tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccacgtc attagttgct 1080

aacggttcgg ccgagcactc taatgagact gccttcgcaa ggaggaggaa ggtgtggacg 1140

acgtcaagtc atcatggccc ttatgtccgg ggcgacacac gtgctacaat ggcatataca 1200

atgagacgca atatcgcgag atggagcaaa tctataaaat atgtcccagt tcggattgga 1260

gtctgcaact cgactccatg aagccggaat cgctagtaat cgtagatcag ccatgctacg 1320

gtgaatacgt tcccgggtct tgtactcacc gcccgtcaca ccatgggagt tgatttcact 1380

cgaagcccaa ataccaaacc ggttatggtc cacagtggaa 1420

<210> 470
<211> 1428
<212> DNA
<213> Campylobacter sp. FOBRC15

<400> 470

agtgaacgct ggcggcgtgc ctaatacatg caagtcgaac ggagattaag tagcttgcta 60

tttaatctta gtggcgcacg ggtgagtaat atatagctaa cttgcccatt actaagggac 120

aacagttgga aacgactgct aataccttat actccgtgtc tatataagta gatacgggaa 180

agtttttcgg taatggatag ggctatatcg tatcagctag ttggtaaggt aatggcttac 240

caaggctatg acgcgtaact ggtctgagag gatgatcagt cacactggaa ctgagacacg 300

gtccagactc ctacgggagg cagcagtagg gaatattgct caatgggggg aaccctgaag 360

cagcaacgcc gcgtggagga tgacactttt cggagcgtaa actccttttc ttgggaaaga 420

attatgacgg tacccaagga ataagcaccg gctaactccg tgccagcagc cgcggtaata 480

cggagggtgc aagcgttact cggaatcact gggcgtaaag gacgcgtagg cggattatca 540

agtctcttgt gaaatctaac ggcttaaccg ttaaactgct tgggaaactg ataatctaga 600

gtaagggaga ggcagatgga attcttggtg taggggtaaa atccgtagag atcaagaaga 660

atacccattg cgaaagcgat ctgctggaac ttaactgacg ctaatgcgtg aaagcgtggg 720

gagcaaacag gattagatac cctggtagtc cacgccctaa acgatgtata ctagttgttg 780

cttcgctagt cgaggcagta atgcacctaa cggattaagt ataccgcctg gggagtacgg 840

tcgcaagatt aaaactcaaa ggaatagacg gggacccgca caagcggtgg agcatgtggt 900

ttaattcgaa gatacgcgaa gaaccttacc cggacttgat atctaacaaa tcatccagag 960

atggaagagt gtctgcttgc agaaatgtta agacaggtgc tgcacggctg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccacgtcat tagttgctaa 1080

cggttcggcc gagcactcta atgagactgc cttcgcaagg aggaggaagg tgtggacgac 1140

gtcaagtcat catggccctt atgtccgggg cgacacacgt gctacaatgg cgtatacaat 1200

gagacgcaat atcgcgagat ggagcaaatc tataaaatac gtcccagttc ggattggagt 1260

ctgcaactcg actccatgaa gccggaatcg ctagtaatcg tagatcagcc atgctacggt 1320

gaatacgttc ccgggtcttg tactcaccgc ccgtcacacc atgggagttg atttcactcg 1380

aagcccaaat accaaactgg ttatggtcca cagtggaatc agcgactg 1428

<210> 471
<211> 1505
<212> DNA
<213> Campylobacter sp. oral clone BB120

<400> 471
gagagtttga ttctggctca gagtgaacgc tggcggcgtg cctaatacat gcaagtcgaa 60

cggagattaa atagcttgct atttaatctt agtggcgcac gggtgagtaa tgtatagtta 120

atctgcccca tagtggagga caacagttag aaatgactgc taatactcca tactccttct 180

tatcataagt taagtcggga aagtttttcg ctatgggatg agactatatc gtatcagtta 240

gttggtaagg taatggctta ccaaggctat gacgcgtaac tggtctgaga ggatgatcag 300

tcacattgga actgagacac ggtccaaact cctacgggag gcagcagtag ggaatattgc 360

gcaatggggg aaaccctgac gcagcaacgc cgcgtggagg atgacacttt tcggagcgta 420

aactccttttt gttagggaag aataatgacg gtacctaacg aataagcacc ggctaactcc 480

gtgccagcag ccgcggtaat acggagggtg caagcgttac tcggaatcac tgggcgtaaa 540

ggacgcgtag gcggattatc aagtctcttg tgaaatctag tggcttaacc actaaactgc 600

ttgggaaact gataatctag agtaagggag aggcagatgg aattcttggt gtaggggtaa 660

aatccgtaga gatcaagaag aatacttatt gcgaaggcga tctgctagaa cttaactgac 720

gctaatgcgt gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgcccta 780

aacgatgtat actggttgtt gctatgctag tcatggcagt aatccaccta acggattaag 840

tataccgcct ggggagtacg gtcgcaagat taaaactcaa aggaatagac ggggacccgc 900

acaagcggtg gagcatgtgg tttaattcga agatacgcga agaaccttac ccggacttga 960

tatctaacaa atcatctaga gatagaagag tgtctgcttg cagaaatgtt aagacaggtg 1020

ctgcacggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccacgtca ttagttgcta acagtttagc tgagcactct aatgagactg ccttcgtaag 1140

gaggaggaag gtgtggacga cgtcaagtca tcatggccct tatgtccagg gcgacacacg 1200

tgctacaatg gcatatacaa tgagatgcaa tatcgcgaga tggagcgaat ctataaaata 1260

tgtcccagtt cggattggag tctgcaactc gactccatga agtcggaatc gctagtaatc 1320

gtagatcagc catgctacgg tgaatacgtt cccgggtctt gtactcaccg cccgtcacac 1380

catgggagtt gatttcactc gaagtcggaa tgctaaacta gctaccgccc acagtggaat 1440

cagcgactgg ggtgaagtcg taacaaggta accgtaggag aacctgcggy tkgawcacct 1500

ccttc 1505

<210> 472
<211> 1695
<212> DNA
<213> Campylobacter sputorum

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<400> 472
agtgaacnct ggcggcgtgc ctaatacatg caagtcgaac gatgaagtcc tagcttgcta 60

ggatggatta gtggcgcacg ggtgagtaat gtatagctaa tctgccccat agagaggaac 120

aacacttaga aatgagtgct aatacctcat actccaatta tacataagtt taattgggaa 180

atgtagctct taataatata tatcaaagat aatttataaa taaaaagtta taaatataac 240

aataagcttt tttgaagctt tatattaata aagcgaaaaa aaagcaaagc agttagattt 300

aataaatttt tatagcattt aaaaatacaa aagacttaat ttttaaatct aaatataaat 360

tattactaat atttttaata gtcatttaga aatatcttaa tatatattat taagagcttt 420

cgctatggga tgaggctata ttgtatcagc tagttggtaa ggtaatggct taccaaggct 480

atgacgcata actggtctga gaggatgatc agtcacactg gaactgagac acggtccaga 540

ctcctacggg aggcagcagt agggaatatt gctcaatggg ggaaaccctg aagcagcaac 600

gccgcgtgga ggatgacact tttcggagcg taaactcctt ttctttggga agaataatga 660

cggtaccaaa ggaataagca ccggctaact ccgtgccagc agccgcggta atacggaggg 720

tgcaagcgtt actcggaatc actgggcgta aaggacgcgt aggtggatag ataagtctct 780

tgtgaaatct agtagcttaa ctactaaact gcttgggaaa ctatctatct agagtaaggg 840

agaggcagat ggaattcttg gtgtaggggt aaaatccgta gatatcaaga ggaatactta 900

ttgcgaaggc gatctgctag aacttaactg acactaatgc gtgaaagcgt ggggagcaaa 960

caggattaga taccctggta gtccacgccc taaacgatgt atactggttg ttgctgtgct 1020

agtcatggca gtaatccacc taacggatta agtataccgc ctggggagta cggtcgcaag 1080

attaaaactc aaaggaatag acggggaccc gcacaagcgg tggagcatgt ggtttaattc 1140

gaagatacgc gaagaacctt acccggactt gatatctaac aaatcatcta gagatagaag 1200

agtgtctgct tgcagaaatg ttaagacagg tgctgcacgg ctgtcgtcag ctcgtgtcgt 1260

gagatgttgg gttaagtccc gcaacgagcg caacccacgt gtttagttgc taacagttag 1320

gctgagcact ctaaacagac tgccttcgta aggaggagga aggtgtggac gacgtcaagt 1380

catcatggcc cttatgtccg gggcgacaca cgtgctacaa tggcatatac aataagacgc 1440

aatatcgcga gatggagcaa atctataaaa tatgtcccag ttcggattgg agtctgcaac 1500

tcgactccat gaagccggaa tcgctagtaa tcgtagatca gccatgctac ggtgaatacg 1560

ttcccgggtc ttgtactcac cgcccgtcac accatgggag ttgatttcac tcgaagccca 1620

aataccaaat tggttatggt ccacagtgga atcagcgact ggggtgaagt cgtaacaagg 1680

taaccgtagg agaac 1695

<210> 473
<211> 1513
<212> DNA
<213> Campylobacter upsaliensis

<400> 473
tatggagagt ttgatcctgg ctcagagtga acgctggcgg cgtgcctaat acatgcaagt 60

cgaacgatga agcttttagc ttgctagaag tggattagtg gcgcacgggt gagtaaggta 120

tagttaatct gccctacact gggggacaac acttagaaat gagtgctaat accccatact 180

cctatttaac ataagttagg tagggaaagt ttttcggtgt aggatgagac tatatagtat 240

cagctagttg gtaaggtaaa ggcttaccaa ggctatgacg cttaactggt ctgagaggat 300

gatcagtcac actggaactg agacacggtc cagactccta cgggaggcag cagtagggaa 360

tattgcgcaa tgggcgaaag cctgacgcag caacgccgcg tggaggatga cacttttcgg 420

agcgtaaact ccttttcttt gggaagaatt ttgacggtac caaaggaata agcaccggct 480

aactccgtgc cagcagccgc ggtaatacgg agggtgcaag cgttactcgg aatcactggg 540

cgtaaagggc gcgtaggcgg attatcaagt ctcttgtgaa atctaatggc ttaaccatta 600

aactgcttgg gaaactgata gtctagagtg agggagaggc agatggaatt ggtggtgtag 660

gggtaaaatc cgtagatatc accaagaata cccattgcga aggcgatctg ctggaactca 720

actgacgcta aggcgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac 780

gccctaaacg atgtatgcta gttgttgggg tgctagtcat ctcagtaatg cagctaacgc 840

attaagcata ccgcctgggg agtacggtcg caagattaaa actcaaagga atagacgggg 900

acccgcacaa gcggtggagc atgtggttta attcgaagat acgcgaagaa ccttacctag 960

gcttgatatc caacaaattc tgtagagata cggaagtgct agcttgctag aatgttgaga 1020

caggtgctgc acggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc tcgtccttag ttgctaacga ttcggtcgag cactctaagg agactgcctt 1140

cgtaaggagg aggaaggtgg ggacgacgtc aagtcatcat ggcccttacg cctagggcga 1200

cacacgtgct acaatggcat atacaatgag acgcaatacc gcgaggtgga gcaaatctat 1260

aaaatatgtc ccagttcgga ttgttctctg caactcgaga gcatgaagcc ggaatcgcta 1320

gtaatcgcaa atcagccatg ttgcggtgaa tacgttcccg ggtcttgtac tcaccgcccg 1380

tcacaccatg ggagttgatt tcactcgaag tggaaatact aaactagtta tcccccacag 1440

tggaatcagc gactggggtg aagtcgtaac aaggtaaccg taggagaacc tgcggttgga 1500

tcacctcctt tct 1513

<210> 474
<211> 1508
<212> DNA
<213> Candidatus Arthromitus sp. SFB-mouse-Yit

<400> 474
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagttgagc 60

ggagatatat ggagcttgct ttatataact tagcagcgaa cgggtgagta acacgtagat 120

aatctatcct atactggggg atagcccgat gaaagttgga ttaataccgc atatagctat 180

atagttgcat gattatgtag tgaaagattt attggtatag gaggagtctg cggcacatta 240

gctagtaggt gaggtaaagg cttacctagg cgacgatgtg tagccggtct gagaggatga 300

acggccacaa tggaactgag acacggtcca tactcctacg ggaggcagca gtggggaata 360

ttgcacaatg ggggaaaccc tgatgcagca acgccgcgtg agtgaagaag gttttcggat 420

tgtaaagctc tgttagcagg gaagaggaag gacggtacct gcagaggaag ccacggctaa 480

ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg ttgttcggaa taactgggcg 540

taaaggatgc gtaggcggtt aaacaagtta tatgttaaat atataggctt aacctgtaga 600

aagcatataa aactgtttaa ctagagtgca ggagaggtaa gtggaattcc tagtgtagcg 660

gtgaaatgcg tagagattag gaagaacacc agtggcgaag gcgacttact ggactgtaac 720

tgacgctgag gcatgagagc atggggagca aacaggatta gataccctgg tagtccatgc 780

tgtaaacgat gggtactagg tgtgggttgt gaataacaat tcgtgccgtc gcaaacgcaa 840

taagtacccc gcctgaggag tacgatcgca agattaaaac tcaaaggaat tgacggggac 900

ccgcacaagc agcggagcat gtggtttaat tcgaagcaac gcgaagaacc ttacctaaac 960

ttgacatacc ttgaattacc ttgtaatgag ggaagctcgc aagagcaagg atacaggtgg 1020

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

cccttgttgt taattgctaa caggttaagc tgagcacttt agcgagacag cctaggttaa 1140

ctaggaggaa ggtggggatg acgtcaaatc atcatgcccc ttacgtttag ggctacacac 1200

gtgctacaat ggtgagaaca gagagaagca agctagtgat agtgagcaaa acttataaaa 1260

ctcatctcag ttcggattgc aggctgaaac tcgcctgtat gaagatggag ttgctagtaa 1320

tcgcgaatca gaatgtcgcg gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca 1380

ccatgagagt tggcaacacc cgaaacctgt gggctaacca tataggaggc agcagtctaa 1440

ggtggggtca gtgattgggg tgaagtcgta acaaggtagc cgtaggagaa cctgcggctg 1500

gatcacct 1508

<210> 475
<211> 1541
<212> DNA
<213> Candidatus Sulcia muelleri

<400> 475
acaatgaaga gtttgatcct tgctcaggat aaacgctagc ggagggccta acacatgcaa 60

gtcgaggggc agcaaaaaaa atataagttt acttatattt tttgttggcg accggcaaac 120

gggtgagtaa tacatacgta acttacctta tgctgaggga tagcctgagg aaacttggat 180

taatacctta taaaacaatc ttttataaag aaatattgtt aaaatttag atggcataaa 240

ataggcgtat gtccgattag ttagttggta aggtaatggc ttaccaagac aatgatcggt 300

agggggcctg agagggcgta cccccacatt ggtactgaga cacggaccaa actcctacgg 360

gaggcagcag tgaggaatat tggtcaatgg aggaaactct gaaccagcca ctccgcgtgc 420

aggatgaaag ccttatgggt tgtaaactgc ttttgtatat gaataaaaaa ttctattttt 480

agaaaaaatt gaaggtaata tacgaataag tatcggcaaa ctccgtgcca gcagccgcgg 540

taaaacggag gatacaagcg ttatccggat ttattgggtt taaagggtgc gtaggcggtt 600

ttttaagtca gtagtgaaat cttaaagctt aactttaaaa ttgctattga tactgagaga 660

cttgagttag gttggagtag ctggaatgtg tggtgtagcg gtgaaatgca tagatatcac 720

acagaacacc gatcgcgaaa gcaagttact aagcctatac tgacgctgag gcacgaaagc 780

gtggggagca aacaggatta gataccctgg tagtccatgc cgtaaacgat gatcactaac 840

tattggtttt ttataattca gtggtcaagc gaaagtgata agtgatccac ctgagaagta 900

cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaatcgg tggagcatgt 960

ggtttaattc gatgatacgc gaggaacctt accaagactt aaatgtacta cgaataaatt 1020

ggaaacaatt tagtcaaacg acggagtaca aggtgctgca tggttgtcgt cagctcgtgc 1080

cgtgaggtgt taggttaagt cctttaacga gcgcaaccct tatgattagt tgccatcgag 1140

taatgttggg gactctaata agactgccgg cgtaagccga gaggaaggtg gggacgacgt 1200

caaatcatca cggcccttac gtcttgggcc acacacgtgc tacaatggtc ggtacaaaag 1260

gcagcgactg ggtgaccaga agcaaatctc taaagccgat ctcagttcgg attggagtct 1320

gaaactcgac tctatgaagc tggaatcgct agtaatcgcg catcagccat ggcgcggtga 1380

atacgttccc gggccttgta cacaccgccc gtcaagccat ggaagttgga agtacctaaa 1440

gtcggtgacc ataaaaggag ctgcctaagg taagtctaat aactagggct aagtcgtaac 1500

aaggtagccg taccggaagg tgcggctgga atatctctgt t 1541

<210> 476
<211> 1504
<212> DNA
<213> Capnocytophaga canimorsus

<400> 476
agagtttgat cctggctcag gatgaacgct agcggcaggc ctaacacatg caagtcgagg 60

ggtagggtgc ttcggcactt gagaccggcg cacgggtgcg taacacgtgt acaatctacc 120

ttttgctaag ggatagcccg aagaaatttg gattaatacc ttatagtatt gtttggtggc 180

atcactaaat aattaaagct ctggtggcaa aagatgagta cgcgtcccat tagctagttg 240

gtgtggtaac ggcataccaa ggctacgatg ggtaggggtc ctgagaggga ggtcccccac 300

actggtactg agacacggac cagactccta cgggaggcag cagtgaggaa tattggacaa 360

tggtcggaag actgatccag ccatgccgcg tgcaggatga cggccttatg ggttgtaaac 420

tgcttttata caggaagaat aaggtctacg cgtagattga tgacggtact gtatgaataa 480

gcatcggcta actccgtgcc agcagccgcg gtaatacgga ggatgcgagc gttatccgga 540

atcattgggt ttaaagggtc cgtaggcggg cttataagtc agaggtgaaa gcactgagct 600

caactgagta actgcctttg aaactgtagg tcttgaatgt ttgtgaagta gctggaatgt 660

gtagtgtagc ggtgaaatgc atagatatta cacagaacac cgattgcgaa ggcatgttac 720

taacaaatta ttgacgctga tggacgaaag cgtggggagc gaacaggatt agataccctg 780

gtagtccacg ctgtaaacga tggatactag ctgtttggga gtaattttga gtggctaagc 840

gaaagtgata agtatcccac ctggggagta cgcacgcaag tgtgaaactc aaaggaattg 900

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgatacgc gaggaacctt 960

accaaggttt aaatgggaaa cgacgtacct agagataggt atttcttcgg acgtttttca 1020

aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt caggttaagt cctataacga 1080

gcgcaacccc tgctgttagt tgctagcgag ttaagtcgag cactctaacg ggactgccgg 1140

tgcaaaccgt gaggaaggtg gggatgacgt caaatcatca cggcccttac atcttgggct 1200

acacacgtgc tacaatggcc ggtacagcga gcagccactg cgtgagcagg agcgaatcta 1260

taaagccggt cacagttcgg atcggagtct gcaactcgac tccgtgaagc tggaatcgct 1320

agtaatcgga tatcagccat gatccggtga atacgttccc gggccttgta cacaccgccc 1380

gtcaagccat ggaagctggg ggtacctgaa gtcggttgcc gcaaggagct gcctagggta 1440

aaactagtga ctggggctaa gtcgtaacaa ggtagccgta ccggaaggtg cggctggaac 1500

acct 1504

<210> 477
<211> 1287
<212> DNA
<213> Capnocytophaga genomosp. C1

<400> 477
gatgaacgct agcggcaggc ctaacacatg caagtcgagg gaccggcgta cgggtgcgta 60

acgcgtatac aatctgcctt tcactggggg atagcccgaa gaaatttgga ttaatacccc 120

atagttaaag gtggtgaaag atgagtatgc gttctattag ctagttggag aggtaacggc 180

tccccaaggc gatgatagat aggggttctg agagggatgt cccccacact ggtactgaga 240

tacggaccag actcctacgg gaggcagcag tgaggaatat tggacaatgg tcggaagact 300

gatccagcca tgccgcgtgc aggatgacgg cctatgggtt gtaaactgct tttgtaaggg 360

aagatgacgg taccttacga ataagcatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggatgc gagcgttatc cggaatcatt gggtttaaag ggtctgtagg cgggctggta 480

agtcagaggt gaaagcgctt agctcaacta agcaactgcc tttgaaactg ttggtcttga 540

atggttgtga agtagttgga atgtgtagtg tagcggtgaa atgcttagat attacacaga 600

acaccgatag cgaaggcata ttactaacaa tattgacgct gatggacgaa agcgtgggga 660

gcgaacagga ttagataccc tggtagtcca cgctgtaaac gatggatact agctgtttgg 720

tattgagtgg ctaagcgaaa gtgataagta tcccacctgg ggagtacgtt cgcaagaatg 780

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 840

atacgcgagg aaccttacca aggtttaaat ggtcaaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcaggt taagccctat aacgagcgca acccctgcca ttagttgcta 960

acgatcgagc cctctaatgg gactgccggt gcaaaccgga ggaaggtggg gatgacgtca 1020

aatcatcacg gcccttacat cttgggctac acacgtgcta caatggccgt cagagagcag 1080

ccactgcgtg agcaggcgcg aatctatacg gtcacagttc ggacggagtc tgcaactcga 1140

ctccggaagc tggaatcgct agtaatcgga tatcagccat gatccggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccat ggaagctggg agtacctgaa gacggttgct 1260

gtttagggta aaactagtga ctggggc 1287

<210> 478
<211> 1509
<212> DNA
<213> Capnocytophaga gingivalis

<400> 478
tgaagagttt gatcctggct caggatgaac gctagcggca ggcctaacac atgcaagtcg 60

agggagaagc cctttcgggg gcagaaaccg gcgcacgggt gcgtaacgcg tatgcaacct 120

acctttcaca gggggatagc ccgaagaaat ttggattaat accccataat attattggat 180

ggcatcattt gataattaaa actgcggtgg tgaaagatgg gcatgcgtcc tattagctag 240

ttggagtggt aacggcaccc caaggctacg ataggtaggg gtcctgagag ggagatcccc 300

cacactggta ctgagacagg gaccagactc ctacgggagg cagcagtgag gaatattggt 360

caatggtcgg aagactgaac cagccatgcc gcgtgcagga agaatgcctt atgggttgta 420

aactgctttt atatgggaag aataaggtgt acgtgtacat tgatgacggt accatatgaa 480

taagcatcgg ctaactccgt gccagcagcc gcggtaatac ggagggtgcg agcgttattc 540

ggaatcattg ggtttaaagg gtctgtaggc gggctattaa gtcagaggtg aaaggtttca 600

gcttaactga gaaattgcct ttgatactgg tagtcttgaa tatctgtgaa gttcttggaa 660

tgtgtagtgt agcggtgaaa tgcttagata ttacacagaa caccgattgc gaaggcaggg 720

gactaacaga caattgacgc tgagagacga aagcgtgggg agcgaacagg attagatacc 780

ctggtagtcc acgctgtaaa cgatggatac tagctgtttg gcgcaagctg agtggctaag 840

cgaaagtgat aagtatccca cctggggagt acgcacgcaa gtgtgaaact caaaggaatt 900

gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgatgatacg cgaggaacct 960

taccaaggtt taaatgggga ctgacaggtg tagagatacg cccttcttcg gacagttttc 1020

aaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg tcaggttaag ccctataacg 1080

agcgcaaccc ctattgttag ttaccagcac gtaaaggtgg ggactctagc aagactgccg 1140

gtgtaaaccg tgaggaaggt ggggatgacg tcaaatcatc acggccctta catcttgggc 1200

tacacacgtg ctacaatggt cgttacagag agcagccact gcgcgagcag gagcgaatct 1260

ataaagacga tcacagttcg gatcggagtc tgcaactcga ctccgtgaag ctggaatcgc 1320

tagtaatcgg atatcagcca tgatccggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcaagcca tggaagctgg gagtacctga agtcggtcac cgcaaggagc tgcctagggt 1440

aaaaccagtg actggggcta agtcgtaaca aggtagccgt accggaaggt gtggctggaa 1500

cacctcctt 1509

<210> 479
<211> 1417
<212> DNA
<213> Capnocytophaga granulosa

<220>
<221> modified_base
<222> (28)..(28)
<223> a, c, t, g, unknown or other

<400> 479
aggcctaaca catgcaagtc gagggagnaa gcccttcggg gtagaaaccg gcgcacgggt 60

gcgtaacgcg tatgcaacct acctttcaca gggggatagc ccgaagaaat ttggattaat 120

accccataat attattggat ggcatcattt gataattaaa attacgatgg tgaaagatgg 180

gcatgcgtcc tattagctag ttggagtggt aacggcaccc caaggctacg ataggtaggg 240

gtcctgagag ggagatcccc cacactggta ctgagacagg gaccagactc ctacgggagg 300

cagcagtgag gaatattggt caatggtcgg aagactgaac cagccatgcc gcgtgcagga 360

agaatgcctt atgggttgta aactgctttt atatgggaag aataaggagt acgtgtactt 420

tgatgacggt accatatgaa taagcatcgg ctaactccgt gccagcagcc gcggtaatac 480

ggaggatgcg agcgttattc ggaatcattg ggtttaaagg gtctgtaggc gggctattaa 540

gtcaggggtg aaaggtttca gcttaactga gaaattgcct ttgatactgg tagtcttgaa 600

aatctgtgaa gttcttggaa tgtgtagtgt agcggtgaaa tgcttagata ttacacagaa 660

caccgattgc gaaggcaggg gactaacaga cgattgacgc tgagagacga aagcgtgggg 720

agcgaacagg attagatacc ctggtagtcc accctgtaaa cgatggatac tagctgtttg 780

gagtaatttg agtggctaag cgaaagtgat aagtatccca cctggggagt acgcacgcaa 840

gtgtgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgatacg cgaggaacct taccaaggtt taaatggaga ctgacagggg cagagatgcc 960

tttttcttcg gacagttttc aaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg 1020

tcaggttaag tcctataacg agcgcaaccc ctattgttag ttaccagcac gtagtggtgg 1080

ggactctagc aagactgccg gtgtaaaccg tgaggaaggt ggggatgacg tcaaatcatc 1140

acggccctta catcttgggc tacacacgtg ctacaatggt cgttacagag agcagccact 1200

gcgcgagcag gagcgaatct ataaagacgg tcacagttcg gatcggagtc tgcaactcga 1260

ctccgtgaag ctggaatcgc tagtaatcgg atatcagcca tgatccggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcaagcca tggaagctgg gagtacctga agtcggttgc 1380

cgcaaggagc tgcctagggt aaaaccagtg actgggg 1417

<210> 480
<211> 1518
<212> DNA
<213> Capnocytophaga ochracea

<400> 480
acgatgaaga gtttgatcct ggctcaggat gaacgctagc ggcaggccta acacatgcaa 60

gtcgaggggg aagttacttt cgggtaacag agaccggcgt acgggtgcgt aacgcgtata 120

caatctgcct ttcactgggg gatagcccga agaaatttgg attaataccc catagtatat 180

agggacggca tcgtttttat attaaagctc tggtggtgaa agatgagtat gcgttctatt 240

agctagttgg agaggtaacg gctccccaag gctatgatag atagggggttc tgagagggat 300

gtcccccaca ctggtactga gatacggacc agactcctac gggaggcagc agtgaggaat 360

attggacaat ggtcggaaga ctgatccagc catgccgcgt gcaggatgac tgccttatgg 420

gttgtaaact gcttttgtaa gggaagaata agggctacgc gtagtttgat gacggtacct 480

tacgaataag catcggctaa ctccgtgcca gcagccgcgg taatacggag gatgcgagcg 540

ttatccggaa tcattgggtt taaagggtcc gtaggcgggc taataagtca ggggtgaaat 600

cgttcagctc aactgagcaa ctgcctttga aactgttggt cttgaatggt tgtgaagtag 660

ttggaatgtg tagtgtagcg gtgaaatgct tagatattac acagaacacc gatagcgaag 720

gcatattact aacaattaat tgacgctgat ggacgaaagc gtggggagcg aacaggatta 780

gataccctgg tagtccacgc tgtaaacgat ggatactagc tgtttggagt aatctgagtg 840

gctaagcgaa agtgataagt atcccacctg gggagtacgt tcgcaagaat gaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gatacgcgag 960

gaaccttacc aaggtttaaa tggggactga cagaggtaga gataccttt tcttcggaca 1020

gttttcaagg tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcag gttaagtcct 1080

ataacgagcg caacccctgc cattagttgc taacgagtaa ggtcgagccc tctaatggga 1140

ctgccggtgc aaaccgtgag gaaggtgggg atgacgtcaa atcatcacgg cccttacatc 1200

ttgggctaca cacgtgctac aatggccgtt acagagagca gccactgcgt gagcaggcgc 1260

gaatctataa agacggtcac agttcggatc ggagtctgca actcgactcc gtgaagctgg 1320

aatcgctagt aatcggatat cagccatgat ccggtgaata cgttcccggg ccttgtacac 1380

accgcccgtc aagccatgga agctgggggt acctgaagac ggttaccgcg aggagctgtt 1440

tagggtaaaa ctagtgactg gggctaagtc gtaacaaggt agccgtaccg gaaggtgcgg 1500

ctggaacacc tccttttct 1518

<210> 481
<211> 1405
<212> DNA
<213> Capnocytophaga sp. GEJ8

<400> 481
gcctacacat gcaagtcgag ggggaagtta ctttcgggta acagagaccg gcgtacgggt 60

gcgtaacgcg tatacaatct gcctttcact gggggatagc ccgaagaaat ttggattaat 120

accccatagt atagtaatac ggcatcgtga tactattaaa gcttaggtgg tgaaagatga 180

gtatgcgttc tattagttag ttggagaggt aacggctccc caaggcgatg atagataggg 240

gttctgagag ggatgtcccc cacactggta ctgagatacg gaccagactc ctacgggagg 300

cagcagtgag gaatattgga caatggtcgg aagactgatc cagccatgcc gcgtgcagga 360

tgaaggtctt atggattgta aactgctttt gtaagggaag aataagggct acgtgtagtt 420

tgatgacggt accttacgaa taagcatcgg ctaactccgt gccagcagcc gcggtaatac 480

ggaggatgcg agcgttatcc ggaatcattg ggtttaaagg gtctgtaggc gggctggtaa 540

gtcagaggtg aaagcgctca gctcaactga ggcaactgcc tttgaaactg ttggtcttga 600

atggttgtga aagtagttgg aatgtgtagt gtagcggtga aatgcttaga tattacacag 660

aacaccgata gcgaaggcat attactaaca attgattgac gctgatggac gaaagcgtgg 720

ggagcgaaca ggattagata ccctggtagt ccacgctgta aacgatggat actagctgtt 780

tggtcgcgag tttgagtggc taagcgaaag tgataagtat cccacctggg gagtacgttc 840

gcaagaatga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 900

aattcgatga tacgcgagga accttaccaa ggtttaaatg gggactgaca ggggtagaga 960

tacccttttc ttcggacagt tttcaaggtg ctgcatggtt gtcgtcagct cgtgccgtga 1020

ggtgtcaggt taagtcctat aacgagcgca acccctgcca ttagttgcta acgagtaagg 1080

tcgagccctc taatgggact gccggtgcaa accgagagga aggtggggat gacgtcaaat 1140

catcacggcc cttacatctt gggctacaca cgtgctacaa tggccgttac agagagcagc 1200

cactgcgtga gcaggcgcga atctataaag acggtcacag ttcggatcgg agtctgcaac 1260

tcgactccgt gaagctggaa tcgctagtaa tcggatatca gccatgatcc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcaa gccatggaag ctgggagtac ctgaagacgg 1380

ttaccgcaag gagctgttag gtaaa 1405

<210> 482
<211> 1450
<212> DNA
<213> Capnocytophaga sp. S1b

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (83)..(83)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (376)..(376)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (409)..(409)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (449)..(449)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (455)..(455)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (513)..(514)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (523)..(523)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (772)..(772)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1001)..(1003)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1062)..(1062)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1077)..(1077)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1113)..(1113)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1215)..(1215)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1419)..(1419)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1441)..(1441)
<223> a, c, t, g, unknown or other

<400> 482
acgatgaaga gtttgatcct ggctcaggat naacgctagc ggcaggccta acacatgcaa 60

gtcgaggaga agccttcggg ctnaraccgg cgyacgggtg cgtaacgcgt atacaatctg 120

cctttcactg ggggatagcc cgaagaaatt tggattaata ccccatagta tagtaatacg 180

gcatcgtgat actattaaag cttaggtggt gaaagatgag tatgcgttct attagctagt 240

tggagaggta acggctcccc aaggctatga tagatagggg ttctgagagg gatgtccccc 300

acactggtac tgagatacgg accagactcc tacgggaggc agcagtgagg aatattggac 360

aatggtcgga agactnatcc agccatgccg cgtgcaggat gaaggtctna tggattgtaa 420

actgcttttg taagggaaga ataaggctnc gcgtngtttg atgacggtac cttacgaata 480

agcatcggct aactccgtgc cagcagccgc ggnnatacgg agnatgcgag cgttatccgg 540

aatcattggg tttaaagggt ctgtaggcgg gcttgtaagt cagaggtgaa agcgctcagc 600

tcaactgagc aactgccttt gaaactgttg gtcttgaatg gttgtgaagt agttggaatg 660

tgtagtgtag cggtgaaatg cttagatatt acacagaaca ccgatagcga aggcatatta 720

ctaacaatta attgacgctg atggacgaaa gcgtggggag cgaacaggat tngataccct 780

ggtagtccac gctgtaaacg atggatacta gctgtttggt ttaaggattg agtggctaag 840

cgaaagtgat aagtatccca cctggggagt acgttcgcaa gaatgaaact caaaggaatt 900

gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgatgatacg cgaggaacct 960

taccaaggtt taaatggrga ctgacagggg tagagatacg nnnttcttcg gacagttttc 1020

aaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg tnaggttaag tcctatnacg 1080

agcgcaaccc ctgccattag ttgctaacga gtnaagtcga gccctctaat gggactgccg 1140

gtgcaaaccg tgaggaaggt ggggatgacg tcaaatcatc acggccctta catcttgggc 1200

tacacacgtg ctacnatggc cgttacagag agcagccact gcgtgagcag gcgcgaatct 1260

ataaagacgg tcacagttcg gatcggagtc tgcaactcga ctccgtgaag ctggaatcgc 1320

tagtaatcgg atatcagcca tgatccggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcaagcca tggaagctgg gagtacctga agacggttnc cgcaaggagc tgtttagggt 1440

naaactagtg 1450

<210> 483
<211> 1442
<212> DNA
<213> Capnocytophaga sp. oral clone AH015

<220>
<221> modified_base
<222> (537)..(537)
<223> a, c, t, g, unknown or other

<400> 483
ggctcaggat gaacgctagc ggcaggccta acacatgcaa gtcgagggag aagcctttcg 60

gggcagaaac cggcgcacgg gtgcgtaacg cgtatgcaac ctacctttca caggggata 120

gcccgaagaa atttggatta ataccccata atattgttgg atggcatcat ctgataatta 180

aaactgtggt ggtgaaagat gggcatgcgt cctattagct agttggagtg gtaacggcac 240

cccaaggcta tgataggtag gggtcctgag agggagatcc cccacactgg tactgagaca 300

gggaccagac tcctacggga ggcagcagtg aggaatattg gtcaatggtc ggaagactga 360

accagccatg ccgcgtgcag gaagaatgcc ttatgggttg taaactgctt ttatatggga 420

agaataaggt gtaacgtgta cattgatgac ggtaccatat gaataagcat cggctaactc 480

cgtgccagca gccgcggtaa tacggaggat gcgagcgtta ttcggaatca ttgggtntaa 540

agggtctgta ggcgggctat taagtcaggg gtgaaaggtt tcagcttaac tgagaaattg 600

cctttgatac tggtagtctt gaatatctgt gaagttcttg gaatgtgtag tgtagcggtg 660

aaatgcttag atattacaca gaacaccgat tgcggaggca ggggactaac agacgattga 720

cgctgagaga cgaaagcgtg gggagcgaac aggattmgat accctggtag tccacgctgt 780

aaacgatgga tactagctgt ttggagaaat ttgagtggct aagcgaaagt gataagtatc 840

ccacctgggg agtacgcacg caagtgtgaa actcaaagga attgacgggg gcccgcacaa 900

gcggtggagc atgtggttta attcgatgat acgcgaggaa ccttaccaag gtytaaatgg 960

agactgacag gggcagagat gccttttttct tcggacagtt ttcaaggtgc tgcatggttg 1020

tcgtcagctc gtgccgtkag gtgtcaggtt aagtcctata acgagcgcaa cccctattgt 1080

tagttaccag cacgtaatgg tggggactcw agcaagactg ccggtgtaaa ccgtgaggaa 1140

ggtggggatg acgtcaaatc atcacggccc ttacatcttg ggctacacac gtgctacaat 1200

ggtcgttaca gagagcagsc actgcgcgag caggagcgaa tctataaaga cggtcacagt 1260

tcggatcgga gtctgcaact cgactccgtg aagctggaat cgctagtaat cggatatcag 1320

ccatgatccg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaag ccatggwagc 1380

tgggggtacc tgaagtcggt tgccgcaagg agctgcctag ggtaaaacca gtgactgggg 1440

ct 1442

<210> 484
<211> 1529
<212> DNA
<213> Capnocytophaga sp. oral clone ASCH05

<220>
<221> modified_base
<222> (974)..(974)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1016)..(1016)
<223> a, c, t, g, unknown or other

<400> 484
gagagtttga tcatggctca ggatgaacgc tagctacagg cttaacacat gcaagtcgag 60

gggagaggtt accttcgggt aactgaaacc ggcgcacggg tgcgtaacgc gtatacaatc 120

tgcctttcac atagggatag cccgaagaaa tttggattaa tacctaatgg tatataagag 180

cggcatcgtt tttatattaa agctacggtg gtgaaagatg agtatgcgtt ctattagcta 240

gttggagagg taacggctcc ccaaggcgac gatagatagg ggttctgaga gggatgtccc 300

ccacactggt actgagatac ggaccagact cctacgggag gcagcagtga ggaatattgg 360

acaatggtcg gaagactgat ccagccatgc cgcgtgcagg atgaaggtcc tatggattgt 420

aaactgcttt tgtaagggaa gaataaggag tacgtgtact ttgatgacgg taccttacga 480

ataagcatcg gctaactccg tgcccgcagc cgcggtaata cggaggatgc gagcgttatc 540

cggaatcatt gggtttaaag ggtccgtagg cgggctgata agtcagaggt gaaagcgctt 600

agctcaacta agcaactgcc tttgaaactg tcagtcttga atgattgtga agtagttgga 660

atgtgtagtg tagcggtgaa atgcttagat atgacgaaga actccgattg cgaaggcagc 720

ttacgggagc acaactgacg ctgaagctcg aaggtgcggg tatcaaacag gattagatac 780

cctggtagtc cgcacagtaa acgctggatg cccgctgttg gttcattaga gtcagcggcc 840

aagcgaaagt gataagtatc ccacctgggg gagtacgcac gcaagtgtga aactcaaagg 900

aattgacggg ggcccgcaca agccggagga acatgtggtt taattcgatg atacgcgagg 960

aaccttacca aggngttgaa tgggaactga cagaggtaga gatgaagagg cccttncgga 1020

cagttttcaa ggtgctgcat ggttgtcgtc agctcttgcc gtgaggtgtc ggcttaagtg 1080

ccataacgag cgcaacccct tttcttagtt gccatcaggt catgctgggc actctgggaa 1140

tactgccacc gtaaggtgtg aggaaggtgg ggatgacgtc aaatcatcac ggcccttaca 1200

tcttgggcta cacacgtgct acaatgggct ttaatagagg ggagcgaagc cgcgaggtgg 1260

agcaaacccc agaaacaagc tctcagttcg gatcggagtc tgcaactcga ctccgtgaag 1320

ctggaatcgc tagtaatcgg atatcagcca tgatccggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacaa cgaaagtcgg aagtacccaa agccggtggg gtaaccttcg 1440

ggagccagcc gtctaaggta aagtcgatga ttggggtgaa gtcgtaacaa ggtagccgta 1500

tcggaaggtg cggctggaac acctccttc 1529

<210> 485
<211> 1357
<212> DNA
<213> Capnocytophaga sp. oral clone ID062

<400> 485
gagtttgatt ctggctcagg atgaacgcta gcggcaggcc taacacatgc aagtcgaggg 60

accggcgcac gggtgcgtaa cgcgtatata atctacctta tacagaggga tagcccgaag 120

aaatttggat taatacttca tagttaaagg cggtataaga tgagtatgcg tcctattagc 180

tagttggtat ggtaacggca taccaaggct acgataggta ggggtcctga gagggagatc 240

ccccacactg gtactgagac acggaccaga ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatggg cgagagcctg aaccagccaa gtcgcgtgaa ggatgactgt ctatggattg 360

taaacttctt ttatacggga atatgcatgt accgtatgaa taagcatcgg ctaactccgt 420

gccagcagcc gcggtaatac ggaggatgcg agcgttatcc ggaatcattg ggtttaaagg 480

gtccgtaggc gggctgataa gtcagaggtg aaagcgctta gctcaactaa gcaactgcct 540

ttgaaactgt cagtcttgaa tgattgtgaa gtagttggaa tgtgtagtgt agcggtgaaa 600

tgcttagata ttacacagaa caccgatagc gaaggcatat tactaacaat atcgacgctg 660

atggacgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac gctgtaaacg 720

atggatacta gctgtttgga tatgagtggc taagcgaaag tgataagtat cccacctggg 780

gagtacgcac gcaagtgtga aactcaaagg aattgacggg ggcccgctca agcggtggag 840

catgtggttt aattcgatga tacgcgagga accttaccaa ggtttaaatg gtcaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcaggtt aagtcctata acgagcgcaa 960

cccctgccat tagttgctaa cgatcgagcc ctctagtggg actgccggtg caaaccggag 1020

gaaggtgggg atgacgtcaa atcatcacgg cccttacatc ttgggctaca cacgtgctac 1080

aatggccgtc agagagcagc cactgcgcga gcaggagcga atctatacgg tcacagttcg 1140

gacggagtct gcaactcgac tccggaagct ggaatcgcta gtaatcggat atcaaccatg 1200

atccggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg gaagctgggg 1260

gtacctgaag gcggtcgctg attagggtaa aactagtgac tggggctaag tcgtaacaag 1320

gtagccgtac cggaaggtgc gggtggatca cctccttt 1357

<210> 486
<211> 1509
<212> DNA
<213> Capnocytophaga sp. oral strain A47ROY

<220>
<221> modified_base
<222> (888)..(888)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (895)..(896)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (955)..(955)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (979)..(979)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (999)..(999)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1016)..(1016)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1019)..(1019)
<223> a, c, t, g, unknown or other

<400> 486
agagtttgat cctggctcag gatgaacgct agcggcaggc ctaacacatg caagtcgagg 60

gggaagttac tttcgggtaa ctgagaccgg cgtacgggtg cgtaacgcgt atacaatctg 120

cctttcactg ggggatagcc cgaagaaatt tggattaata ccccatagta tagtagtgtg 180

gcatcacaca actattaaag ccttggtggt gaaagatgag tatgcgttct attagctagt 240

tggagaggta acggctcccc aaggctacga tagatagggg ttctgagagg gatgtccccc 300

acactggtac tgagatacgg accagactcc tacgggaggc agcagtgagg aatattggac 360

aatggtcgga agactgatcc agccatgccg cgtgcaggat gacggcctta tgggttgtaa 420

actgcttttg taagggaaga ataaggagta cgtgtacttt gatgacggta ccttacgaat 480

aagcatcggc taactccgtg ccagcagccg cggtaatacg gaggatgcga gcgttatccg 540

gaatcattgg gtttaaaggg tccgtaggcg ggctaataag tcagaggtga aagcgcttag 600

ctcaactaag caactgcctt tgaaactgtt ggtcttgaat ggttgtgaag tagttggaat 660

gtgtagtgta gcggtgaaat gcttagatat tacacagaac accgatagcg aaggcatatt 720

actaacaatt aattgacgct gatggacgaa agcgtgggga gcgaacagga ttagataccc 780

tggtagtcca cgctgtaaac gatggatact agctgtttgg tctaaggatt gagtggctaa 840

gcgaaagtga taagtatccc acctggggag tacgttcgca agaatganac tcaanngaat 900

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgatgatac gcgangaacc 960

ttcccagggt ttaaatggng actgacagat gtagagatnc ctccttcttc ggacanttnt 1020

caaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcaggttaa gtcctataac 1080

gagcgcaacc cctgccatta gttgctaacg agtaaggtcg agccctctaa tgggactgcc 1140

ggtgcaaacc gtgaggaagg tggggatgac gtcaaatcat cacggccttt acatcttggg 1200

ctacacacgt gctacaatgg ccgttacaga gagcagccac tgcgtgagca ggcgcgaatc 1260

tataaagacg gtcacagttc ggatcggagt ctgcaactcg actccgtgaa gctggaatcg 1320

ctagtaatcg gatatcagcc atgatccggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcaagcc atggaagctg ggagtacctg aagacggtca ccgcaaggag ctgtttaggg 1440

taaaactagt gactggggct aagtcgtaac aaggtagccg taccggaagg tgcggctgga 1500

tcacctccc 1509

<210> 487
<211> 1463
<212> DNA
<213> Capnocytophaga sp. oral strain S3

<220>
<221> modified_base
<222> (33)..(33)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (520)..(520)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1008)..(1008)
<223> a, c, t, g, unknown or other

<400> 487
taacgatgaa gagtttgatc ctggctcagg atnaacgcta gcggcaggcc taacacatgc 60

aagtcgaggg agaagccctt cggggcagaa accggcgcac gggtgcgtaa cgcgtatgca 120

acctaccttt cacaggggga tagcccgaag aaatttggat taatacccca taatattgtt 180

ggatggcatc attttgcaat taaaactgcg gtggtgagag atgggcatgc gtcctattag 240

ctagttggag tggtaacggc accccaaggc tacgataggt aggggtcctg agagggagat 300

cccccacact ggtactgaga cagggaccag actcctacgg gaggcagcag tgaggaatat 360

tggtcaatgg tcggaagact gaaccagcca tgccgcgtgc aggaagaatg ccttatgggt 420

tgtaaactgc ttttatatgg gaagaataag gtgtacgagt acattgatga cggtaccata 480

tgaataagca tcggctaact ccgtgccagc agccgcggtn atacggagga tgcgagcgtt 540

attcggaatc attgggttta aagggtctgt aggcgggcta ttaagtcagg ggtgaaaggt 600

ttcagcttaa ctgagaaatt gcctttgata ctggtagtct tgaatatctg tgaagttctt 660

ggaatgtgta gtgtagcggt gaaatgctta gatattacac agaacaccga ttgcgaaggc 720

aggggactaa cagacaattg acgctgagag acgaaagcgt ggggagcgaa caggattaga 780

taccctggta gtccacgctg taaacgatgg atactagctg tttgatgata agttgagtgg 840

ctaagcgaaa gtgataagta tcccacctgg ggagtacgca cgcaagtgtg aaactcaaag 900

gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg atacgcgagg 960

aaccttacca aggtttaaat ggggactgac aggtgtagag atacgccntt cttcggacag 1020

ttttcaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcagg ttaagtccta 1080

taacgagcgc aacccctatt gttagttacc agcacgtagt ggtggggact ctagcaagac 1140

tgccggtgta aaccgtgagg aaggtgggga tgacgtcaaa tcatcacggc ccttacatct 1200

tgggctacac acgtgctaca atggtcgtta cagagagcag ccactgcgtg agcaggagcg 1260

aatctataaa gacgatcaca gttcggatcg gagtctgcaa ctcgactccg tgaagctgga 1320

atcgctagta atcggatatc agccatgatc cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca agccatggaa gctgggagta cctgaagtcg gtgaccgcaa ggagctgcct 1440

agggtaaaac cagtgactgg ggc 1463

<210> 488
<211> 1516
<212> DNA
<213> Capnocytophaga sp. oral taxon 338

<400> 488
acgatgaaga gtttgatcct ggctcaggat gaacgctagc ggcaggccta acacatgcaa 60

gtcgagggag aagcccttcg gggcagaaac cggcgcacgg gtgcgtaacg cgtatgcaac 120

ctacctttca caggggata gcccggagaa atttggatta atatcccata atattgttgg 180

atggcatcat ttggcaatta aagttacgat ggtggaagat gggcatgcgt cctattagct 240

agttggcgag gtaacggctc gccaaggcga cgataggtag gggtcctgag agggagatcc 300

cccacactgg tactgagaca gggaccagac tcctacggga ggcagcagtg aggaatattg 360

gtcaatggtc ggaagactga accagccatg ccgcgtgcag gaaggcggcc ttatgggttg 420

taaactgctt ttatatggga agaataagga gtacgtgtac tttgatgacg gtaccatatg 480

aataagcatc ggctaactcc gtgccagcag ccgcggtaat acggaggatg cgagcgttat 540

tcggaatcat tgggtttaaa gggtctgtag gcgggctatt aagtcagggg tgaaatattt 600

cagcttaact gggaaattgc ctttgatact ggtagtcttg aatatttgtg aagtttttgg 660

aatgtgtagt gtagcggtga aatgcataga tattacacag aacaccgatt gcggaggcag 720

gggactaaca aataattgac gctgagagac gagagcgtgg ggagcgaaca ggattagata 780

ccctggtagt ccacgctgta aacgatggat actagctgtt tggtaggaat attgagtggc 840

taagcgaaag tgataagtat cccacctggg gagtacgcac gcaagtgtga aactcaaagg 900

aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatga tacgcgagga 960

accttaccaa ggtttaaatg gtgactgacg tacctagaga tgggtatttc ttcggacagt 1020

tatcaaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcaggt taagtcctat 1080

aacgagcgca acccctattg atagttacca gcacgtaaag gtggggactc tattgagact 1140

gccggtgtaa accgtgagga aggtggggat gacgtcaaat catcacggcc cttacatctt 1200

gggctacaca cgtgctacaa tggtcgttac agagagcagc tactgcgtga gcaggtgcga 1260

atcttaaaag acggtcacag ttcggatcgg agtctgcaac tcgactccgt gaagctggaa 1320

tcgctagtaa tcgcatatca gccatgatgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcaa gccatggaag ctgggagtac ctgaagttgg ttaccgcaag gagctaccta 1440

gggtaaaacc agtgactggg gctaagtcgt aacaaggtag ccgtaccgga aggtgtggct 1500

ggaacacctc ctttct 1516

<210> 489
<211> 1518
<212> DNA
<213> Capnocytophaga sputigena

<400> 489
acgatgaaga gtttgatcct ggctcaggat gaacgctagc ggcaggccta acacatgcaa 60

gtcgagggag aggttacctt cgggtaacca aaaccggcgc acgggtgcgt aacgcgtata 120

caatctgcct ttcacatagg gatagcccga agaaatttgg attaatacct aatggtatat 180

aggagcggca tcgtttttat attaaagcta cggtggtgaa agatgagtat gcgttctatt 240

agctagttgg agaggtaacg gctccccaag gcgacgatag ataggggttc tgagagggat 300

gtcccccaca ctggtactga gatacggacc agactcctac gggaggcagc agtgaggaat 360

attggacaat ggtcggaaga ctgatccagc catgccgcgt gcaggatgaa ggtcctatgg 420

attgtaaact gcttttgtaa gggaagaata aggagtacgt gtactttgat gacggtacct 480

tacgaataag catcggctaa ctccgtgcca gcagccgcgg taatacggag gatgcgagcg 540

ttatccggaa tcattgggtt taaagggtcc gtaggcgggc tgataagtca gaggtgaaag 600

cgcttagctc aactaagcaa ctgcctttga aactgtcagt cttgaatgat tgtgaagtag 660

ttggaatgtg tagtgtagcg gtgaaatgct tagatattac acagaacacc gatagcgaag 720

gcatattact aacaatttat tgacgctgat ggacgaaagc gtggggagcg aacaggatta 780

gataccctgg tagtccacgc tgtaaacgat ggatactagc tgtttggagc aatctgagtg 840

gctaagcgaa agtgataagt atcccacctg gggagtacgc acgcaagtgt gaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gatacgcgag 960

gaaccttacc aaggtttaaa tgggaactga cagaggtaga gatacctcct tcttcggaca 1020

gttttcaagg tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcag gttaagtcct 1080

ataacgagcg caacccctgc cattagttgc taacgagtca agtcgagccc tctagtggga 1140

ctgccggtgc aaaccgtgag gaaggtgggg atgacgtcaa atcatcacgg cccttacatc 1200

ttgggctaca cacgtgctac aatggccgtt acagagagca gccactgcgc gagcaggagc 1260

gaatctataa agacggtcac agttcggatc ggagtctgca actcgactcc gtgaagctgg 1320

aatcgctagt aatcggatat cagccatgat ccggtgaata cgttcccggg ccttgtacac 1380

accgcccgtc aagccatgga agctgggggt acctgaagac ggtcaccgcg aggagctgtt 1440

tagggtaaaa ctagtgactg gggctaagtc gtaacaaggt agccgtaccg gaaggtgcgg 1500

ctggaacacc tccttttct 1518

<210> 490
<211> 1534
<212> DNA
<213> Cardiobacterium hominis

<400> 490
gaactgaaga gtttgattct ggctcagatt gaacgctggc ggcatgctta acacatgcaa 60

gtcgaacgga aacgatggag cttgctccag gcgtcgagtg gcggacgggt gagtaacgca 120

tgggaatctg ccttttgctg ggggataacg tagggaaact tacgctaata ccgcataaga 180

cctaagggtg aaagcggggg accgaaaggc ctcgcggcaa gagatgagcc catgttggat 240

tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc catagctggt ctgagaggat 300

gatcagccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattggacaa tgggggggaac cctgatccag caatgccgcg tgtgtgaaga aggccttcgg 420

gttgtaaagc actttcagta gggaggaaag gtgcgtagtt aatacctgcg caattgacgt 480

tacctacaga agaagcaccg gctaactccg tgccagcagc cgcggtaata cggagggtgc 540

gagcgttatt cggaattact gggcgtaaag cgcacgcagg cggttgccca agtcagatgt 600

gaaagccccg ggcttaacct gggaactgca tttgaaactg ggcgactaga gtatgaaaga 660

ggaaagcgga atttccagtg tagcagtgaa atgcgtagat attggaagga acaccgatgg 720

cgaaggcagc tttctgggtc gatactgacg ctcatgtgcg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccctaa acgatgtcaa ctaggcgtcg ggttgttaaa 840

gactcggtgc cggagctaac gcattaagtt gaccgcctgg ggagtacggc cgcaaggttg 900

aaactcaaag aaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacca ggccttgaca tcctaggaac ttggcagaga tgccttggtg 1020

ccttcgggaa cctagagaca ggtgttgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt atccttactt gccagcactt tgggtgggaa 1140

ctgtaaggag actgccggtg acaaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacgg cctgggctac acacgtgcta caatggtcgg tacagacggt agcgaagccg 1260

cgaggtggag ccaatctgag aaagccgatc gtagtccgga ttgcagtctg caactcgact 1320

gcatgaagtc ggaatcgcta gtaatcgcga atcagcatgt cgcggtgaat acgttcccgg 1380

gtcttgtaca cactgcccgt cacaccatgg gagtttgttg caccagaagc aggtagctta 1440

acttaggagg gcgcttgcca cggtgtggcc gatgactggg gtgaagtcgt aacaaggtaa 1500

ccgtagggga acctgcggtt ggatcacctc cttt 1534

<210> 491
<211> 1493
<212> DNA
<213> Cardiobacterium valvarum

<400> 491
gcgtgcttaa cacatgcaag tcgaacggaa acgacggagc ttgctccggg cgtcgagtgg 60

cggacgggtg agtaatgcat gggaatctgc cttttgctgg gggataacgt agggaaactt 120

acgctaatac cgcataagac ctgagggtga aagtggggga ccgttaaggc ctcacggcag 180

aagatgagcc catgtcggat tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc 240

cgtagctggt ctgagaggat gatcagccac actgggactg agacacggcc cagactccta 300

cgggaggcag cagtggggaa tattggacaa tgggggcaac cctgatccag caatgccgcg 360

tgtgtgaaga aggccttcgg gttgtaaagc actttcagca gggaggaaag catcatggtt 420

aacacccatg gtagtgacgt tacctgcaga agaagcaccg gctaactccg tgccagcagc 480

cgcggtaata cggagggtgc aagcgttatt cggaattact gggcgtaaag cgcacgcagg 540

cggctaccta agtcagatgt gaaagccccg ggcttaacct gggaactgca tttgaaactg 600

ggcagctaga gtatgaaaga ggaaagcgga atttccagtg tagcagtgaa atgcgtagat 660

attggaagga acaccgatgg cgaaggcagc tttctgggtc gatactgacg ctcatgtgcg 720

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccctaa acgatgtcaa 780

ctaggcgtcg ggttgtatag actcggtgcc gcagctaacg cattaagttg accgcctggg 840

gagtacggcc gcaaggttga aactcaaaga aattgacggg gacccgcaca agcggtggag 900

catgtggttt aattcgatgc aacgcgaaga accttaccag gccttgacat ccagagaact 960

tagcagagat gctttggtgc cttcgggaac tctgagacag gtgttgcatg gctgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta tccttacttg 1080

ccagcactta gggtgggaac tgtaaggaga ctgccggtga caagccggag gaaggtgggg 1140

atgacgtcaa gtcatcatgg cccttacggc ctgggctaca cacgtgctac aatggtcggt 1200

acagacggta gcgaagccgc gaggtggagc caatctgaga aagccgatcg tagtccggat 1260

tgcagtctgc aactcgactg catgaagtcg gaatcgctag taatcgcgaa tcagcatgtc 1320

gcggtgaata cgttcccggg tcttgtacac actgcccgtc acaccatggg agtttgttgc 1380

accagaagca ggtagcttaa cgaaagaggg cgcttgccac ggtgtggccg atgactgggg 1440

tgaagtcgta acaaggtaac cgtaggggaa cctgcggttg gatcacctcc tac 1493

<210> 492
<211> 1503

<212> DNA
<213> Carnobacterium divergens

<220>
<221> modified_base
<222> (1)..(1)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (98)..(99)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (234)..(234)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (250)..(250)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (349)..(350)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (541)..(541)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (560)..(560)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (642)..(643)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (777)..(780)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (947)..(947)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (981)..(982)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1037)..(1038)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1043)..(1043)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1067)..(1067)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1114)..(1114)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1401)..(1401)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1424)..(1424)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1500)..(1500)
<223> a, c, t, g, unknown or other

<400> 492
nttatatgag agtttgatcc tggctcagga cgaacgctgg cggcatgcct aatacatgca 60

agtcgaacgc acgaagttga aaagcttgct tttcgatnna agtaagtggc ggacgggtga 120

gtaacacgtg ggtaacctgc ccataagagg gggataacat tcggaaacgg atgctaatac 180

cgcatatttc aagtgaccgc atggtcgctt gatgaaaggt ggcttcggct accncttatg 240

gatggacccn cggtgcatta gttagttggt gaggtaatgg ctcaccaaga ccatgatgca 300

tagccgacct gagagggtga tcggccacac tgggactgag acacggccnn gactcctacg 360

ggaggcagca gtagggaatc ttccgcaatg gacgaaagtc tgacggagca atgccgcgtg 420

agtgaagaag gttttcggat cgtaaaactc tgttgttaga gaagaacaag gatgagagta 480

actgctcatc ccctgacggt atctaaccag aaagccacgg ctaactacgt gccagcagcc 540

ncggtaatac gtaggtggcn agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc 600

ggttctttaa gtctgatgtg aaagcccccg gctcaaccgg gnngggtcat tggaaactgg 660

agaacttgag tgcagaagag gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata 720

tatggaggaa caccagtggc gaaggcgact ctctggtctg taactgacgc tgaggcnnnn 780

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgatgagtgc 840

taagtgttgg agggtttccg cccttcagtg ctgcagctaa cgcattaagc actccgcctg 900

gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg gggaccngca caagcggtgg 960

agcatgtggt ttaattcgaa nnaacgcgaa gaaccttacc aggtcttgac atcctttgac 1020

cactcgagag atcgagnntt ccnttcgggg acaaagtgac aggtggngca tggttgtcgt 1080

cagctcgtgt cgtgagatgt tgggttaagt cccncaacga gcgcaaccct tattactagt 1140

tgccagcatt cagttgggca ctctagtgag actgccggtg acaaaccgga ggaaggtggg 1200

gatgacgtca aatcatcatg ccccttatga cctgggctac acacgtgcta caatggatgg 1260

tacaacgagt cgcgaagtcg tgaggccaag ctaatctctt aaagccattc tcagttcgga 1320

ttgtaggctg caactcgcct acatgaagcc ggaatcgcta gtaatcgcgg atcagaacgc 1380

cgcggtgaat acgttcccgg ntcttgtaca caccgcccgt cacnccacga gagtttgtaa 1440

cacccgaagc cggtgaggta acctttttagg agccagccgt ctaaggtggg atagataatn 1500

ggg 1503

<210> 493
<211> 1547
<212> DNA
<213> Carnobacterium maltaromaticum

<400> 493
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gcacgaagtt gaagagcttg ctctttaacc aagtgagtgg cggacgggtg agtaacacgt 120

gggtaacctg cccattagag ggggataaca ttcggaaacg gatgctaata ccgcatagtt 180

tcaggaatcg catgattctt gaaggaaagg tggcttcggc taccactaat ggatggaccc 240

gcggcgtatt atctagttgg tgaggtaatg gctcaccaag gcaatgatac gtagccgacc 300

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 360

agtagggaat cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gagtgaagaa 420

ggttttcgga tcgtaaaact ctgttgttaa agaagaacaa ggatgagagt aactgctcat 480

cccctgacgg tatttaacca gaaagccacg gctaactacg tgccagcagc cgcggtaata 540

cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttcttta 600

agtctgatgt gaaagccccc ggctcaaccg gggagggtca ttggaaactg gagaacttga 660

gtgcagaaga ggagagtgga attccacgtg tagcggtgaa atgcgtagat atgtggagga 720

acaccagtgg cgaaggcgac tctctggtct gtaactgacg ctgaggctcg aaagcgtggg 780

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaagtgttg 840

gagggtttcc gcccttcagt gctgcagcta acgcattaag cactccgcct ggggagtacg 900

gccgcaaggc tgaaactcaa aggaattgac ggggacccgc acaagcggtg gagcatgtgg 960

tttaatttgg aagcaacgcg aagaacctta ccaggtcttg acatcctttt gaccacttct 1020

agagatagag cttttccctt cggggacaaa gtgacaggtg gtgcatggtt gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttatta ctagttgcca 1140

gcatttagtt gggcactcta gtgagactgc cggtgacaaa ccggaggaag gtggggatga 1200

cgtcaaatca tcatgccccc tatgacctgg gctacacacg tgctacaatg gatggtacaa 1260

cgagtcgcaa ggtcgcgagg ccaagctaat ctcttaaagc cattctcagt tcggattgta 1320

ggctgcaact cgcctacatg aagccggaat cgctagtaat cgcggatcag aacgccgcgg 1380

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc 1440

gaagccggtg aggtaacctt ttaggagcca gccgtctaag gtgggataga taattggggt 1500

gaagtcgtaa caaggtagcc gtatcggaag gtgcggctgg atcacct 1547

<210> 494
<211> 1497
<212> DNA
<213> Catabacter hongkongensis

<400> 494
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gaagttgctc tttgggaagc cctcgggtgg aactgtgagt atacttagtg gcggacgggt 120

gagtaacgcg tgagcaatct gccctgcaat gggggacaac agttggaaac gactgctaat 180

accgcataag accacgaaac cgcatggttt agaggtaaaa ggattcattc gatgcaggat 240

gagctcgcgt cccattagat agttggtgag gtaacggccc accaagtcaa cgatgggtag 300

ccgacctgag agggtgatcg gccacattgg aactgagaaa cggtccaaac tcctacggga 360

ggcagcagtg gggaatattg ggcaatgggg gaaaccctga cccagcaacg ccgcgtgaag 420

gaagaaggcc ttcgggttgt aaacttttgt cctatgggac gaaaaaaatg acggtaccat 480

aggaggaagc tccggctaac tacgtgccag cagccgcggt aatacgtagg gagcaagcgt 540

tgtccggaat tactgggcgt aaagggtgcg taggtggcca tgtaagtcag gtgtgaaaga 600

ccggggctca accccggggt tgcacttgaa actgtgtggc ttgagtacag gagagggaag 660

tggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg 720

cgactttctg gactgtaact gacactgagg cacgaaagcg tggggagcaa acaggattag 780

ataccctggt agtccacgcc gtaaacgatg gatactaggt gtgggggcg atagtcctcc 840

gtgccgaagc taacgcatta agtatcccgc ctggggagta cgatcgcaag gttgaaactc 900

aaaggaattg acgggggccc gcacaagcag cggagcatgt ggtttaattc gaagcaacgc 960

gaagaacctt accaaggctt gacatcctct gacgcatata gagatatatg ttcccttcgg 1020

ggcagagaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttgttgctag ttgccagcac gtaaaggtgg gaactctagt 1140

gagactgccg gggacaactc ggaggaaggt ggggacgacg tcaaatcatc atgcccctta 1200

tgtcttgggc tacacacgtg ctacaatggc cggtacaaag ggcagcgacc tcgtaagagt 1260

aagcgaatct caaaaagccg gccccagttc ggattgtggg ctgcaacccg cccacatgaa 1320

gtcggagttg ctagtaatcg cgaatcagca tgtcgcggtg aatgcgttcc cgggccttgt 1380

acacaccgcc cgtcacacca cggaagttgg gagcacccga agccagtggc ttaaccgtaa 1440

ggagagagct gtcgaaggtg agatcaatga ctggggtgaa gtcgtaacaa ggtaacc 1497

<210> 495
<211> 1485
<212> DNA
<213> Catenibacterium mitsuokai

<400> 495
agagtttgat cctggctcag gatgaacgct ggcgccgtgc ctaatacatg caagtcgaac 60

gaatctcctt cggaagataa gtgcgaacgg gtgagtaata cataggtaac ctgcccctgt 120

gcgggggata acaggaggaa actcctgcta ataccgcata gccatgagca ccgcatggag 180

ctcatgccaa atatccttca cgggatagcg cagggatgga cctatggcgc attagctagt 240

tggcggggca acggcccacc aaggcaacga tgcgtagccg gcctgagagg gcggacggcc 300

acattgggac tgagacacgg cccagactct acgggaggca gcagtaggga attttcggca 360

atgggggaaa ccctgaccga gcaacgccgc gtgagcgaag aaggcttcgg gtcgtaaagc 420

tctgttgtaa aggaagaacg tcggacacag gaaatggtgt gcgagtgacg gtactttacc 480

agaaagccac ggctaactac gtgccagcag ccgcggtaat ccgtaggtgc cgaccgttat 540

ccggaatcat tggccgtaaa gagggagcag gcggccgcaa gggtctgtgg tgaaagaccg 600

aagctaaact tcggtaagcc atggaaaccg ggcggctaga gtgcggaaga ggatcgtgga 660

attccatgtg tagcggtgaa atgcgtagat atatggagga acaccagtgg cgaagcgacg 720

gtctgggccg caactgacgc tcattcccga aaccgtgggg agccaatggc attagatacc 780

ctagtagtcc acgccgtaaa cgatggtcac taagtgtcgg gggtcaaacc ccggtgctgc 840

agtcaacgca ataagtgacc cgcctgagta gtacgttcgc aagaatgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaggt cttgacatcg atctaaaagg gatggagaca tcctcatagc tatagagaag 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cctgtcgcca gttaccatca ttgagttggg gactctggcg agactgcctc 1140

tgcaaggagg aggaaggcgg ggatgacgtc aaatcatcat gccccttatg acctgggcca 1200

cacacgtgct acaatggacg ggacagaggg aagcgaaggc gcgagcgcaa gcggacccca 1260

gaaacccgtt cccagttcgg actgcagtct gcaactcgac tgcacgaagc cggaatcgct 1320

agtaatcgcg gatcagcatg ccgcggtgaa tacgttctcg ggccttgtac acaccgccgt 1380

cacaccatga gagttggcaa cacccgaagg cggcggccca acccgcaagg agggagctgt 1440

ctaaggtggg gctgatgatt ggggtgaagt cgtaacaagg taacc 1485

<210> 496
<211> 1292
<212> DNA
<213> Catonella genomosp. P1 oral clone MB5_P12

<400> 496
gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac gagtggcgga cgggtgagta 60

acgcgtgggc aacctgccct atacaggggg atagcagctg gaaacggctg gtaagaccgc 120

ataaggaaat caggtatagg atggacccgc gtccgattag ccagttggca gggtaaaagc 180

ctaccaaagc gacgatcggt agccggactg agaggtcggg cggccacatt gggactgaga 240

cacggcccaa actcctacgg gaggcagcag tgggggatat tgcacaatgg aggaaactct 300

gatgcagcga cgccgcgtga gtgaagaagt atttcggtat gtaaagctct atcagcaggg 360

aagatgacgg tacctgacta agaagccccg gctaactacg tgccagcagc cgcggtaata 420

cgtaggggc aagcgttatc cggatttact gggtgtaaag ggagcgcagg cggttttgca 480

agttgagagt ggaagcaggg ggctcaaccc cctgactgct cccaaaactg taaaacttga 540

gtatgggaga ggcaggcgga attcctagtg tagcggtgaa atgcttagat attaggaaga 600

acaccggtgg cgaaggcggc ctgctggacc aactgacgct gaggctcgaa agcgtgggta 660

gcaaacagga ttagataccc tggtagtcca cgctgtaaac gatgaatact aggtgctggg 720

atttcggtgc cgtcgcaaac gcattaagta ttccacctgg ggagtacgtt cgcgagaatg 780

aagctcaagg gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgacg 840

caacgcgaag aaccttaccc ggtcttgaga tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctattt ttagtagcca 960

gcggccgggc actctaaaga gactgccgag gataactcgg aggaaggcgg ggatgacgtc 1020

aaatcatcat gccccttatg accggggcta cacacgtgct acaatgtcag tcagagggaa 1080

gcgaaggcgt gagtcggagc aaatctcagg ctgcctcagt tcggatgtag tctgcaactc 1140

gactacagaa gctggaatcg ctagtaatcg caaatcagaa tgttgcggtg aatacgttcc 1200

cgggtcttgt acacaccgcc cgtcacacca tgggagtcgg aaatgcccga agtcagtgcc 1260

taaggagctg ccgaaggcag gtctggtgac tg 1292

<210> 497
<211> 1553
<212> DNA
<213> Catonella morbi

<400> 497
atgagagttt gatcctggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg 60

aacgaaccgc gactgagtgc ttgcacttgg tcaaggtgag tggcgaacgg gtgagtaaca 120

cgtgggtaac ctacctcata gtgggggata acagtcggaa acgactgcta ataccgcata 180

ggacatggga tcacatgatt ctgtgaggaa aggtggcgca agctatcgct aagagatgga 240

cccgcggtgc attagctagt tggtagggta agggcctacc aaggcgatga tgcatagccg 300

acctgagagg gtgatcggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

agcagtaggg aatcttccgc aatggacgca agtctgacgg agcaacgccg cgtgagtgaa 420

gaaggtcttc ggatcgtaaa gctctgttgt tagagaagaa cagcgcatag agtaactgct 480

atgcgtgtga cggtatctaa ccagaaagcc acggctaact acgtgccagc agccgcggta 540

atacgtaggt ggcgagcgtt gtccggattt attgggcgta aagggagtgt aggcggtctt 600

ttaagtctga tgtgaaagcc cacggctcaa ccgtggaggg tcattggaaa ctgggagact 660

tgagtgcaga agaggagagc ggaattccat gtgtagcggt gaaatgcgta gatatatgga 720

ggaacaccag tggcgaaggc ggctctctgg tctgtaactg acgctgaggc tcgaaagcgt 780

ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatga gtgctaagtg 840

ttggaggggt tccacccttc agtgctggag ttaacgcaat aagcactccg cctggggagt 900

acggccgcaa ggctgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcccg acgaccgctc 1020

tagagataga gtttttcttc ggaacgtcgg tgacaggtgg tgcatggttg tcgtcagctc 1080

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctataac tagttgccag 1140

cattgagatg gggactctag ttagactgcc ggtgacaaac cggaggaagg tggggatgac 1200

gtcaaatcat catgcccctt atgacctggg ctacacacgt gctacaatgg atggtacaac 1260

gagcagcgaa ctcgcgaggg taagcgaatc tctaaaagcc attctcagtt cggattgtag 1320

tctgcaactc gactacatga agccggaatc gctagtaatc gcggatcagc acgccgcggt 1380

gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg 1440

aagccggtgg cctaaccttt taggagggag ccgtcgaagg tgggatagat gattggggtg 1500

aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tct 1553

<210> 498
<211> 1366
<212> DNA
<213> Catonella sp. oral clone FL037

<400> 498
gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa cgcgtgggta acctgccccg tacaggggga tagcgtcggg 120

aaactgacgg taagaccgca tagggaaaac tggtatggga tggacccgcg tccgattagc 180

cagttggcag ggtaaaggcc taccaaagct tcgatcggta gccggactga gaggtcggac 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt gggggatatt 300

gcacaatgga ggaaactctg atgcagcgac gccgcgtgag tgaagaagtg ctccggcatg 360

taaagctctt tcagcaggga agatgacggt acctgaataa gaagccccgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggggcga agcgttatcc ggatttactg ggtgtaaagg 480

gagcgcaggc ggtctggcaa gttgagagtg gaagcagggg gctcaacccc ctgactgctc 540

ccaaaactgt tggactggag tatgggagag gcaggcggaa ttcctagtgt agcggtgaaa 600

tgctcagata ttaggaagaa caccggtggc gaaggcggcc tgctggacca actgacgctg 660

aggctcgaga gcgtggggag cgaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgaatacta ggtgccggga tttcggtgcc gtcgcaaacg cattgagtat tccacctggg 780

gagtacgttc gcaagaatga aactcaaagg aattgacggg gacccgcgca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttacccg gtcttgagat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctgttct tagtagccag cggccgggca ctctaaggag actgccgggg ataacccgga 1020

ggaaggcggg gatgacgtca aatcatcatg ccccttatga cttgggcgac acacgtgcta 1080

caatggcgta caaagggaag cgagctcgtg agagtaagcg aaactcaaaa cgtctcagtt 1140

cggatgtagt ctgcaacccg actacagaag ctggaatcgc tagtaatcgc agatcagcat 1200

gctgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat gggagtcggt 1260

aatgcccgaa gccagtaacc agggagctgt cgaaggcagg actgataact ggggtgaagt 1320

cgtaacaagg tagccgtatc ggaaggtgcg gctggaacac ctccttt 1366

<210> 499
<211> 1403
<212> DNA
<213> Cedecea davisae

<400> 499
cggacgggtg agtaatgtct ggggatctgc ctgatggagg gggataacta ctggaaacgg 60

tagctaatac cgcataacgt cgcaagacca aagaggggga ccttcgggcc tcttgccatc 120

ggatgaaccc agatgggatt agctagtagg tggggtaatg gctcacctag gcgacgatcc 180

ctagctggtc tgagaggatg accagccaca ctggaactga gacacggtcc agactcctac 240

gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc catgccgcgt 300

gtgtgaagaa ggccttcggg ttgtaaagca ctttcagcga ggaggaaggc attaaggtta 360

ataacctyrg tgattgacgt tactcgcaga agaagcaccg gctaactccg tgccagcagc 420

cgcggtaata cggagggtgc aagcgttaat cggaattact gggcgtaaag cgcacgcagg 480

cggtttgtta agtcggatgt gaaatccccg ggctcaacct gggaactgca ttcgaaactg 540

gcaagcttga gtcttgtaga ggggggtaga attccaggtg tagcggtgaa atgcgtagag 600

atctggagga ataccggtgg cgaaggcggc cccctggaca aagactgacg ctcaggtgcg 660

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgtcga 720

cttggaggtt gtgcccttga ggcgtggctt ccggagctaa cgcgttaagt cgaccgcctg 780

gggagtacgg ccgcaaggtt aaaactcaaa tgaattgacg gggcccgca caagcggtgg 840

agcatgtggt ttaattcgat gcaacgcgaa gaaccttacc tactcttgac atccagagaa 900

ctttccagag atggattggt gccttcggga actctgagac aggtgctgca tggctgtcgt 960

cagctcgtgt tgtgaaatgt tgggttaagt cccgcaacga gcgcaaccct tatcctttgt 1020

tgccagcggt tcggccggga actcaaagga gactgccagt gataaactgg aggaaggtgg 1080

ggatgacgtc aagtcatcat ggcccttacg agtagggcta cacacgtgct acaatggcgc 1140

atacaaagag aagcgacctc gcgagagcaa gcggacctca taaagtgcgt cgtagtccgg 1200

attggagtct gcaactcgac tccatgaagt cggaatcgct agtaatcgta gatcagaatg 1260

ctacggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagtgggtt 1320

gcaaaagaag taggtagctt aaccttcggg agggcgctta ccactttgtg attcatgact 1380

ggggtgaagt cgtaccaagg taa 1403

<210> 500
<211> 1444
<212> DNA
<213> Cellulosimicrobium funkei

<400> 500
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gatgatgccc agcttgctgg 60

gtggattagt ggcgaacggg tgagtaacac gtgagtaacc tgcccttgac ttcgggataa 120

ctccgggaaa ccggggctaa taccggatat gagccgccyt cgcatggggg tggttggaaa 180

gtttttcggt cagggatggg ctcgcggcct atcagcttgt tggtggggtg atggcctacc 240

aaggcgacga cgggtagccg gcctgagagg gcgaccggcc acactgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgaa agcctgatgc 360

agcgacgccg cgtgagggat gaaggccttc gggttgtaaa cctctttcag cagggaagaa 420

gcgcaagtga cggtacctgc agaagaagcg ccggctaact acgtgccagc agccgcggta 480

atacgtaggg cgcaagcgtt gtccggaatt attgggcgta aagagctcgt aggcggtttg 540

tcgcgtctgg tgtgaaaact cgaggctcaa cctcgagctt gcatcgggta cgggcagact 600

agagtgcggt aggggagact ggaattcctg gtgtagcggt ggaatgcgca gatatcagga 660

ggaacaccga tggcgaaggc aggtctctgg gccgcaactg acgctgagga gcgaaagcat 720

ggggagcgaa caggattaga taccctggta gtccatgccg taaacgttgg gcactaggtg 780

tggggctcat tccacgagtt ccgtgccgca gcaaacgcat taagtgcccc gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat 900

gcggattaat tcgatgcaac gcgaagaacc ttaccaaggc ttgacatgca cgggaagcca 960

ccagagatgg tggtctcttt ggacactcgt gcacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccctcgtccc atgttgccag 1080

cgggttatgc cggggactca tgggagactg ccggggtcaa ctcggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgtcttg ggcttcacgc atgctacaat ggccggtaca 1200

aagggctgcg ataccgtaag gtggagcgaa tcccaaaaag ccggtctcag ttcggattgg 1260

ggtctgcaac tcgaccccat gaagtcggag tcgctagtaa tcgcagatca gcaacgctgc 1320

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcaa gtcacgaaag tcggtaacac 1380

ccgaagccca tggcccaacc gttcgcgggg ggagtggtcg aaggtgggac tggcgattgg 1440

gact 1444

<210> 501
<211> 1470
<212> DNA
<213> Cetobacterium somerae

<400> 501
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caagtcgatt 60

cgatttacct tcgggtattg aggatggcgg acgggtgagt aacgcgtaag gaacttgcct 120

cttggtctgg gacaactgtt ggaaacgaca gctaataccg gatattatga gattctcgca 180

tgggaaactt atgaaagcta tatgcgccaa gagagagcct tgcgttccat tagctagttg 240

gtggggtaac ggcccaccaa ggcgacgatg gatagccggc ctgagagggt gaacggccac 300

aaggggactg agacacggcc cttactccta cgggaggcag cagtggggaa tattggacaa 360

tgggccacaa gcctgatcca gcaattctgt gtgcacgatg aaggtcttcg gattgtaaag 420

tgctttcagt tgggaagaag aaagtgacgg taccaacaga agaagcgacg gctaaatacg 480

tgccagcagc cgcggtaata cgtatgtcgc aagcgttatc cggatttatt gggcgtaaag 540

cgcgtctagg cggaaaaata agtctgatgt taaaatgcgg ggctcaactc cgtattgcgt 600

tggaaactgt ttttctagag tactggagag gtgggcggaa ctacaagtgt agaggtgaaa 660

ttcgtagata tttgtaggaa tgccgatgga gaagtcagct cactggacag atactgacgc 720

taaagcgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa 780

cgatgatcac taggtgttgg gggtcgaacc tcagcgccca agctaacgcg ataagtgatc 840

cgcctgggga gtacgcacgc aagtgtgaaa ctcaaaggaa ttgacgggga cccgcacaag 900

cggtggagca tgtggtttaa ttcgacgcaa cgcgagaaac cttaccagcg tttgacatcc 960

taagaagttt ccagagatgg attcgtgccg gcttgccgga acttagtgac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 1080

tattgtatgt tgctaccatt aagttgagca ctcatgcgat actgcctgcg atgagcagga 1140

ggaaggtggg gatgacgtca agtcatcatg ccccttatac gctgggctac acacgtgcta 1200

caatgggcag tacagagagt tgccaacccg cgagggtgag ctaatctctt aaagctgttc 1260

ttagttcgga ttgtactctg caactcgagt acatgaagtt ggaatcgcta gtaatcgcaa 1320

atcagcatgt tgcggtgaat acgttctcgg gtcttgtaca caccgcccgt cacaccacga 1380

gagttggttg cacctgaagt agcaggccta accgtaagga gggatgttcc taaggtgtga 1440

ttagcgattg gggtgaagtc gtaacaaggt 1470

<210> 502
<211> 1549
<212> DNA
<213> Chlamydia muridarum

<400> 502
ctgagaattt gatcttggtt cagattgaac gctggcggcg tggatgaggc atgcaagtcg 60

aacggaacaa ttgcttcggt gattgtttag tggcggaagg gttagtaatg catagataat 120

ttgtccttaa cttgggaata acggttggaa acggccgcta ataccgaatg tggcgtagat 180

taggcatcta aattacgtta aagaagggga tcttcggacc tttcggttaa gggagagtct 240

atgtgatatc agctagttgg tggggtaaag gcctaccaag gctatgacgt ctaggcggat 300

tgagagattg gccgccaaca ctgggactga gacactgccc agactcctac gggaggctgc 360

agtcgagaat ctttcgcaat ggacggaagt ctgacgaagc gacgccgcgt gtgtgatgaa 420

ggctctaggg ttgtaaagca ctttcgcttg ggaataagag aagacggtta atacccgttg 480

gatttgagcg taccaggtaa agaagcaccg gctaactccg tgccagcagc tgcggtaata 540

cggagggtgc tagcgttaat cggatttatt gggcgtaaag ggcgtgtagg cggaaaggta 600

agttagttgt caaatctcgg ggctcaaccc cgaatcggca tctaaaacta tttttctaga 660

gggtagatgg agaaaaggga atttcacgtg tagcggtgaa atgcgtagat atgtggaaga 720

acaccagtgg cgaaggcgct tttctaattt atacctgacg ctaaggcgcg aaagcaaggg 780

gagcaaacag gattagatac cctggtagtc cttgccgtaa acgatgcata cttgatgtgg 840

atggtctcaa ccccatccgt gtcggagcta acgcgttaag tatgccgcct gaggagtaca 900

ctcgcaaggg tgaaactcaa aagaattgac gggggcccgc acaagcagtg gagcatgtgg 960

tttaattcga tgcaacgcga aggaccttac ctgggtttga catgcatatg accgcggcag 1020

aaatgtcgtt ttccgcaagg acatatgcac aggtgctgca tggctgtcgt cagctcgtgc 1080

cgtgaggtgt tgggttaagt cccgcaacga gcgcaaccct tatcgttagt tgccagcact 1140

tagggtggga actctaacga gactgcctgg gttaaccagg aggaaggcga ggatgacgtc 1200

aagtcagcat ggcccttatg cccagggcga cacacgtgct acaatggcca gtacagaagg 1260

tagcaagatc gcgagatgga gcaaatcctc aaagctggcc ccagttcgga ttgtagtctg 1320

caactcgact acatgaagtc ggaattgcta gtaatggcgt gtcagccata acgccgtgaa 1380

tacgttcccg ggccttgtac acaccgcccg tcacatcatg ggagttggtt ttaccttaag 1440

tcgttgactc aacccgcaag ggggagaggc gcccaaggtg aggctgatga ctgggatgaa 1500

gtcgtaacaa ggtagcccta ccggaaggtg gggctggatc acctccttt 1549

<210> 503
<211> 1553
<212> DNA
<213> Chlamydia psittaci

<400> 503
ttttctgaga atttgatctt ggttcagatt gaacgctggc ggcgtggatg aggcatgcaa 60

gtcgaacgga ataatgactt cggttgttat ttagtggcgg aagggttagt aatacataga 120

taatctgtcc tcaacttggg aataacggtt ggaaacgacc gctaataccg aatgtggtat 180

gtttaggcat ctaaaacata ttaaagaagg ggatcttcgg acctttcggt tgagggagag 240

tctatgggat atcagcttgt tggtggggta atggcctacc aaggctttga cgtctaggcg 300

gattgagaga ttgaccgcca acactgggac tgagacactg cccagacttc tacggaaggc 360

tgcagtcgag aatctttcgc aatggacgaa agtctgacga agcgacgccg cgtgtgtgat 420

gaaggctcta gggttgtaaa gcactttcgc ttgggaataa gagagattgg ctaatatcca 480

atcgatttga gcgtaccagg taaagaagca ccggctaact ccgtgccagc agctgcggta 540

atacggaggg tgctagcgtt aatcggattt attgggcgta aagggcgtgt aggcggaaag 600

gaaagttaga tgttaaatct tggggctcaa ccccaagcca gcatctaata ctatctttct 660

agagggtaga tggagaaaag ggaattccac gtgtagcggt gaaatgcgta gatatgtgga 720

agaacaccag tggcgaaggc gcttttctaa tttacacctg acgctaaggc gcgaaagcaa 780

ggggagcaaa caggattaga taccctggta gtccttgccg taaacgatgc atacttgatg 840

tggatagtct caaccctatc cgtgtcgtag ctaacgcgtt aagtatgccg cctgaggagt 900

acactcgcaa gggtgaaact caaaagaatt gacgggggcc cgcacaagca gtggagcatg 960

tggtttaatt cgatgcaacg cgaagaacct tacctgggct tgacatgtat ttgaccgcgg 1020

cagaaatgtc gttttccgca aggacagata cacaggtgct gcatggctgt cgtcagctcg 1080

tgccgtgagg tgttgggtta agtcccgcaa cgagcgcaac ccttatcgtt agttgccaac 1140

acttagggtg ggaactctaa cgagactgcc tgggttaacc aggaggaagg cgaggatgac 1200

gtcaagtcag catggccctt atgcccaggg ctacacacgt gctacaatgg ccagtacaga 1260

aggtagcaat atcgtgagat ggagcaaatc ctcaaagctg gccccagttc ggattgtagt 1320

ctgcaactcg actacatgaa gtcggaattg ctagtaatgg cgtgtcagct ataacgccgt 1380

gaatacgttc ccgggccttg tacacaccgc ccgtcacatc atgggagttg gttttgcctt 1440

aagtcgttga ctcaacctgc aaaggagaga ggcgcccaag gtgaggctga tgactgggat 1500

gaagtcgtaa caaggtagcc ctaccggaag gtggggctgg atcacctcct ttt 1553

<210> 504
<211> 1554
<212> DNA
<213> Chlamydia trachomatis

<400> 504
ttttctgaga atttgatctt ggttcagatt gaacgctggc ggcgtggatg aggcatgcaa 60

gtcgaacgga gcaattgttt cggcaattgt ttagtggcgg aagggttagt aatgcataga 120

taatttgtcc ttaacttggg aataacggtt ggaaacggcc gctaataccg aatgtggcga 180

tatttgggca tccgagtaac gttaaagaag gggatcttag gacctttcgg ttaagggaga 240

gtctatgtga tatcagctag ttggtggggt aaaggcctac caaggctatg acgtctaggc 300

ggattgagag attggccgcc aacactggga ctgagacact gcccagactc ctacgggagg 360

ctgcagtcga gaatctttcg caatggacgg aagtctgacg aagcgacgcc gcgtgtgtga 420

tgaaggctct agggttgtaa agcactttcg cttgggaata agagaaggcg gttaataccc 480

gctggatttg agcgtaccag gtaaagaagc accggctaac tccgtgccag cagctgcggt 540

aatacggagg gtgctagcgt taatcggatt tattgggcgt aaagggcgtg taggcggaaa 600

ggtaagttag ttgtcaaaga tcggggctca accccgagtc ggcatctaat actatttttc 660

tagagggtag atggagaaaa gggaatttca cgtgtagcgg tgaaatgcgt agatatgtgg 720

aagaacacca gtggcgaagg cgcttttcta atttatacct gacgctaagg cgcgaaagca 780

aggggagcaa acaggattag ataccctggt agtccttgcc gtaaacgatg catacttgat 840

gtggatggtc tcaaccccat ccgtgtcgga gctaacgcgt taagtatgcc gcctgaggag 900

tacactcgca agggtgaaac tcaaaagaat tgacgggggc ccgcacaagc agtggagcat 960

gtggtttaat tcgatgcaac gcgaaggacc ttacctgggt ttgacatgta tatgaccgcg 1020

gcagaaatgt cgttttccgc aaggacatat acacaggtgc tgcatggctg tcgtcagctc 1080

gtgccgtgag gtgttgggtt aagtcccgca acgagcgcaa cccttatcgt tagttgccag 1140

cacttagggt gggaactcta acgagactgc ctgggttaac caggaggaag gcgaggatga 1200

cgtcaagtca gcatggccct tatgcccagg gcgacacacg tgctacaatg gccagtacag 1260

aaggtagcaa gatcgtgaga tggagcaaat cctcaaagct ggccccagtt cggattgtag 1320

tctgcaactc gactacatga agtcggaatt gctagtaatg gcgtgtcagc cataacgccg 1380

tgaatacgtt cccgggcctt gtacacaccg cccgtcacat catgggagtt ggttttacct 1440

taagtcgttg actcaacccg caagggagag aggcgcccaa ggtgaggctg atgactagga 1500

tgaagtcgta acaaggtagc cctaccggaa ggtggggctg gatcacctcc tttt 1554

<210> 505
<211> 1407
<212> DNA
<213> Chlamydiales bacterium NS11

<400> 505
ggtatggggg caactccata tagtggcgca agggttagta atacatagat aatctgcctc 60

tgacctggga ataacggctg gaaacggcca tacatagata atctacctct gacctgggaa 120

taacggctgg aaacggccgc taataccgaa tgaggtggca taaggcatct tgtgcttatc 180

aatgcggggg atcgaaagac ctcgtggtta gagaagagtc tatgggatat cagctagttg 240

gtgaggtaat ggctcaccaa ggctaagacg tctaggcgga ttgagagatt gaccgccaac 300

actgggactg agacactgcc cagactccta cgggaggctg cagtcgagaa tctttcgcaa 360

tgggcgcaag cctgacgaag cgacgccgtg tgagcgaaga aggccttcgg gttgtaaagc 420

tctttcgcta gggaacaaga gatataggac aataccctat agatttgatg gtacttggta 480

aagaagcacc ggctaactcc gtgccagcag ctgcggtaat acggagggtg caagcattga 540

tcggaattac tgggcgtaaa gggcgcgtag gcggcagaat aagtcagatg tgaaattccg 600

gggctcaacc ccggagctgc atttgaaact attcaactag aggacagtta gggtaaacgg 660

aattccacgt gtagcggtga aatgcgtaga tatgtggaag aacaccggtg gtgaagacgg 720

tttactgggc tgatactgac gctgaggcgc gaaagcatgg ggagcaaaca ggattagata 780

ccctggtagt cctagcctta aacgatgtat actaggagta ggtgggctca acccccactg 840

taccggagct aacgcattaa gtatgccgcc tggggagtac gctcgcaagg gtgaaactca 900

aaagaattga cgggggcccg cacaagcagt ggagcatgtg gtttaattcg atgcaacgcg 960

aagaacctta cctaggctcg aaatgtagag gacgatatca gagatgatat ttcccgaaag 1020

ggtctctata taggtgctgc atggctgtcg tcagctcgtg ccgtgaggtg tttggttaag 1080

tccagcaacg agcgcaaccc ttatcgttag ttgccaacac gtaaaggcgg gaactctaac 1140

gagactgcct gggttaacca ggaggaaggt gaggatgacg tcaagtccgc atggccttta 1200

tgtccagggc tacacacgtg ctacaatggt cggtacagaa ggcagcgaaa ccgcaaggcg 1260

aagcaaatcc ggaaaaaccg atctcagttc agattgtagt ctcaactcgg ctacatgaag 1320

ttggaattgc tagtaatggc gtgtcagcaa caacgccgtg aatacgttcc cgggccttgt 1380

acacactgcc cgtcacatca tgggagt 1407

<210> 506
<211> 1334
<212> DNA
<213> Chlamydiales bacterium NS13

<400> 506
tagtggcgca agggttagta atacatggat aatccacctc tcacgtagga ataacggctg 60

gaaacggccg ctaataccga atgaggtggc ttaaggcatc ttaccatagt caaagcgggg 120

gatcgaaaga cctcgcggtt agagaggagt tcatgagata tcagctagtt ggtgaggtaa 180

tggctcacca aggctaagac gtctaggcgg attgagagat tgaccgccaa cactgggact 240

gagacactgc ccagactcct acgggaggct gcagtcgaga atcttgcgca atgggcgcaa 300

gcctgacgaa gcgacgccgt gtgagcgaag aaggccttca ggttgtaaag ctctttcgct 360

agggaacaag agagtcggga taataatcag atgacttgat ggtacttggt aaagaagcac 420

cggctaactc cgtgccagca gctgccgtac taccgagggt gcaagcattg atcggaatta 480

ctgcgcgtaa agggcgcgta cgccgcagga taagtcagat gtgaaattcc ggggctcaac 540

cccggagctg catttgaaac tctcttgcta gaggacagtt agggtaaacg gaattccacg 600

tgtagcggtg aaatgcgtag atatgtggaa gaacaccagt ggtgaagacg gttttctggg 660

ctggaactga cgctgaggcg cgggagctag gggagcaaac aggattagat accctggtag 720

tcctagccgt aaacgatgca tactggatgt agggaggctc aacccttatt gtatcggagc 780

taacgcgtta agtatgccgc ctggggagta cgcccgcaag ggtgaaactc aaaagaattg 840

acgggggccc gcacaagcag tggagcatgt ggtttaattc gatgcaacgc gaagaacctt 900

acccaggctc gaagtgtaga gaacaagcgc agagatgcgg tgtctcttcg ggacatctat 960

ataggtgctg catggctgtc gtcagctcgt gccgtgaggt gttgggttaa gtcccgcaac 1020

gagcgcaacc cttattgtca gttgccaacg cgtaaaggcg gggactctgg caagactgcc 1080

taggttaact aggaggaagg tgaggatgac gtcaagtccg catggccctt atgtccgggg 1140

ctacacacgt gctacaatgg tcgatacaga gggctgcgaa gccgcgaggc ggagcaaatc 1200

cgataaaacc gatctcagtt cagattgcag tctcaactcg actacatgaa gttggaattc 1260

ctagtaaagg cgtgtcagct acagcgccgt gaatacgttc ccgggccttg tagacaccgc 1320

ccgtcacatc atgg 1334

<210> 507
<211> 1337
<212> DNA
<213> Chlamydiales bacterium NS16

<400> 507
tagtggcgga agggttagta atacatgagt aacctacctc taacctgggg ataacggttg 60

gaaacggccg ctaataccga atgaggagac gaggggaatg ctcatggctt caaagtaggg 120

gatcttgaag ggaccttgcg gtaggagaga ggggtatggg atatcagcta gttggtgtgg 180

taaaggcgca ccaaggctaa gacgtctagg cggattgaga ggttgaccgc caacactggg 240

actgagacac tgcccagact cctacgggag gctgcagtcg agaatctttc gcaatgggcg 300

aaagcgtgac gaagcgacgc cgtgtggacg atgaaggcct tcgggttgta aagtcctttc 360

gccagggaac aagaaaaatt aactaataac ttatcaattt gagcgtacta ggtaaagaag 420

caccggctaa ctccgtgcca gcagctgcgg taatacggag ggtgcaagca ttaatcggat 480

ttattgggcg taaagagcgc gtaggcgggc aagcaagtca gatgtgaaat tccggagctc 540

aactccggag ctgcatttga aactacttgt ctagaggatg gacggagaaa acggaattcc 600

acgtgtagcg gtgaaatgcg tagatatgtg gaagaacacc ggtggcgaag gcggttttct 660

agtttattcc tgacgctgag gcgcgagagc aaggggagca aacagggtta gataccctgg 720

tagtccttgc cgtaaacgtt gcatacttga tgtatttggg ctcaaccccg actgtgtcga 780

acctaacgcg ataagtatac cacctgagga gtacgctcgc aagggtgaaa ctcaaaagaa 840

ttgacggggg cccgcacaag cagtggagca tgtggtttaa ttcgatgcaa cgcgaagaac 900

cttacccagg cttgacatat agaagaccac atcagaaatg ttgtctcccg caagggcttt 960

tgtacaggtg ctgcatggct gtcgtcagct cgtgccgtga ggtgttgggt taagtcccgc 1020

aacgagcgca acccttgtca ttagttgcca acatttcgtg atggggactc taatgagact 1080

gcctgggtta actaggagga aggtgaggat gacgtcaagt ccgcatggcc tttatgtctg 1140

gggctacaca cgtgctacaa tggtcgatac agaaggcagc gaagccgcaa ggtggagcaa 1200

atcctcaaaa ccgatctcag ttcggataga agtctgcaac tcgacttctt gaagttggaa 1260

ttgctagtaa tgacgtgtca gcaataacgt cgtgaatacg ttcccgggcc ttgtacacac 1320

cgcccgtcac atcacgg 1337

<210> 508
<211> 1548
<212> DNA
<213> Chlamydophila pecorum

<400> 508
ctgagaattt gatcttggtt cagattgaac gctggcggcg tggatgaggc atgcaagtcg 60

aacggaataa tggcttcggc tattatttag tggcggaagg gttagtaata catagataat 120

ttgtcttaac ttgggaataa cggttggaaa cggccgctaa taccgaatgt ggtgtgttta 180

ggcatctaaa ttacattaaa gaaggggatc ttcggacctt tcggttaaga gaaagtctgt 240

gggatatcag cttgttggtg gggtaatggc ctaccaaggc tatgacgtct aggcggattg 300

agagattgac cgccaacact gggactgaga cactgcccag actcctacgg gaggctgcag 360

tcgagaatct ttcgcaatgg acgaaagtct gacgaagcga cgccgcgtgt gtgatgaagg 420

ctctagggtt gtaaagcact ttcgcctggg aataagagag attggctaat atccaattga 480

tttgagcgta ccaggtaaag aagcaccggc taactccgtg ccagcagctg cggtaatacg 540

gagggtgcta gcgttaatcg gatttattgg gcgtaaaggg cgtgtaggcg gaaaggaaag 600

ttagatgtca aatcttgagg ctcaacctca agtcggcatc taatactatc tttctagagg 660

ttggatggag aaaagggaat tccacgtgta gcggtgaaat gcgtagatat gtggaagaac 720

accagtggcg aaggcgcttt tctaattttt cctgacgcta aggcgcgaaa gcaaggggag 780

caaacaggat tagataccct ggtagtcctt gctgtaaacg atgcatactt gatgtggatg 840

gtctcaaccc catccgtgtc ggagctaacg cgttaagtat gccgcctgag gagtacactc 900

gcaagggtga aactcaaaag aattgacggg ggcccgcaca agcagtggag catgtggttt 960

aattcgatgc aacgcgaaga accttacctg ggcttgacat gtatttgacc gcggcagaaa 1020

tgtcgttttc cgtaaggaca gatacacagg tgctgcatgg ctgtcgtcag ctcgtgccgt 1080

gaggtgttgg gttaagtccc gcaacgagcg caacccttat cgttagttgc cagcactttg 1140

ggtgggaact ctaacgagac tgcctgggtt aaccaggagg aaggcgagga tgacgtcaag 1200

tcagcatggc ccttatgtcc agggcgacac acgtgctaca atgggtagta cagaaggtag 1260

caagatcgtg agatggagca aatccttaaa gctatcctca gttcggattg tagtctgcaa 1320

ctcggctaca tgaagtcgga attgctagta atggcgtgtc agccataacg ccgtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca catcatggga gttggtttca ccttaagtcg 1440

ttgactcaac ctatttttag gagggaggcg cccaaggtga ggctgatgac tgggatgaag 1500

tcgtaacaag gtagccctac cggaaggtgg ggctggatca cctccttt 1548

<210> 509
<211> 1552
<212> DNA
<213> Chlamydophila pneumoniae

<400> 509
ctgagaattt gatcttagtt cagattgaac gctggcggcg tggatgaggc atgcaagtcg 60

aacggaataa tgacttcggt tgttatttag tggcggaagg gttagtagta catagataat 120

ctgccctcaa cttggggata acggttggaa acgatcgcta ataccgaatg tagtgtaatt 180

aggcatctaa tatatattaa agaaggggat cttcggacct ttcggttgag gaagagttta 240

tgcgatatca gcttgttggt ggggtaaaag cccaccaagg cgatgacgtc taggcggatt 300

gagagattga ccgccaacac tgggactgag acactgccca gactcctacg ggaggctgca 360

gtcgagaatc tttcgcaatg gacgaaagtc tgacgaagcg acgccgcgtg tgtgatgaag 420

gccttagggt tgtaaagcac tttcgcctgg gaataagaga gattggctaa tatccaatcg 480

atttgagcgt accaggtaaa gaagcaccgg ctaactccgt gccagcagct gcggtaatac 540

ggagggtgct agcgttaatc ggatttattg ggcgtaaagg gcgtgtaggc ggaaaggaaa 600

gttagatgtt aaattttggg gctcaacccc aagtcagcat ttaaaactat ctttctagag 660

gatagatggg gaaaagggaa ttccacgtgt agcggtgaaa tgcgtagata tgtggaagaa 720

caccagtggc gaaggcgctt ttctaattta tacctgacgc taaggcgcga aagcaagggg 780

agcaaacagg attagatacc ctggtagtcc ttgccgtaaa cgatgcatac ttgatgtgga 840

tggtctcaac cccatccgtg tcggagctaa cgtgttaagt atgccgcctg aggagtacac 900

tcgcaagggt gaaactcaaa agaattgacg ggggcccgca caagcagtgg agcatgtggt 960

ttaattcgat gcaacgcgaa ggaccttacc tggacttgac atgtatttga caactgtaga 1020

aatacagctt tccgcaagga cagatacaca ggtgctgcat ggctgtcgtc agctcgtgcc 1080

gtgaggtgtt gggttaagtc ccgcaacgag cgcaaccctt atcgttagtt gccagcactt 1140

agggtgggaa ctctaacgag actgcctggg ttaaccagga ggaaggcgag gatgacgtca 1200

agtcagcatg gcccttatgt ccagggcgac acacgtgcta caatggttag tacagaaggt 1260

agcaagatcg tgagatggag caaatcctaa aagctagccc cagttcggat tgtagtctgc 1320

aactcgacta catgaagtcg gaattgctag taatggcgtg tcagccataa cgccgtgaat 1380

acgttctcgg gccttgtaca caccgcccgt cacatcatgg gagttggttt taccttaagt 1440

cgttgactca acctatttat aggagagagg cgcccaaggt gaggctgatg actgggatga 1500

agtcgtaaca aggtagccct accggaaggt ggggctggat cacctccttt tt 1552

<210> 510
<211> 1548
<212> DNA
<213> Chlamydophila psittaci

<400> 510
ctgagaattt gatcttggtt cagattgaac gctggcggcg tggatgaggc atgcaagtcg 60

aacggaataa tgacttcggt tgttatttag tggcggaagg gttagtaata catagataat 120

ctgtcctcaa cttgggaata acggttggaa acgaccgcta ataccgaatg tggtatgttt 180

aggcatctaa agcatattaa agaaggggat cttcggacct ttcggttgag ggagagtcta 240

tgggatatca gcttgttggt ggggtaatgg cctaccaagg ctttgacgtc taggcggatt 300

gagagattga ccgccaacac tgggactgag acactgccca gacttctacg gaaggctgca 360

gtcgagaatc tttcgcaatg gacgaaagtc tgacgaagcg acgccgcgtg tgtgatgaag 420

gctctagggt tgtaaagcac tttcgcttgg gaataagaga gattggctaa tatccaatcg 480

atttgagcgt accaggtaaa gaagcaccgg ctaactccgt gccagcagct gcggtaatac 540

ggagggtgct agcgttaatc ggatttattg ggcgtaaagg gcgtgtaggc ggaaaggaaa 600

gttagatgtt aaatcttggg gctcaacccc aagccagcat ctaatactat ctttctagag 660

ggtagatgga gaaaagggaa ttccacgtgt agcggtgaaa tgcgtagata tgtggaagaa 720

caccagtggc gaaggcgctt ttctaattta cacctgacgc taaggcgcga aagcaagggg 780

agcaaacagg attagatacc ctggtagtcc ttgccgtaaa cgatgcatac ttgatgtgga 840

tagtctcaac cctatccgtg tcgtagctaa cgcgttaagt atgccgcctg aggagtacac 900

tcgcaagggt gaaactcaaa agaattgacg ggggcccgca caagcagtgg agcatgtggt 960

ttaattcgat gcaacgcgaa gaaccttacc tgggcttgac atgtatttga ccgcggcaga 1020

aatgtcgttt tccgcaagga cagatacaca ggtgctgcat ggctgtcgtc agctcgtgcc 1080

gtgaggtgtt gggttaagtc ccgcaacgag cgcaaccctt atcgttagtt gccaacactt 1140

agggtgggaa ctctaacgag actgcctggg ttaatcagga ggaaggcgag gatgacgtca 1200

agtcagcatg gcccttatgc ccagggctac acacgtgcta caatggccag tacagaaggt 1260

agcaatatcg tgagatggag caaatcctca aagctggccc cagttcggat tgtagtctgc 1320

aactcgacta catgaagtcg gaattgctag taatggcgtg tcagctataa cgccgtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacatcatgg gagttggttt tgccttaagt 1440

cgttgactca acctgcaaag gagagaggcg cccaaggtga ggctgatgac tgggatgaag 1500

tcgtaacaag gtagccctac cggaaggtgg ggctggatca cctccttt 1548

<210> 511
<211> 1419
<212> DNA
<213> Chloroflexi genomosp. P1

<400> 511
gatgaacgct ggcggcgtgc ttaatacatg caagtcgaac gggtgcagcg atgtaccagt 60

ggcgaacggg tgagtaacac gttggtgacc tgccccaaag aggggaatac cgcttggaaa 120

cgagcgacaa aaccgcataa gctatcggga gtcagagagc cgatagtaaa agaggaatct 180

actttgggag gggcctgcgg cccatcagct agttggagag gtaacggctc accaaggcga 240

agacgggtag gggacctgag agggtgatcc cccacaatgg aactgaaaca cggtccatac 300

acctacgggt ggcagcagta gggaatattg ctaaatgggc gaaagcctga agcagcaacg 360

ccgcgtgaac gaagaaggcc ttcgggtcgt aaagttcttt tacgtgggaa gaggaaggac 420

agtaccacgg gaataagtct cggctaacta cgtgccagca gccgcggtaa aacgtaggag 480

gcgagcgtta tccggattta ctgggcgtaa agagcgtgta ggaggcaaaa caagacggat 540

gtgaaagccc ccggcttaac cgggggaggt cgtacgtgac tgtagagcta gagtgagtta 600

gaggtaagcg gaactccggg agtagtggtg aaatgcgtag atatccggaa gaacatcaga 660

ggcgaaagcg gcttactggg acttaactga cactgagacg cgaaagccag ggtagcaaac 720

gggattagag accccggtag tcctggctgt aaacgatgta gactggacgt tttcggggta 780

aaagctgaga gtgtcgaagc gaacgcgata agtctaccgc ctggggagta cggtcgcagg 840

attaaaactc aaaggaattg acgggggccc gcacaagcag cggagcgtgt ggtttaattc 900

gatgatacac gaagaacctt accggggttt gacatacagg tagtaagaag gcgaaagccg 960

gatgaccctt acgggggagc ctgaacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1020

agatgttcgg ttaagtccgc taacgagcgc aacccttgtc gcgtgttaca agtgtcacgc 1080

gagaccgccg gtagaaagcc ggaggaaggt ggggatgacg tcaagtcagc atggccttta 1140

tatcccgggc tacacacacg ctacaatggc cggtacagag ggtagcgaag ccgcgaggcg 1200

gagccaatcc tgaaaagccg gtcgtagttc agattgcagg ctgcaactcg cctgcatgaa 1260

gatggagttg ctagtaaccg taggtcagcg atactacggt gaatacgttc ccgggccttg 1320

tacacaccgc ccgtcacgtc atgggagttg gcaacacctg aagccggtat cctgaccgag 1380

aggagggagc cgtcaaaggt ggggttgatg attggggtg 1419

<210> 512

<211> 1334
<212> DNA
<213> Christensenella minuta

<400> 512
ggctcaggac gaacgctggc ggcgtgctta acacatgcaa gtcgaacgag tggcggacgg 60

gtgagtaacg cgtgagcaac ctgccctgca acgggggaca acagttggaa acgactgcta 120

ataccgcatg agaaaagtcg atgcaggatg ggctcgcgtc ccattagata gttggtgagg 180

taacggccca ccaagtcaac gatgggtagc cgacctgaga gggtgatcgg ccacactgga 240

actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgg gcaatggggg 300

aaaccctgac ccagcaacgc cgcgtgaggg aagaaggtct tcggattgta aacctttgtc 360

ctatgggacg atgacggtac cataggagga agctccggct aactacgtgc cagcagccgc 420

ggtaatacgt agggagcaag cgttgtccgg aattactggg cgtaaagggt gcgtaggtgg 480

tcatgtaagt cagatgtgaa agaccggggc ttaaccccgg ggttgcattt gaaactgtgt 540

gacttgagta caggagaggg aagtggaatt cctagtgtag cggtgaaatg cgtagatatt 600

aggaggaaca ccagtggcga aggcgacttt ctggactgac tgacactgag gcacgaaagc 660

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat ggatactagg 720

tgtggggcgt tccgtgccga agcaaacgca ttaagtatcc cgcctgggga gtacgatcgc 780

aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cagcggagca tgtggtttaa 840

ttcgaagcaa cgcgaagaac cttaccaagg cttgacatcg acaggtggtg catggttgtc 900

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttattgcta 960

gttgccagcg cgcgggaact ctagtgagac tgccggggac aactcggagg aaggtgggga 1020

cgacgtcaaa tcatcatgcc ccttatgtct tgggctacac acgtgctaca atggccggca 1080

aagggcagcg aacccgtaag gggaagcgaa tctcaaccgg tcccagttcg gatgtgggct 1140

gcaacccgcc cacagaagtc ggagttgcta gtaatcgcga atcagcatgt cgcggtgaat 1200

gcgttcccgg gccttgtaca caccgcccgt cacaccacgg aagttgggag cacccgaagc 1260

cagtgcttag agagctgtcg aaggtgagat caatgactgg ggtgaagtcg taacaaggta 1320

gccgtatcgg aagg 1334

<210> 513
<211> 1544
<212> DNA
<213> Chromobacterium violaceum

<400> 513
tgaactgaag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcgaacgg taacagggtg cttgcaccgc tgacgagtgg cgaacgggtg agtaatgcgt 120

cggaatgtac cgtgtaatgg gggatagctc ggcgaaagcc ggattaatac cgcatacgcc 180

ctgaggggga aagcggggga tcgaaagacc tcgcgttata cgagcagccg acgtctgatt 240

agctagttgg tgaggtaaga gctcaccaag gcgacgatca gtagcgggtc tgagaggatg 300

atccgccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

tttggacaat gggggcaacc ctgatccagc catgccgcgt gtctgaagaa ggccttcggg 420

ttgtaaagga cttttgtcag ggaggaaatc ccgctggtta atacccggcg gggatgacag 480

tacctgaaga ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 540

gagcgttaat cggaattact gggcgtaaag cgtgcgcagg cggttgtgca agtctgatgt 600

gaaagccccg ggcttaacct gggaacggca ttggagactg cacagctaga gtgcgtcaga 660

gggggggtaga attccacgtg tagcagtgaa atgcgtagag atgtggagga ataccgatgg 720

cgaaggcagc cccctgggat gacactgacg ctcatgcacg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccctaa acgatgtcaa ctagctgttg ggggtttgaa 840

tccttggtag cgtagctaac gcgtgaagtt gaccgcctgg ggagtacggc cgcaaggtta 900

aaactcaaag gaattgacgg ggacccgcac aagcggtgga tgatgtggat taattcgatg 960

caacgcgaaa aaccttacct gctcttgaca tgtacggaac ttgccagaga tggcttggtg 1020

cccgaaaggg agccgtaaca caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgtcattag ttgccatcat tcagttgggc 1140

actctaatga gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aagtcctcat 1200

ggcccttatg agcagggctt cacacgtcat acaatggtcg gtacagaggg ttgccaagcc 1260

gcgaggtgga gctaatctca gaaaaccgat cgtagtccgg atcgcactct gcaactcgag 1320

tgcgtgaagt cggaatcgct agtaatcgca gatcagcatg ctgcggtgaa tacgttcccg 1380

ggtcttgtac acaccgcccg tcacaccatg ggagtgagtt tcaccagaag tgggtaggct 1440

aaccgcaagg aggccgctta ccacggtggg attcatgact ggggtgaagt cgtaacaagg 1500

tagccgtagg ggaacctgcg gctggatcac ctcctttcta gaga 1544

<210> 514
<211> 1480
<212> DNA
<213> Chryseobacterium anthropi

<400> 514
ctagagtttg atcctggctc aggatgaacg ctagcgggag gcctaacaca tgcaagccga 60

gcggtagagt ttcttcggaa acttgagagc ggcgcacggg tgcgtaacac gtgtgcaacc 120

tacctttatc tgggggatag cctttcgaaa ggaagattaa taccccataa tataatgatt 180

ggcatcaatt attattgaaa actccggtgg atagagatgg gcacgcgcaa gattagatag 240

ttggtgaggt aacggctcac caagtcaatg atctttaggg gtcctgagag ggagatcccc 300

cacactggta ctgagacacg gaccagactc ctacgggagg cagcagtgag gaatattgga 360

caatgggtga gagcctgatc cagccatccc gcgtgaagga wgacggtcct atggattgta 420

aacttctttt gtacagggat aaacctactc tcgtgagggt agctgaaggt actgtacgaa 480

taagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttatcc 540

ggatttattg ggtttaaagg gtccgtaggc ggacttgtaa gtcagtggtg aaatctcata 600

gcttaactat gaaactgcca ttgatactgc aggtcttgag taaatttgaa gtggctggaa 660

taagtagtgt agcggtgaaa tgcatagata ttacttagaa caccaattgc gaaggcaggt 720

cactaagatt taactgacgc tgatggacga aagcgtgggg agcgaacagg attagatacc 780

ctggtagtcc acgccgtaaa cgatgctaac tcgtttttgg attttcggat tcagagacca 840

agcgaaagtg ataagttagc cacctgggga gtacgtccgc aaggatgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggtggatta tgtggtttaa ttcgatgata cgcgaggaac 960

cttaccaaga cttaaatggg aattgacagg tctagaaata gaccctcctt cgggcaattt 1020

ccaaggtgct gcatggttgt cgtcagctcg tgccgtgagg tgttaggtta agtcctgcaa 1080

cgagcgcaac ccctgtcact agttgcyawc attyagttgr ggactctagt gagactgcct 1140

acgcaagtag agaggaaggt ggggatgacg tcaaatcatc acggcccttа cgtcttgggc 1200

cacacacgta atacaatggc cggtacagag ggcagctacc aggtgactgg atgcaaatct 1260

cgaaagccgg tctcagttcg gattggagtc tgcaactcga ctctatgaag ctggaatcgc 1320

tagtaatcgc gcatcagcca tggcgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcaagcca tggaagtctg gggtacctga agtcggtgac cgtaaaagga gctgcctagg 1440

gtaaaacagg taactagggc taagtcgtaa caaggtagcc 1480

<210> 515
<211> 1519
<212> DNA
<213> Chryseobacterium gleum

<400> 515
atacaatgga gagtttgatc ctggctcagg atgaacgcta gcgggaggcc taacacatgc 60

aagctgagcg gtagagatct ttcgggatct tgagagcggc gtacgggtgc ggaacacgtg 120

tgcaacctgc ctttatcagg gggatagcct ttcgaaagga agattaatac cccataatat 180

attgagtggc atcacttaat attgaaaact ccggtggata gagatgggca cgcgcaagat 240

tagatagttg gtgaggtaac ggctcaccaa gtctgcgatc tttagggggc ctgagagggt 300

gatcccccac actggtactg agacacggac cagactccta cgggaggcag cagtgaggaa 360

tattggacaa tgggtgcgag cctgatccag ccatcccgcg tgaaggacga cggccctatg 420

ggttgtaaac ttcttttgta tagggataaa cctactctcg tgagagtagc tgaaggtact 480

atacgaataa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 540

gttatccgga tttattgggt ttaaagggtc cgtaggcgga tctgtaagtc agtggtgaaa 600

tctcacagct taactgtgaa actgccattg atactgcagg tcttgagtgt tgttgaagta 660

gctggaataa gtagtgtagc ggtgaaatgc atagatatta cttagaacac caattgcgaa 720

ggcaggttac taagcaacaa ctgacgctga tggacgaaag cgtggggagc gaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgctaactcg tttttgggct ttcgggttca 840

gagactaagc gaaagtgata agttagccac ctggggagta cgaacgcaag tttgaaactc 900

aaaggaattg acgggggccc gcacaagcgg tggattatgt ggtttaattc gatgatacgc 960

gaggaacctt accaaggctt aaatgggaaa tgacaggctt agaaataggc ttttcttcgg 1020

acatttttca aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt taggttaagt 1080

cctgcaacga gcgcaacccc tgtcactagt tgccatcatt aagttgggga ctctagtgag 1140

actgcctacg caagtagaga ggaaggtggg gatgacgtca aatcatcacg gcccttacgc 1200

cttgggccac acacgtaata caatggccgg tacagagggc agctacactg cgaagtgatg 1260

caaatctcga aagccggtct cagttcggat tggagtctgc aactcgactc tatgaagctg 1320

gaatcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg gccttgtaca 1380

caccgcccgt caagccatgg aagtctgggg tacctgaagt cggtgaccgt aacaggagct 1440

gcctagggta aaacaggtaa ctagggctaa gtcgtaacaa ggtagccgta ccggaaggtg 1500

cggctggaac atctcattt 1519

<210> 516
<211> 1483
<212> DNA
<213> Chryseobacterium hominis

<400> 516
tttgatccct ggctcaggat gaacgctagc gggaggccta acacatgcaa gccgagcggt 60

atttgttctt cggaacagag agagcggcgc acgggtgcgg aacacgtgtg caacctgcct 120

ttatctgggg gatagccttt cgaaaggaag attaataccc cataatatat tgagtggcat 180

catttgatat tgaaaactcc ggtggataga gatgggcacg cgcaagatta gatagttggt 240

gaggtaacgg ctcaccaagt caatgatctt taggggggcct gagagggtga tcccccacac 300

tggtactgag acacggacca gactcctacg ggaggcagca gtgaggaata ttggacaatg 360

ggttagcgcc tgatccagcc atcccgcgtg aaggacgacg gccctatggg ttgtaaactt 420

cttttgtata gggataaacc tactctcgtg agagtagctg aaggtactat acgaataagc 480

accggctaac tccgtgccag cagccgcggt aatacggagg gtgcaagcgt tatccggatt 540

tattgggttt aaagggtccg taggcggatc tgtaagtcag tggtgaaatc tcacagctta 600

actgtgaaac tgccattgat actgcaggtc ttgagtaaat ttgaagtggc tggaataagt 660

agtgtagcgg tgaaatgcat agatattact tagaacacca attgcgaagg caggtcacta 720

agatttaact gacgctgatg gacgaaagcg tggggagcga acaggattag ataccctggt 780

agtccacgcc gtaaacgatg ctaactcgtt tttggggytt cggcttcaga gactaagcga 840

aagtgataag ttagccacct ggggagtacg ttcgcaagaa tgaaactcaa aggaattgac 900

gggggcccgc acaagcggtg gattatgtgg tttaattcga tgatacgcga ggaaccttac 960

caagacttaa atgggaaatg acagatttag aaatagatcc ttcttcggac atttttcaag 1020

gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtta ggttaagtcc tgcaacgagc 1080

gcaacccctg tcactagttg ctagcattaa gttgaggact ctagtgagac tgcctacgca 1140

agtagagagg aaggtgggga tgacgtcaaa tcatcacggc ccttacgtct tgggccacac 1200

acgtaataca atggccggta cagagggcag ctacacagcg atgtgatgca aatctcgaaa 1260

gccggtctca gttcggattg gagtctgcaa ctcgactcta tgaagctgga atcgctagta 1320

atcgcgcatc agccatggcg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

agccatggaa gtctggggta cctgaagtcg gtgaccgtaa aaggagctgc ctagggtaaa 1440

acaggtaact agggctaagt cgtaacaagg tagccgtacc cga 1483

<210> 517
<211> 1399
<212> DNA
<213> Citrobacter amalonaticus

<220>
<221> modified_base
<222> (915)..(915)
<223> a, c, t, g, unknown or other

<400> 517
tcgacggtaa caggaagcag cttgctgctt tgctgacgag tggcggacgg gtgagtaatg 60

tctgggaaac tgcccgatgg aggggataa ctactggaaa cggtagctaa taccgcataa 120

tgtcgcaaga ccaaagaggg ggaccttcgg gcctcttgcc atcggatgtg cccagatggg 180

attagctagt tggtgaggta acggctcacc aaggcgacga tccctagctg gtctgagagg 240

atgaccagcc acactggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatgggcgca agcctgatgc agccatgccg cgtgtatgaa gaaggccttc 360

gggttgtaaa gtactttcag cggggaggaa ggggttaagg ttaataacct tagccattga 420

cgttacccgc agaagaagca ccggctaact ccgtgccagc agccgcggta atacggaggg 480

tgcaagcgtt aatggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat 540

gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggctt gagtctcgta 600

gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 660

ggcgaaggcg gccccctgga cgaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgccgt aaacgatgtc tatttggagg ttgtgccctt 780

gaggtgtggc ttccggagct aacgcgttaa atagaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga aggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaagcgt taatnggata cctggtcttg acatccacag aacttggcag agatgccttg 960

gtgccttcgg gaactgtgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gtccggccgg 1080

gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc 1140

atggcccttа cgaccagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc 1200

tcgcgagagc aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg 1260

actccatgaa gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1380

ttaaccttcg ggagggcgc 1399

<210> 518
<211> 1396
<212> DNA
<213> Citrobacter braakii

<220>
<221> modified_base
<222> (940)..(940)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (976)..(976)
<223> a, c, t, g, unknown or other

<400> 518
tcgaacggta gcacagagga gcttgctcct tgggtgacga gtggcggacg ggtgagtaat 60

gtctgggaaa ctgcccgatg gaggggggata actactggaa acggtagcta ataccgcata 120

acgtcgcaag accaaagagg gggaccttcg ggcctcttgc catcggatgt gcccagatgg 180

gattagctag taggtggggt aacggctcac ctaggcgacg atccctagct ggtctgagag 240

gatgaccagc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 360

cgggttgtaa agtactttca gcgaggagga aggcgttgtg gttaataacc gcaacgattg 420

acgttactcg cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggtct gtcaagtcgg 540

atgtgaaatc cccgggctca acctgggaac tgcatccgaa actggcaggc tagagtcttg 600

tagaggggg tagaattcca ggtgtagcgg tgaaatgcgt agagatctgg aggaataccg 660

gtggcgaagg cggccccctg gacaaagact gacgctcagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgcc gtaaacgatg tcgacttgga ggttgtgccc 780

ttgaggcgtg gcttccggag ctaacgcgtt aagtcgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgcaacg cgaagaacct tacctactct tgacatccan ggaacttacc agagatggtt 960

tggtgccttc gggaancgtg agacaggtgc tgcatggctg tcgtcagctc gtgttgtgaa 1020

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cggtccggcc 1080

gggaactcaa aggagactgc cagtgataaa ctggaggaag gtggggatga cgtcaagtca 1140

tcatggccct tacgagtagg gctacacacg tgctacaatg gcatatacaa agagaagcga 1200

cctcgcgaga gcaagcggac ctcataaagt atgtcgtagt ccggattgga gtctgcaact 1260

cgactccatg aagtcggaat cgctagtaat cgtggatcag aatgccacgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catgggagtg ggttgcaaaa gaagtaggta 1380

gcttaacctt cgggag 1396

<210> 519
<211> 1393
<212> DNA
<213> Citrobacter farmeri

<220>
<221> modified_base
<222> (951)..(951)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1369)..(1370)
<223> a, c, t, g, unknown or other

<400> 519
aacaggaagc agcttgctgc tttgctgacg agtggcggac gggtgagtaa tgtctgggaa 60

actgcccgat ggagggggat aactactgga aacggtagct aataccgcat aatgtcgcaa 120

gaccaaagag ggggaccttc gggcctcttg ccatcggatg tgcccagatg ggattagctt 180

gttggtgagg taacggctca ccaaggcgac gatccctagc tggtctgaga ggatgaccag 240

ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgc 300

acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct tcgggttgta 360

aagtactttc agcggggagg aaggggatgt ggttaataac cgcattcatt gacgttaccc 420

gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag ggtgcaagcg 480

ttaatcggaa ttactgggcg taaagcgcac gcaggcggtc tgtcaagtcg gatgtgaaat 540

ccccgggctc aacctgggaa ctgcattcga aactggcagg cttgagtctc gtagaggggg 600

gtagaattcc aggtgtagcg gtgaaatgcg tagagatctg gaggaatacc ggtggcgaag 660

gcggcccccc ggacgaagac tgacgctcag gtgcgaaagc gtggggagca aacaggatta 720

gataccctgg tagtccacgc cgtaaacgat gtctatttgg aggttgtgcc cttgaggcgt 780

ggcttccgga gctaacgcgt taaatagacc gcctggggag tacggccgca aggttaaaac 840

tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgatgcaac 900

gcgaagaacc ttacctggtc ttgacatcca cagaacttgt cagagatgcc naggtgcctt 960

cgggaactgt gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga aatgttgggt 1020

taagtcccgc aacgagcgca acccttatcc tttgttgcca gcggtccggc cgggaactca 1080

aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc atcatggccc 1140

ttacgaccag ggctacacac gtgctacaat ggcatataca aagagaagcg acctcgcgag 1200

agcaagcgga cctcataaag tatgtcgtag tccggattgg agtctgcaac tcgactccat 1260

gaagtcggaa tcgctagtaa tcgtggatca gaatgccacg gtgaatacgt tcccgggcct 1320

tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtagnn tagcttaacc 1380

ttcgggaggg cgc 1393

<210> 520
<211> 1398
<212> DNA
<213> Citrobacter freundii

<220>
<221> modified_base
<222> (19)..(19)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1376)..(1381)
<223> a, c, t, g, unknown or other

<400> 520
tcgaacggta gcacagagng agcttgctcc ttgggtgacg agtggcggac gggtgagtaa 60

tgtctgggaa actgcccgat ggaggggat aactactgga aacggtagct aataccgcat 120

aacgtcgcaa gaccaaagag ggggaccttc gggcctcttg ccatcggatg tgcccagatg 180

ggattagcta gtaggtgggg taacggctca cctaggcgac gatccctagc tggtctgaga 240

ggatgaccag ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg 300

ggaatattgc acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct 360

tcgggttgta aagtactttc agcgaggagg aaggtgttga ggttaataac ctcagcgatt 420

gacgttactc gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag 480

ggtgcaagcg ttaatcggaa ttactgggcg taaagcgcac gcaggcggtc tgtcaagtcg 540

gatgtgaaat ccccgggctc aacctgggaa ctgcatccga aactggcagg ctagagtctt 600

gtagaggggg gtagaattcc aggtgtagcg gtgaaatgcg tagagatctg gaggaatacc 660

ggtggcgaag gcggcccccc ggacaaagac tgacgctcag gtgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gtcgacttgg aggttgtgcc 780

cttgaggcgt ggcttccgga gctaacgcgt taagtcgacc gcctggggag tacggccgca 840

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 900

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca gagaacttag cagagatgct 960

ttggtgcctt cgggaactct gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1020

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcggttcggt 1080

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1140

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcatataca aagagaagcg 1200

acctcgcgag agcaagcgga cctcataaag tatgtcgtag tccggattgg agtctgcaac 1260

tcgactccat gaagtcggaa tcgctagtaa tcgtggatca gaatgccacg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagnnnnn 1380

ngcttaacct tcgggagg 1398

<210> 521

<211> 1397
<212> DNA
<213> Citrobacter gillenii

<400> 521
gtcgaacggt agcacagagg agcttgctcc ttgggtgacg agtggcggac gggtgagtaa 60

tgtctgggaa actgcccgat ggaggggat aactactgga aacggtagct aataccgcat 120

aacgtcgcaa gaccaaagag ggggaccttc gggcctcttg ccatcggatg tgcccagatg 180

ggattagcta gtaggtgggg taacggctca cctaggcgac gatccctagc tggtctgaga 240

ggatgaccag ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg 300

ggaatattgc acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct 360

tcgggttgta aagtactttc agcgaggagg aaggggatgt ggttaataac cgcattcatt 420

gacgttactc gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag 480

ggtgcaagcg ttaatcggaa ttactgggcg taaagcgcac gcaggcggtc tgtcaagtcg 540

gatgtgaaat ccccgggctc aacctgggaa ctgcatccga aactggcagg ctagagtctt 600

gtagaggggg gtagaattcc aggtgtagcg gtgaaatgcg tagagatctg gaggaatacc 660

ggtggcgaag gcggcccccc ggacaaagac tgacgctcag gtgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gtcgacttgg aggttgttcc 780

cttgaggagt ggcttccgga gctaacgcgt taagtcgacc gcctggggag tacggccgca 840

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 900

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca cggaatttag cagatatgct 960

ttagtgcctt cgggaaccgt gagacaggtg ctgcatggct gtcgtcagct cgagttgcga 1020

agagttgggt aagaacccgc aacgagcgca acccttatcc tttgttgcca gcggttcggc 1080

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1140

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcatataca aagagaagcg 1200

acctcgcgag agcaagcgga cctcataaag tatgtcgtag tccggattgg agtctgcaac 1260

tcgactccat gaagtcggaa tcgctagtaa tcgtagatca gaatgctacg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtaggt 1380

agcttaacct tcgggag 1397

<210> 522
<211> 1387
<212> DNA
<213> Citrobacter koseri

<400> 522
acaggaagca gcttgctgct tcgctgacga gtggcggacg ggtgagtaat gtctgggaaa 60

ctgcctgatg gagggggata actactggaa acggtagcta ataccgcata acgtcgcaag 120

accaaagagg gggaccttcg ggcctcttgc catcagatgt gcccagatgg gattagcttg 180

ttggtggggt aacggctcac caaggcgacg atccctagct ggtctgagag gatgaccagc 240

cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg gaatattgca 300

caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt cgggttgtaa 360

agtactttca gcggggagga aggtgttgtg gttaataacc gcagcaattg acgttacccg 420

cagaaaagca ccggctaact ccgtgccagc agccgcggta atacggaggg tgcaagcgtt 480

aatcggaatt actgggcgta aagcgcacgc aggcggtctg ttaagtcaga tgtgaaatcc 540

ccgggctcaa cctgggaact gcattgatac tggcaggctt gagtctcgta gaggggggta 600

gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg 660

gccccctgga cgaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgtc gacttggagg ttgtgccctt gaggcgtggc 780

ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg ttaaaactca 840

aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg atgcaacgcg 900

aagaacctta cctggtcttg acatccacag aacttggcag agatgactta gatgcgtaag 960

gcacgggctc aaccgtgctg catggctgtc gtcagctcgt gttgtgaaat gtagaggggg 1020

gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gttaggccgg gaactcaaag 1080

gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc atggccctta 1140

cgaccagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc tcgcgagagc 1200

aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg actccatgaa 1260

gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc ttaacctccg 1380

ggagggc 1387

<210> 523
<211> 1394
<212> DNA
<213> Citrobacter murliniae

<400> 523
acggtagcac agaggagctt gctccttggg tgacgagtgg cggacgggtg agtaatgtct 60

gggaaactgc ccgatggagg gggataacta ctggaaacgg tagctaatac cgcataacgt 120

cgcaagacca aagaggggga ccttcgggcc tcttgccatc ggatgtgccc agatgggatt 180

agctagtagg tggggtaacg gctcacctag gcgacgatcc ctagctggtc tgagaggatg 240

accagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 300

attgcacaat gggcgcaagc ctgatgcagc catgccgcgt gtatgaagaa ggccttcggg 360

ttgtaaagta ctttcagcga ggaggaaggt gttgtggtta ataaccgcag caattgacgt 420

tactcgcaga agaagcaccg gctaactccg tgccagcagc cgcggtaata cggagggtgc 480

aagcgttaat cggaattact gggcgtaaag cgcacgcagg cggtctgtca agtcggatgt 540

gaaatccccg ggctcaacct gggaactgca tccgaaactg gcaggctaga gtcttgtaga 600

gggggggtaga attccaggtg tagcggtgaa atgcgtagag atctggagga ataccggtgg 660

cgaaggcggc cccctggaca aagactgacg ctcaggtgcg aaagcgtggg gagcaaacag 720

gattagatac cctggtagtc cacgccgtaa acgatgtcga cttggaggtt gtgcccttga 780

ggcgtggctt ccggagctaa cgcgttaagt cgaccgcctg gggagtacgg ccgcaaggtt 840

aaaactcaaa tgaattgacg gggcccgca caagcggtgg agcatgtggt ttaattcgat 900

gcaacgcgaa gaaccttacc tactcttgac atccagagaa gtttgcagag atgcgaacgt 960

gccttcggga gctctgagac aggtgctgca tggctgtcgt cagctcgtgt tgtgaaatgt 1020

tgggttaagt cccgcaacga gcgcaaccct tatcctttgt tgccagcggt ccggccggga 1080

actcaaagga gactgccagt gataaactgg aggaaggtgg ggatgacgtc aagtcatcat 1140

ggcccttacg agtagggcta cacacgtgct acaatggcat atacaaagag aagcgacctc 1200

gcgagagcaa gcggacctca taaagtatgt cgtagtccgg attggagtct gcaactcgac 1260

tccatgaagt cggaatcgct agtaatcgtg gatcagaatg ccacggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gcaaaagaag taggtagctt 1380

aaccttcggg aggg 1394

<210> 524
<211> 1542
<212> DNA
<213> Citrobacter rodentium

<400> 524
aaattgaaga gtttgatcat ggctcagatt gaacgctggc ggcaggccta acacatgcaa 60

gtcgaacggt aacaggaagc agcttgctgc tttgctgacg agtggcggac gggtgagtaa 120

tgtctgggaa actgcccggt ggaggggat aactactgga aacggtagct aataccgcat 180

aacgtcgcaa gaccaaagag ggggaccttc gggcctcttg ccaccggatg tgcccagatg 240

ggattagctt gttggtgagg taacggctca ccaaggcgac gatccctagc tggtctgaga 300

ggatgaccag ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct 420

tcgggttgta aagtactttc agcggggagg aagggattgt ggttaataac cgcagtcatt 480

gacgttaccc gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag 540

ggtgcaagcg ttaatcggaa ttactgggcg taaagcgcac gcaggcggtc tgtcaagtcg 600

gatgtgaaat ccccgggctc aacctgggaa ctgcattcga aactggcagg cttgagtctc 660

gtagaggggg ggggaattcc aggtgtagcg gtgaaatgcg tagagatctg gaggaatacc 720

ggtggcgaag gcggcccccc ggacgaagac tgacgctcag gtgcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gtctacttgg aggttgtgcc 840

cctgaggcgt ggcttccgga gctaacgcgt taagtagacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctggtc ttgacatcca gagaactttc cagagatgga 1020

ttggtgcctt cgggaactct gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcggtccggc 1140

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgaccag ggctacacac gtgctacaat ggcatataca aagagaagcg 1260

acctcgcgag agcaagcgga cctcataaag tatgtcgtag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgtggatca gaatgccacg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtaggt 1440

agcttaacct ccgggagggc gcttaccact ttgtgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct ta 1542

<210> 525
<211> 1326
<212> DNA
<213> Citrobacter sedlakii

<400> 525
cttgctctcg ggtgacgagt ggcggacggg tgagtaatgt ctgggaaact gcccgatgga 60

gggggataac tactggaaac ggtagctaat accgcataat gtcgcaagac caaagagggg 120

gaccttcggg cctcttgcca tcggatgtgc ccagatggga ttagcttgtt ggtgaggtaa 180

tggctcacca aggcgacgat ccctagctgg tctgagagga tgaccagcca cactggaact 240

gagacacggt ccagactcct acgggaggca gcagtgggga atattgcaca atgggcgcaa 300

gcctgatgca gccatgccgc gtgtgtgaag aaggccttcg ggttgtaaag cactttcagc 360

ggggaggaag gcgatgcggt taataaccgt gttgattgac gttacccgca gaagaagcac 420

cggctaactc cgtgccagca gccgcggtaa tacggagggt gcaagcgtta atcggaatta 480

ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat gtgaaatccc cgggctcaac 540

ctgggaactg cattcgaaac tggcaggctt gagtcttgta gaggggggta gaattccagg 600

tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg gccccctgga 660

caaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat accctggtag 720

tcacgccgta aacgatgtcg acttggaggt tgtgcccttg aggcgtggct tccggagcta 780

acgcgttaag tcgaccgcct ggggagtacg gccgcaaggt taaaactcaa atgaattgac 840

gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgcaacgcga agaaccttac 900

ctggtcttga catccacgga atttggcaga gatgccttag tgccttcggg aaccgtgaga 960

caggtgctgc atggctgtcg tcagctcgtg ttgtgaaatg ttgggttaag tcccgcaacg 1020

agcgcaaccc ttatcctttg ttgccagcgg tccggccggg aactcaaagg agactgccag 1080

tgataaactg gaggaaggtg gggatgacgt caagtcatca tggcccttac gaccagggct 1140

acacacgtgc tacaatggca tatacaaaga gaagcgacct cgcgagagca agcggacctc 1200

ataaagtatg tcgtagtccg gattggagtc tgcaactcga ctccatgaag tcggaatcgc 1260

tagtaatcgt ggatcagaat gccacggtga atacgttccc gggccttgta cacaccgccc 1320

gtcaca 1326

<210> 526
<211> 967
<212> DNA
<213> Citrobacter sp. 30_2

<220>
<221> modified_base
<222> (8)..(10)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (762)..(762)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (776)..(776)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (926)..(926)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (940)..(940)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (945)..(945)
<223> a, c, t, g, unknown or other

<400> 526
gcacagannn agcttgctcc ttgggtgacg agtggcggac gggtgagtaa tgtctgggaa 60

actgcccgat ggagggggat aactactgga aacggtagct aataccgcat aacgtcgcaa 120

gaccaaagag ggggaccttc gggcctcttg ccatcggatg tgcccagatg ggattagcta 180

gtaggtgggg taacggctca cctaggcgac gatccctagc tggtctgaga ggatgaccag 240

ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgc 300

acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct tcgggttgta 360

aagtactttc agcgaggagg aaggtgttga ggttaataac ctcagcaatt gacgttactc 420

gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag ggtgcaagcg 480

ttaatcggaa ttactgggcg taaagcgcac gcaggcggtc tgtcaagtcg gatgtgaaat 540

ccccgggctc aacctgggaa ctgcatccga aactggcagg ctagagtctt gtagaggggg 600

gtagaattcc aggtgtagcg gtgaaatgcg tagagatctg gaggaatacc ggtggcgaag 660

gcggccccct ggacaaagac tgacgctcag gtgcgaaagc gtggggagca aacaggatta 720

gataccctgg tagtccacgc cgtaaacgat gtcgacttgg angttgtgcc cttgangcgt 780

ggcttccgga gctaacgcgt taagtcgacc gcctggggag tacggccgca aggttaaaac 840

tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgatgcaac 900

gcgaagaacc ttacctactc ttgacntcca gagaacttan caganatgct ttggtgcctt 960

cgggaac 967

<210> 527
<211> 1383
<212> DNA
<213> Citrobacter sp. KMSI-3

<220>
<221> modified_base
<222> (926)..(927)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (934)..(934)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (948)..(948)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (964)..(964)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1059)..(1059)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1364)..(1364)
<223> a, c, t, g, unknown or other

<400> 527
gcacagagag cttgctctcg ggtgacgagt ggcggacggg tgagtaatgt ctgggaaact 60

gcccgatgga gggggataac tactggaaac ggtagctaat accgcataat gtcgcaagac 120

caaagagggg gaccttcggg cctcttgcca tcggatgtgc ccagatggga ttagctagta 180

ggtggggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga tgaccagcca 240

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattgcaca 300

atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg ggttgtaaag 360

tactttcagc gaggaggaag gcgttgtggt taataacctt agtgattgac gttactcgca 420

gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt gcaagcgtta 480

atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat gtgaaatccc 540

cgggctcaac ctgggaactg catccgaaac tggcaggcta gagtcttgta gaggggggta 600

gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg 660

gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgtc acttggaggt tgtgcccttg aggcgtggct 780

tccggagcta acgcgttaag tcgaccgcct ggggagtacg gcgcaaggtt aaaactcaaa 840

tgaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa 900

gaaccttacc tactcttgac atccanngaa yttngcagag atgctttngt gccttcggga 960

actntgagac aggtgctgca tggctgtcgt cagctcgtgt tgtgaaatgt tgggttaagt 1020

cccgcaacga gcgcaaccct tatcctttgt tgccagcgnt tcggtcggga actcaaagga 1080

gactgccagt gataaactgg aggaaggtgg ggatgacgtc aagtcatcat ggcccttacg 1140

agtagggcta cacacgtgct acaatggcat atacaaagag aagcgacctc gcgagagcaa 1200

gcggacctca taaagtatgt cgtagtccgg attggagtct gcaactcgac tccatgaagt 1260

cggaatcgct agtaatcgtg gatcagaatg ccacggtgaa tacgttcccg ggccttgtac 1320

acaccgcccg tcacaccatg ggagtgggtt gcaaaagaag tagntagctt aaccttcggg 1380

agg 1383

<210> 528
<211> 1022
<212> DNA
<213> Citrobacter werkmanii

<220>
<221> modified_base
<222> (13)..(15)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (17)..(17)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (19)..(21)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (30)..(30)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (34)..(34)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (78)..(78)
<223> a, c, t, g, unknown or other

<400> 528
gtactttcag cgnnngnann ngttgtggtn aatnaccgca gcaattgacg ttactcgcag 60

aagaagcacc gggctaantc cgtgccagca gccgcggtaa tacggagggt gcaagcgtta 120

atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat gtgaaatccc 180

cgggctcaac ctgggaactg catccgaaac tggcaggcta gagtcttgta gaggggggta 240

gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg 300

gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat 360

accctggtag tccacgccgt aaacgatgtc gacttggagg ttgtgccctt gaggcgtggc 420

ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg ttaaaactca 480

aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg atgcaacgcg 540

aagaacctta cctactcttg acatccagag aacttagcag agatgctttg gtgccttcgg 600

gaactctgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat gttgggttaa 660

gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gttaggccgg gaactcaaag 720

gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc atggccctta 780

cgagtagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc tcgcgagagc 840

aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg actccatgaa 900

gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg aatacgttcc cgggccttgt 960

acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc ttaaccttcg 1020

gg 1022

<210> 529
<211> 1266
<212> DNA
<213> Citrobacter youngae

<400> 529
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtagcacaga gagcttgctc tcgggtgacg agtggcggac gggtgagtaa 120

tgtctgggaa actgcccgat ggaggggat aactactgga aacggtagct aataccgcat 180

aacgtcgcaa gaccaaagag ggggaccttc gggcctcttg ccatcggatg tgcccagatg 240

ggattagctt gttggtgggg taacggctca ccaaggcgac gatccctagc tggtctgaga 300

ggatgaccag ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct 420

tcgggttgta aagtactttc agcgaggagg aaggcgttgt ggttaataac cgcagcgatt 480

gacgttactc gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag 540

ggtgcaagcg ttaatcggaa ttactgggcg taaagcgcac gcaggcggtc tgttaagtca 600

gatgtgaaat ccccgggctc aacctgggaa ctgcatttga aactggcagg cttgagtctc 660

gtagaggggg gtagaattcc aggtgtagcg gtgaaatgcg tagagatctg gaggaatacc 720

ggtggcgaag gcggcccccc ggacgaagac tgacgctcag gtgcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gtctatttgg aggttgtgcc 840

cttgaggcgt ggcttccgga gctaacgcgt taaatagacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctggtc ttgacatcca cagaagtttt cagagatgag 1020

aacgtgcctt cgggaactgt gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcggttaggc 1140

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgaccag ggctacacac gtgctacaat ggcatataca aagagaagcg 1260

acctcg 1266

<210> 530
<211> 1436
<212> DNA
<213> Cloacibacillus evryensis

<400> 530
cgcgtcgcga cgctggcggc gtgcctaaca catgcaagtc gaacgaagac catagaggag 60

cttgcgttaa tatggtttta gtggcggacg ggtgagtaac gcgtgaggac ttgtcgagta 120

caggggaca acaggtggaa acgtctgcta ataccccata agccttcggg taaaaggagc 180

gatccggtac acgagagact cgcgttctat cagctagtag gtggggtaac ggcccaccca 240

ggccaagacg gatagccgga ctgagaggtc gatcggccac actggaactg agacacggtc 300

cagactccta cgggaggcag cagtggggaa tattgggcaa tgggggaaac cctgacccag 360

cgacgccgcg tgagtgaaga aatccctcgg gatgtaaaac tctgttgtgt gggaagataa 420

tgacggtacc acacgaggaa gccccggcaa actacgtgcc agcagccgcg gtaatacgta 480

gggggcgagc gttgttcgga attactgggc gtaaagcgca cgcaggcgga ccagtaagtc 540

tgtcgtcaaa ggcggaggct caaccttcgt tccacgatag atactgcggg tctagagtat 600

gtgagaggga agtggaattc ccggtgtagc ggtgaaatgc gtagatatcg ggaggaacac 660

cagtggcgaa ggcggcttcc tggcacacaa ctgacgctca tgtgcgaaag ccagggcagc 720

gaacgggatt agataccccg gtagtcctgg ccgtaaacga tggatactgg gtgtgggtga 780

agcagttcat ccgtgccgta gttaacgcgt taagtatccc gcctggggac tacggtcgca 840

agactgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcac gtggtttaat 900

tcgatgcaaa ccgaagaacc ttacctgggt ttgacatact accggtactg acctgaaagg 960

gaagggaccc cagcttgctg gggaagtaga acaggtgctg catggctgtc gtcagctcgt 1020

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctatagcca gttgctaaca 1080

agtgaagttg agcactctgg cgagactgcc gccgacaagg cggaggaagg tggggatgac 1140

gtcaagtcat catggccttt atgcccaggg cgacacacgt gctacaatgg acggcacaaa 1200

aggcagctta ctagcgatag ttggcgaatc ctaaaaagcc gttcccagtt cggattgcag 1260

tctgaaaccc gactgcatga agccggaatc gctagtaatc gcagatcagc caagctgcgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacccgagtt gggggcaccc 1380

gaagccgcag gcttaacccg taagggaaag aagcgtctaa ggtgcgccga gtaagg 1436

<210> 531
<211> 975
<212> DNA
<213> Clostridiaceae bacterium END-2

<220>
<221> modified_base
<222> (738)..(738)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (856)..(856)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (917)..(917)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (926)..(926)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (946)..(946)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (952)..(952)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (954)..(954)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (958)..(958)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (967)..(969)
<223> a, c, t, g, unknown or other

<400> 531
gattatttcg gtaagaagta ctttatgact gagtggcgga cgggtgagta acgcgtggat 60

aacctgcctc atacaggggg ataacagtta gaaatgactg ctaataccgc ataagcgcac 120

agtgctgcat ggcacagtgc gaaaagctcc ggcggtatga gatggatccg cgtttgatta 180

gctagttggt ggggtaaagg cctaccaagg cgacgatcaa tagccgacct gagagggtga 240

ccggccacat tgggactgag acacggccca aactcctacg ggaggcagca gtggggaata 300

ttgcacaatg ggggaaaccc tgatgcagcg acgccgcgtg aaggaagaag tatttcggta 360

tgtaaacttc tatcagcagg gaagaaaatg acggtacctg actaagaagc cccggctaat 420

tacgtgccag cagccgcggt aatacgtaag gggcaagcgt tatccggatt tactgggtgt 480

aaagggagcg tagacggcag tgcaagtctg atgtgaaagc ccggggctca accccgggac 540

tgcattggaa actgtgcagc tagagtgtcg gagaggtaag tggaattcct agtgtagcgg 600

tgaaatgcgt agatattagg aggaacacca gtggcgaagg cggcttactg gacgataact 660

gacgttgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 720

gtaaacgatg aatactangt gtcgggcgcc aaaggcgttc ggtgccgcag caaacgcaat 780

aagtattcca cctggggagt acgttcgcaa gaatgaaact caaaggaatt gacggggacc 840

cgcacaagcg gtggancatg tggtttaatt cgaagcaacg cgaagaacct taccaagtct 900

tgacatctgc ctgaccnggt ccgtanagga cccttccttc gggacnggca ananaggngg 960

tgcatgnnng tcgtc 975

<210> 532
<211> 990
<212> DNA
<213> Clostridiaceae bacterium JC13

<220>
<221> modified_base
<222> (896)..(896)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (904)..(904)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (924)..(924)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (934)..(934)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (942)..(942)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (968)..(968)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (970)..(970)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (983)..(984)
<223> a, c, t, g, unknown or other

<400> 532

gaagtgaaga tagcttgcta ttggaactta gtggcgaacg ggtgagtaac acgtagataa 60

cctgcctgta tgaccgggat aacagttgga aacgactgct aataccggat aggcagagag 120

gaggcatctc ttctctgtta aagttgggac acaacgcaaa cagatggatc tgcggtgcat 180

tagctagttg gtgaggtaac ggcccaccaa ggcgatgatg catagccggc ctgagagggc 240

gaacggccac attgggactg agacacggcc caaactccta cgggaggcag cagtagggaa 300

ttttcggcaa tgggggaaac cctgaccgag caatgccgcg tgagtgaaga cggccttcgg 360

gttgtaaagc tctgttgtaa gggaagaacg gcatagagag ggaatgctct atgagtgacg 420

gtaccttacc agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg 480

caagcgttat ccggaattat tgggcgtaaa gggtgcgtag gcggcgagat aagtctgagg 540

taaaagcccg tggctcaacc acggtaagcc ttggaaactg tctggctgga gtgcaggaga 600

ggacaatgga attccatgtg tagcggtaaa atgcgtagat atatggagga acaccagtgg 660

cgaaggcggt tgtctggcct gtaactgacg ctgaagcacg aaagcgtggg gagcaaatag 720

gattagatac cctagtagtc cacgccgtaa acgatgagaa ctaagtgttg gggaaactca 780

gtgctgcagt taacgcaata agttctccgc ctggggagta tgcacgcaag tgtgaaactc 840

aaaggaattg acgggggccc gcacaagcgg tggagtatgt ggtttaattc gacgcnacgc 900

gaanaacctt accaggcctt gacntggtat caanggccct anagataggg agatagttat 960

ggtacacncn ggtggtgcat ggnngtcgtc 990

<210> 533
<211> 1480
<212> DNA
<213> Clostridiales bacterium 9400853

<400> 533
tagagtttga tcctggctca ggatgaacgc tggcggcgtg cctaacacat gcaagtcgag 60

cgagaagtta ctcaatgaat cttcggaaga attgagtaat ggaaagcggc ggacgggtga 120

gtaacgcgtg ggcaacctgc ctttcacaga gggatagcca aaggaaactt tgattaaaac 180

ctcataaagc cggaatagtg cataatatac cggccaaaga tttatcggtg aaagatgggc 240

ccgcgtctga ttagctagtt ggtggggtaa cggctcacca aggcaacgat cagtagccga 300

cctgagaggg tgatcggcca cattggaact gagacacggt ccaaactcct acgggaggca 360

gcagtgggga atattgcaca atgggcgcaa gcttgatgca gcaacgccgc gtgaacgaag 420

aaggccttcg ggtcgtaaag ttctgtccat agggaagaaa caaatgacgg tacctatgga 480

ggaagccccg gctaaatacg tgccagcagc cgcggtaata cgtatggggc aagcgttatc 540

cggaattatt gggcgtaaag agtgcgtagg tggtggctta agcgcagggt ttaaggcaat 600

ggcttaacta ttgttcgcct tgcgaactgg gtcacttgag tacaggagag gaaagcggaa 660

ttcctagtgt agcggtgaaa tgcatagata ttaggaggaa caccggtggc gaaggcggct 720

ttctggactg caactgacac tgaggcacga aagcgtgggt agcaaacagg attagatacc 780

ctggtagtcc acgccgtaaa cgatgagcac taggtgtcgg ccaataaagg tcggtgccgc 840

agttaacgca ttaagtgctc cgcctgggga gtacgcacgc aagtgtaaaa ctcaaaggaa 900

ttgacgggga cccgcacaag cagcggagca tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccagag cttgacatcc ctctgacaga tccttaatcg gattcttctt cggacagagg 1020

agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttatcat tagttgccat cattaagttg ggcactctag tgagactgcc 1140

ggggacaact cggaggaagg tggggatgac gtcaaatcat catgcccctt atgttctggg 1200

ctacacacgt gctacaatgg tcggtacaga aagcagcgaa accgtgaggt gaagccaatc 1260

tccaaaaccg atctcagttc ggattgtagg ctgcaactcg cctacatgaa gtcggagttg 1320

ctagtaatcg cagatcagaa tgctgcggtg aatgcgttcc cgggtcttgt acacaccgcc 1380

cgtcacacca tggaagttgg gggtgcccga agttggacaa taaatcgttt acctaaggca 1440

aaaccaatga ctggggtgaa gtcgtaacaa ggtagccgta 1480

<210> 534
<211> 1489
<212> DNA
<213> Clostridiales bacterium 9403326

<400> 534
tagagtttga tcctggctca ggataaacgc tggcggcgtg cgtaacacat gcaagtcgaa 60

cgagaatgtg ctgacggatc cttagggtga agatagcaca ggacagtggc ggatgggtga 120

gtaacgcgta agaaacctgc ctttcacacc gggatagcag ctggaaacgg ctattaatac 180

cggatgacac tttttccccg catgaggaag aggttaaaga atttcggtga aagatggtct 240

tgcgtctgat tagctagttg gtggggtaac ggcctaccaa ggcgacgatc agtagccggc 300

ctgagagggt gtacggccac attgggactg agacacggcc caaactccta cgggaggcag 360

cagtggggaa ttttgcacaa tggaggaaac tctgatgcag cgacgccgcg tgaacgaaga 420

aggtcttcgg attgtaaagt tctgtcctgg gtgaagataa tgacggtaac tcaggaggaa 480

gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcgagc gttgttcgga 540

attattgggc gtaaagggta cgtaggcggt ttgttaagtt tggcgttaaa tcacggggct 600

caaccccgtt cagcgttgaa aactggcaaa cttgagtagt agaggggaca gtggaattcc 660

tagtgtagcg gtgaaatgcg tagagattag gaagaatacc ggtggcgaag gcgactgtct 720

ggatacatac tgacgctcag gtacgaaagc gtggggagca aacaggatta gataccctgg 780

tagtccacgc cctaaacgat gagtgctagg tgtcgggtgt caaagcccgg tgccgccgtt 840

aacacattaa gcactccgcc tggggagtac gcacgcaagt gtgaaactca aaggaattga 900

cggggacccg cacaagtagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta 960

ccagggcttg acataacagt gacgggttaa gagattaacc gttcccttcg gggacactgc 1020

tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttgtcgtt agttgccagc attaagttgg ggactctagc gagactgccg 1140

gtgataaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccttta tgtcctgggc 1200

tacacacgtg ctacaatggc cgaaaacagc gtgaagcaac ctcgtgagag caagcgaacc 1260

acgaaaagtc ggtctcagtt cggactgtag gctgcaactc gcctacacga agtcggagtt 1320

actagtaatc gcgaatcagc atgtcgcggt gaatgcgttc ccgggtcttg tacacaccgc 1380

ccgtcacacc atggaagttg gtaatacccg aagccgctga gcgaacctat gacgcaggcg 1440

tcgaaggtag gatcaatgac tggggtgaag tcgtaacaag gtagccgta 1489

<210> 535
<211> 1335
<212> DNA
<213> Clostridiales bacterium SY8519

<400> 535
gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa cgcgtggata acctgcctca aacaggggga taacagccgg 120

aaacggctgc taataccgca taagaaaaag tggtttgaga tggatccgcg tctgattagt 180

tagttggcgg ggtaacggcc caccaaggcg acgatcagta gccggcctga gagggtgaac 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg ggaaaccctg atgcagcaac gccgcgtgag cgaagaagta tttcggtatg 360

taaagctcta tcagcaggga agatgacggt acctgactaa gaagctccgg ctaaatacgt 420

gccagcagcc gcggtaatac gtatggagca agcgttatcc ggatttactg ggtgtaaagg 480

gagcgcaggc ggtggcgcaa gtctgatgtg aaaacccggg gcccaacccc gggactgcat 540

tggaaactgc gtgacttgag tgtcggaggg gtaagtggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaggaa caccagtggc gaaggcggct tactggacga actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgaatacta ggtgttggca tgtcagtgcc gcagcaaacg cattaagtat tccacctggg 780

gagtacgttc gcaagaatga aactcaaagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gccttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtgta tagtagccag cggccgggca ctctatacag actgccaggg acaacctgga 1020

ggaaggcggg gatgacgtca aatcatcatg ccccttatgg cctgggcgac acacgtgcta 1080

caatggcgta cagagggagg craagccgcg aggtggagcg aatcccaaaa cgtctcagtt 1140

cggatgcagg ctgcaacccg cctgcagaag ctggaatcgc tagtaatcgc agatcagcat 1200

gctgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat gggagtcgga 1260

aatgcccgaa gccggtaccc agggagccgt cgaaggcagg tctgataact ggggtgaagt 1320

cgtaacaagg tagcc 1335

<210> 536
<211> 1319

<212> DNA
<213> Clostridiales bacterium oral clone P4PA_66 P1

<400> 536
gacgaacgct ggcggcgcgc ctaacacatg caagtcgagc gagcggcgga cgggtgagta 60

acgcgtgagc aacctacctt ttacaggggg ataacgtccc gaaagggacc ctaataccgc 120

atgagcaaag ccggtaaaag atgggctcgc gtccgattag atagttggtg aggtaacggc 180

ccaccaagtc aacgatcggt agccgacctg agagggtgat cggccacatt ggaactgaga 240

cacggtccag actcctacgg gaggcagcag tggggaatat tgggcaatgg gggaaaccct 300

gacccagcga cgccgcgtga aggaagacgg ccttcgggtt gtaaacttct gttcttggtg 360

aagaagacgg taaccaagga ggaagccccg gctaactacg tgccagcagc cgcggtaata 420

cgtaggggcc gagcgttgtc cggaatgatt gggcgtaaag ggcgcgtagg cggctacgga 480

agtctggagt ggaagtccta ttttcaaggt aggaattgct ttggaaactc cgcagcttga 540

gtgcaggaga ggttatcgga attcccggtg tagcggtgaa atgcatagag atcgggagga 600

acaccagtgg cgaaggcggg taactggact gactgacgct gaggcgcgaa agtgtgggga 660

gcaaacagga ttagataccc tggtagtcca cactgtaaac gatgaatgct aggtgtaggt 720

gcatctgtgc cgtcgtaaac acaataagca ttccgcctgg ggagtacggt cgcaagatta 780

aaactcaaag gaattgacgg gggcccgcac aagcagcgga gcatgtggtt taattcgaag 840

caacgcgaag aaccttacca ggtcttgaca tcgacaggtg gtgcatggat gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgcca atagttacta 960

acggctgagg actctattgg gactgccgtg gacaacacgg aggaaggtgg ggacgacgtc 1020

aaatcatcat gccccttatg acctgggcta cacacgtgct acaatggtcg ccaaagagga 1080

gcaaagccgc aaggcggagc ggatctcaag cgatctcagt tcagatgtgg gctgcaaccc 1140

gcccacagaa gtcggagttg ctagtaatcg cgaatcagca tgtcgcggtg aatacgttcc 1200

cgggccttgt acacaccgcc cgtcacacca tgggagttga tagcgcccga aggcagaagg 1260

tagccatctg acgaaggcga gattaatgac tggggtgaag tcgtaacagg gtagccgta 1319

<210> 537
<211> 1487
<212> DNA
<213> Clostridiales bacterium oral taxon 093

<400> 537
gagtttgatc ctggctcagg acgaacgctg gcggcatgct taacacatgc aagtcgaacg 60

agctgattcc ttcgggatga aagcgagtgc gaacgggtga gtaatgtatg agtaacctgc 120

ctctgtctac gggataacat ttggaaacaa gtgctaatac ggtataagac cacagcaccg 180

catggtgcag gggtaaaaga tttatcggac agagatggac tcatatccca ttagctagtt 240

ggtgagataa tagcccacca aggcgacgat gggtagccga gctgagaggc tgatcggcca 300

cattggaact gaaacacggt ccagactcct acgggaggca gcagtgggga atattgggca 360

atggaggaaa ctctgaccca gcaatgccgc gtgagcgatg aaggtcatcg attgtaaagc 420

tcttttcctg ggaacgaaac aaatgacggt acccagggaa taagccccgg ctaactacgt 480

gccagcagcc gcggtaatac gtaggggcg agcgttgtcc ggaatgactg ggcgtaaagg 540

gtgcgtaggt ggtttaataa gttagaagtg taatacccgg gcttaactcg ggtgctgctt 600

ctaaaactgt taggcttgag tgtagtagag gaaagcggaa ttcaatgtgt agcggtggaa 660

tgcgtagata tattgaagaa catcagtggc gaaggcggct ttctggacta taactgacac 720

tgaggcacga aagcgtgggg agcaaacagg attagatacc ctagtagtcc acgccgtaaa 780

cgatggatac tagatgcagg aggtattcac tccttctgtg tcgcagctaa cgcaataagt 840

atcccgcctg gggagtacga tcgcaagatt aaaactcaaa ggaattgacg gggacccgca 900

caagcagcgg aacatgtggt ttaattcgaa gcaacgcgaa aaaccttacc aagacttgac 960

atcagtatga ctatcataga aatatggtat ctcgcaagag catactgaca ggtggtgcat 1020

ggttgtcgtc agctcgtgtc gtgagatgtt aggttaagtc ctgcaacgag cgcaaccctt 1080

ataactagtt gccaatatta agttaggaac tctagttaga ctgccgtggt caacacggag 1140

gaaggtgggg atgacgtcaa atcatcatgc cccttacgtc ttgggctaca cacgtgctac 1200

aatggctatt acaaagagtt gcaagttggt aacagcaagc taatctcaaa aaaatagtct 1260

cagttcggat tgtgggctgc aacccgccca catgaagtcg gagttgctag taatcccgaa 1320

tcagcatgtc ggggtgaatg cgttcccggg tcttgtacac accgcccgtc acgccatggg 1380

agttggtagt acccaaagtc ggtgagctaa ccgcaaggaa gcagccgcct aaggtaagat 1440

caatgactgg ggtgaagtcg taacaaggta gccgtatcgg aaggtgc 1487

<210> 538
<211> 1532
<212> DNA
<213> Clostridiales bacterium oral taxon F32

<400> 538
agagtttgat cctggctcag gataaacgct ggcggcgcac ataagacatg caagtcgaac 60

gaaagtcgtt gtatatgaaa ttgactaaga atttagattt atctagaaga tgagaatgta 120

gattatacaa caatggcttt agtggcggac tggtgagtaa tacgtaagca acctgcctat 180

tagaggggaa taacaattag aaatgattga taataccgca tatgccatag tcatcacatg 240

atgatagtgg gaaaggagta atccgctgat agatgggctt acgcctgatt agatagttgg 300

tagggtaatg gcctaccaag tctgcgatca gtagccgaac tgagaggttg aacggccaca 360

ttgggactga gatacggccc agactcctac gggaggcagc agtcgggaat attgcgcaat 420

ggaggaaact ctgacgcagt gacgccgcgt gcaggaagaa ggttttcgga ttgtaaactg 480

ctttagacag ggaagataaa agacagtacc tgtaaaataa gctccggcta actacgtgcc 540

agcagccgcg gtaatacgta gggagcgagc gttatccgga tttattgggt gtaaagggtg 600

cgtagacggg aaattaagtt atttgtgaaa tccctcggct taaccgagga actgcaacta 660

aaactgattt tcttgagtat tggagaggaa agtggaattc ctagtgtagc ggtgaaatgc 720

gtagatatta ggaggaacac cagtggcgaa ggcgactttc tggacaataa ctgacgttga 780

ggcacgaaag tgtggggagc aaacaggatt agataccctg gtagtccaca ctgtaaacga 840

tggatactag gtgtagggtg tgataaacgc tctgtgccgt cgctaacgca gtaagtatcc 900

cacctgggga gtacgaccgc aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag 960

cagtggagta tgtggtttaa ttcgacgcaa cgcgaagaac cttaccaggg cttgacatat 1020

acaggaatat gctagagata gtatagctct tcggagcctg tatacaggtg gtgcatggtt 1080

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctatct 1140

ttagttacca gcgagtaatg tcgggaactc tagagagact gccggtgtta aatcggagga 1200

aggtggggac gacgtcaaat catcatgccc tttatgtcct gggctacaca cgtactacaa 1260

tggctattac aaagggaagc aatacagcaa tgtggagcaa aactcaaaaa aatagtctca 1320

gttcggattg aaggctgaaa ttcgccttca tgaagctgga attgctagta atggcaggtc 1380

agcatactgc cgtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1440

ttggggatac ccgaagcctg tgagctaact tttagaggca gcagtcgaag gtagaatcaa 1500

tgattggggt gaagtcgtaa caaggtagcc gt 1532

<210> 539
<211> 1474
<212> DNA
<213> Clostridiales bacterium ph2

<400> 539
tggctcagga ttaacgctgg cggcgtgcat aacacatgca tgttgaacga gaatctcttt 60

gacagatcct tcgggtgacg acagagagag gaaagtagcg gatgggtgag taacacgtaa 120

ggaacctgcc atgcacaggg ggatagcagc cggaaacgac tattaatacc ccatgacacc 180

tcactttcgc atgaaagaga ggtcaaagat ttatcggtgt gtgatggcct tgcgtctgat 240

tagcttgttg gtggggtaaa ggcctaccaa ggcgatgatc agtagccggc ttgagagagt 300

gtacggccac attgggattg agacacggcc cagactccta cgggaggcag cagtggggaa 360

ttttgcacaa tggaggaaac tctgatgcag cgacgccgcg tgaacgaaga aggtcttcgg 420

attgtaaagt tctgtcctgg acgaagataa tgacggtaat ccaggaggaa gccccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggggcgagc gttgtccgga atgattgggt 540

gtaaagggta cgcaggcggt ctattaagtt tgacgtgaaa gcccggggct caacctcggc 600

aagcgttgaa aactggtaga cttgaatagt ggaagggaca gtggaattcc tagtgtagcg 660

gtgaaatgcg tagagattag gaagaatacc aatggcgaaa gcaactgtct ggacacatat 720

tgacgctgag gtacgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc 780

cgtaaacgct gagtgctagg tgttgggggt caaacctcgg tgccgacgtt aacacattaa 840

gcactccacc tggggagtac gcacgcaagt gtgaaactca aaggaattga cggggacccg 900

cacaagtagc ggagcatgtg gtttaattcg acgcaacgcg aagaacctta ccaaggcttg 960

acataaaacg gaccggtgta gagatacacc ytctcttcgg agctgtttta caggtggtgc 1020

atggttgtcg tcagctcgtg ttgtgaaatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ctgtcgttag ttaccagcaa gtaaagttgg ggactctaac gagactgccg gtgataaacc 1140

ggaggaaggt ggggacgacg tcaaatcatc atgcccttta tgtcttgggc tacacacgtg 1200

ctacaatggt tgggaacaaa gcgcagcaag gtcgcgaggc caagcgaatc gcagaaaacc 1260

aatctcagtt cggattggag gctgcaaccc gcctccatga agtcggagtt actagtaatc 1320

gtggatcagc atgccacggt gaatgcgttc ccgggtcttg tacacaccgc ccgtcacacc 1380

atggaagttg gtaatacccg aagtcgctga gcgaaccgca aggaagcagg cgccgaaggt 1440

aggatcaatg actggggtga agtcgtaaca agta 1474

<210> 540
<211> 1523
<212> DNA
<213> Clostridiales genomosp. BVAB3

<400> 540
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggagctttga ggaagtgctt gcacagaatt aaagcttagt ggcggacggg tgagtaacgc 120

gtgaggaacc tgcctttcac agtggaataa caacgggaaa ccgttgctaa tggcgcatga 180

catcgcattg aggcatctca gagcgattaa aggagaaatc cggtgaaaga tggactcgcg 240

tccgattagc tagttggtga ggtaacggcc caccaaggcg acgatcggta gccgaactga 300

gaggttgatc ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatatt gggcaatggg cgaaagcctg acccagcaac gccgcgtgaa gtatgaaggc 420

cttcgggttg taaacttctt tgatcaggga agaaacaaat gacggtacct gaaaaacaag 480

ccacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcgagcg ttatccggat 540

ttactgggtg taaagggcgt gcaggcgggc tgataagtca gatgtgaaat ccccgagctt 600

aactcgggaa ctgcatctga tactgttggt cttgagtgct ggagaggata gtggaattcc 660

tagtgtagcg gtaaaatgcg cagatattag gaggaacacc agtggcgaag gcggctatct 720

ggacagtaac tgacgctgag gcgcgaaagc gtgggtagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gattactagg tgtaggaggt atcgacccct tctgtgccgg 840

agttaacaca ataagtaatc cacctgggga gtacggccgc aaggttgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cagtggagta tgtggtttaa ttcgacgcaa cgcgaagaac 960

cttaccaggg tttgacatcc cttgaacgat gtagagatac ataattccct tcggggacaa 1020

ggagacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

caacgagcgc aacccctatt gccagttgcc atcatttagt tgggcactca ggcgagactg 1140

ccgttgataa aacggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatatcctg 1200

ggctacacac gtactacaat ggctacaaca gagagcagcg acgtcgcgag gcgaagcaaa 1260

tccccaaatg tagtctcagt tcggattgca ggctgcaact cgcctgcatg aagccggaat 1320

tgctagtaat ggcaggtcag catactgccg tgaatacgtt ctcgggcctt gtacacaccg 1380

cccgtcacac catgagagtc agtaacaccc gaagtcagta gtctaaccgc aaggggacg 1440

ctgccgaagg tgggaccgat aattggggtg aagtcgtaac aaggtagccg tatcggaagg 1500

tgcggctgga tcacctcctt tct 1523

<210> 541
<211> 1020
<212> DNA
<213> Clostridiales bacterium 1_7_47FAA

<220>
<221> modified_base
<222> (14)..(15)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (969)..(969)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (974)..(974)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (977)..(977)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (983)..(985)
<223> a, c, t, g, unknown or other

<400> 541
gaacgaagca tccnnatagg aagttttcgg atggaatatg ggatgactga gtggcggacg 60

ggtgagtaac gcgtggataa cctgcctcac actgggggat aacagttaga aatggctgct 120

aataccgcat aagcgcacag taccgcatgg tacggtgtga aaaacccagg tggtgtgaga 180

tggatccgcg tctgattagc cagttggcgg ggtaacggcc caccaaagcg acgatcagta 240

gccgacctga gagggtgacc ggccacattg ggactgagac acggcccaaa ctcctacggg 300

aggcagcagt ggggaatatt gcacaatggg cgaaagcctg atgcagcgac gccgcgtgag 360

tgaagaagta tctcggtatg taaagctcta tcagcaggga agaaaatgac ggtacctgac 420

taagaagccc cggctaacta cgtgccagca gccgcggtaa tacgtagggg gcaagcgtta 480

tccggattta ctgggtgtaa agggagcgta gacggcgatg caagtctgaa gtgaaagccc 540

ggggctcaac cccgggactg ctttggaaac tgtgtggctg gagtgcagga gaggtaagtg 600

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg 660

gcttactgga ctgtaactga cgttgaggct cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgaa tgctaggtgt cgggggggcaa agcccctcgg 780

tgccgccgct aacgcaataa gcattccacc tggggagtac gttcgcaaga atgaaactca 840

aaggaattga cggggacccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 900

aagaacctta ccaagtcttg acatcccccc gaccggacag taacgtgtcc cttccttcgg 960

gacagggana cagnggngca tgnnntcgtc agctcgtgtc gtgagatgtt gggttaagtc 1020

<210> 542
<211> 1435
<212> DNA
<213> Clostridiales sp. SM4/1

<400> 542
gacgaattga ctgagtggcg gacgggtgag taacgcgtgg gtaacctgcc tcacactggg 60

ggacaacagc tggaaacggc tgctaatacc gcataagcgc acagcttcgc atgaagcagt 120

gtgaaaaact ccggtggtgt gagatggacc cgcgtctgat tagctagttg gtaaggtaac 180

ggcttaccaa ggcgacgatc agtagccgac ctgagagggt gaccggccac attgggactg 240

agacacggcc caaactccta cgggaggcag cagtggggaa tattgcacaa tgggggaaac 300

cctgatgcag cgacgccgcg tgagtgaaga agtatttcgg tatgtaaagc tctatcagca 360

gggaagaaaa tgacggtacc tgactaagaa gccccggcta actacgtgcc agcagccgcg 420

gtaatacgta gggggcaagc gttatccgga tttactgggt gtaaagggag cgtagacggc 480

gaagcaagtc tgaagtgaaa gcccggggct caaccgcggg actgctttgg aaactgtttt 540

gctagagtgc tggagaggta agtggaattc ctagtgtagc ggtgaaatgc gtagatatta 600

ggaggaacac cagtggcgaa ggcggcttac tggacagtaa ctgacgttga ggctcgaaag 660

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgaatactag 720

gtgttggtga gcaaagctca tcggtgccgt cgcaaacgca ataagtattc cacctgggga 780

gtacgttcgc aagaatgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca 840

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaagt cttgacatcg gaatgaccgg 900

aacttaaccg ttccttttct tcggaacatt ccagacaggt ggtgcatggt tgtcgtcagc 960

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatc ctaagtagcc 1020

agcagttcgg ctgggcactc ttgggagact gccagggata acctggagga aggtggggat 1080

gacgtcaaat catcatgccc cttatgattt gggctacaca cgtgctacaa tggcgtaaac 1140

aaagggaagc gaagctgtga agctgagcaa atctcaaaaa taacgtctca gttcggattg 1200

tagtctgcaa ctcgactaca tgaagctgga atcgctagta atcgcggatc agaatgccgc 1260

ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accatgggag tcagtaacgc 1320

ccgaagtcag tgacccaacc gcaaggaggg agctgccgaa ggcgggaccg ataactgggg 1380

tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1435

<210> 543
<211> 1297
<212> DNA
<213> Clostridiales sp. SS3/4

<400> 543
gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac gagtggcgga cgggtgagta 60

acgcgtgggt aacctgcctc atacaggggg ataacggtta gaaatgactg ctaataccgc 120

ataagaaaaa gtggtatgag atggacccgc gtctgattag ctagttggtg gggtaacggc 180

ccaccaaggc gacgatcagt agccgacctg agagggtgac cggccacatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag tgggggatat tgcacaatgg aggaaactct 300

gatgcagcga cgccgcgtga gtgaagaagt atttcggtat gtaaagctct atcagcaggg 360

aagatgacgg tacctgacta agaagccccg gctaactacg tgccagcagc cgcggtaata 420

cgtaggggcc aagcgttatc cggatttact gggtgtaaag ggagcgtaga cggcgacgca 480

agtctgaagt gaaatacccg ggctcaacct gggaactgct ttggaaactg tgttgctaga 540

gtgctggaga ggtaagcgga attcctagtg tagcggtgaa atgcgtagat attaggaaga 600

acaccagtgg cgaaggcggc ttactggaca gactgacgtt gaggctcgaa agcgtgggga 660

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatact aggtgttggt 720

gcatcggtgc cgccgcaaac gcaataagta ttccacctgg ggagtacgtt cgcaagaatg 780

aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 840

caacgcgaag aaccttacca aatcttgaca tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctattg tcagtagcca 960

gcagctgggc actctgatga gactgccagg gataacctgg aggaaggtgg ggatgacgtc 1020

aaatcatcat gccccttatg atttgggcta cacacgtgct acaatggcgt acaaagagaa 1080

gcgagcctgc gagggggagc aaatctcaaa acgtctcagt tcggatgtag tctgcaactc 1140

gactacagaa gctggaatcg ctagtaatcg cagatcagaa tgctgcggtg aatacgttcc 1200

cgggtcttgt acacaccgcc cgtcacacca tgggagtcgg aaatgcccga agccagtacc 1260

cagggagctg tcgaaggcag gtctgataac tggggtg 1297

<210> 544
<211> 1378
<212> DNA
<213> Clostridiales sp. SSC/2

<220>
<221> modified_base
<222> (13)..(13)
<223> a, c, t, g, unknown or other

<400> 544
ccttatttga ttnttcttcg gaactgaaga tttggtgatt gagtggcgga cgggtgagta 60

acgcgtgggt aacctgccct gtacaggggg ataacagtca gaaatgactg ctaataccgc 120

ataagaccac agcaccgcat ggtgcagggg taaaaactcc ggtggtacag gatggacccg 180

cgtctgatta gctggttggt gaggtaacgg ctcaccaagg cgacgatcag tagccggctt 240

gagagagtga acggccacat tgggactgag acacggccca aactcctacg ggaggcagca 300

gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg acgccgcgtg agtgaagaag 360

tatctcggta tgtaaagctc tatcagcagg gaagaaaatg acggtacctg actaagaagc 420

cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt tatccggaat 480

tactgggtgt aaagggtgcg taggtggtat ggcaagtcag aagtgaaaac ccagggctta 540

actctgggac tgcttttgaa actgtcagac tgagtgcagg agaggtaagc ggaattccta 600

gtgtagcggt gaaatgcgta gatattagga ggaacatcag tggcgaaggc ggcttactgg 660

actgaaactg acactgaggc acgaaagcgt ggggagcaaa caggattaga taccctggta 720

gtccacgccg taaacgatga atactaggtg tcggggccgt agaggcttcg gtgccgcagc 780

caacgcagta agtattccac ctggggagta cgttcgcaag aatgaaactc aaaggaattg 840

acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt 900

acctggtctt gacatccttc tgaccggtcc ttaaccgggc gtttgcgtcg ggacaggagt 960

gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1020

cgagcgcaac ccctatcttt agtagccagc atataaggtg ggcactctag agagactgcc 1080

agggataacc tggaggaagg tggggacgac gtcaaatcat catgcccctt atgaccaggg 1140

ctacacacgt gctacaatgg cgtaaacaga gggaagcagc ctcgtgagag tgagcaaatc 1200

ccaaaaataa cgtctcagtt cggattgtag tctgcaactc gactacatga agctggaatc 1260

gctagtaatc gcgaatcaga atgtcgcggt gaatacgttc ccgggtcttg tacacaccgc 1320

ccgtcacacc atgggagtca gtaacgcccg aagtcagtga cccaaccgta aggaggga 1378

<210> 545
<211> 1510
<212> DNA
<213> Clostridium acetobutylicum

<400> 545
tttaaattga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgagcg gggaacttcg gttcccagcg gcggacgggt gagtaacacg tgggtaacct 120

acctcatagt ggggaatagc ctttcgaaag gaagattaat accgcataat actcgagaat 180

cgcatgattc ttgagccaaa ggatttattc gctatgagat ggacccgcgg cgcattagct 240

tgttggtgag gtaacggctc accaaggctt cgatgcgtag ccgacctgag agggtgatcg 300

gccacattgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggg gaaaccctga tgcagcaacg ccgcgtgagt gatgaaggtc ttcggatcgt 420

aaaactctgt cttatgggac gataatgacg gtaccatagg aggaagccac ggctaactac 480

gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt ccggatttac tgggcgtaaa 540

ggatgtgtag gcggatattt aagtgagatg tgaaatcccc gggcttaact tgggggctgc 600

atttcaaact ggatgtctgg agtgcaggag aggaaggcag aattcctagt gtagcggtga 660

aatgcgtaga gattaggaag aataccagtg gcgaaggcgg ccttctggac tgtaactgac 720

gctgaggcat gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 780

aacgatgaat actaggtgta ggaggtatcg actccttctg tgccgcagtt aacacaataa 840

gtattccgcc tgggaagtac ggtcgcaaga ttaaaactca aaggaattga cggggacccg 900

cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctagacttg 960

acatctcctg aattagtccg taatggatga agtcccttcg gggacaggat gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttatcatt agttgctaac atttagttga gcactctagt gagactgccc gggttaaccg 1140

ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtctagggc tacacacgtg 1200

ctacaatggt ggggacaaaa agatgcaata ccgcaaggtg gagcaaaact caaaacccca 1260

tcccagttcg gattgtaggc tgaaactcgc ctacatgaag ccggagttgc tagtaatcgc 1320

gaatcagaat gtcgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat 1380

gagagtcggc aacacccgaa gcccgtgagg taacctttg gaaccagcgg tcgaaggtgg 1440

ggttgataat tggggtgaag tcgtaacaag gtagccgtag gagaacctgc ggctggatca 1500

cctcctttct 1510

<210> 546
<211> 1470
<212> DNA
<213> Clostridium aerotolerans

<220>
<221> modified_base
<222> (1082)..(1083)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1085)..(1089)
<223> a, c, t, g, unknown or other

<400> 546
cgcgtgctta acacatgcaa gtcgagcgaa gcattttaaa ggaagtttc ggatggaatt 60

taagatgact tagcggcgga cgggtgagta acgcgtgggt aacctgcctc atacaggggg 120

ataacagtta gaaatgactg ctaataccgc ataagcgcac agtgctgcat agcacagtgt 180

gaaaaactcc ggtggtatga gatggacccg cgtctgatta ggtagttggt gaggtaacgg 240

cccaccaagc cgacgatcag tagccgacct gagagggtga ccggccacat tgggactgag 300

acacggccca aactcctacg ggaggcagca gtggggaata ttggacaatg ggggaaaccc 360

tgatccagcg acgccgcgtg agtgaagaag tatttcggta tgtaaagctc tatcagcagg 420

gaagaaaatg acggtacctg actaagaagc cccggctaac tacgtgccag cagccgcggt 480

aatacgtagg gggcaagcgt tatccggatt tactgggtgt aaagggagcg tagacggctc 540

tgcaagtctg gagtgaaagc cggggctcaa ccccgggact gctttggaaa ctgtggagct 600

agagtgcagg agaggtaagt ggaattccta gtgtagcggt gaaatgcgta gatattagga 660

ggaacaccag tggcgaaggc ggcttactgg actgtaactg acgttgaggc tcgaaagcgt 720

ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatga atactaggtg 780

ttggggagca aagctcttcg gtgccgccgc taacgcaata agtattccac ctggggagta 840

cgttcgcaag aatgaaactc aaaggaattg acggggaccc gcacaagcgg tggagcatgt 900

ggtttaattc gaagcaacgc gaagaacctt accaagtctt gacatcggaa tgaccgtctc 960

gtaacggaga cctcccttcg gggcattcca gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttatcctt agtagccagc 1080

anntnnnnnt gggcactctg gggagactgc cagggataac ctggaggaag gtggggatga 1140

cgtcaaatca tcatgcccct tatgatttgg gctacacacg tgctacaatg gcgtaaacaa 1200

agggaagcaa aggagcgatc tggagcaaat cccaaaaata acgtctcagt tcggattgta 1260

gtctgcaact cgactacatg aagctggaat cgctagtaat cgcagatcag aatgctgcgg 1320

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac catgggagtt ggtaacgccc 1380

gaagtcagtg acccaaccgt aaggagggag ctgccgaagg cgggactgat aactggggtg 1440

aagtcgtaac aaggtagccg tatcggaagg 1470

<210> 547
<211> 1289
<212> DNA
<213> Clostridium aldenense

<220>
<221> modified_base
<222> (139)..(139)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (676)..(676)
<223> a, c, t, g, unknown or other

<400> 547
ggtgagtaac gcgtggataa cctgcctcac actgggggat aacagttaga aatggctgct 60

aataccgcat aagcgcacag taccgcatgg gacggtgtga aaaacccagg tggtgtgaga 120

tggatccgcg tctgattanc cagttggcgg ggtaacggcc caccaaagcg acgatcagta 180

gccgacctga gagggtgacc ggccacattg ggactgagac acggcccaaa ctcctacggg 240

aggcagcagt ggggaatatt gcacaatggg cgcaagcctg atgcagcgac gccgcgtgag 300

tgaaaaaata tctcggtatg taaagctcta tcagcaggaa aaaggataaa aacccggcta 360

actacgtgcc agcagccgcg gtaatacgta gggggcaagc gttatccgga tttactgggt 420

gtaaagggag cgtagacggc gacgcaagtc tggagtgaaa gcccggggcc caaccccggg 480

actgctttgg aaactgtgct gctggagtgc agagaggtaa gtggaattcc tagtgtacgg 540

tgaaatgcgt aatattagag gaacaccagt ggcgaaggcg gcttactgga ctgtaactga 600

cgttgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 660

aaacgatgaa tgctangtgt cgggggggcaa agcccttcgg tgccgccgct aacgcaataa 720

gcattccacc tggggagtac gttcgcaaga atgaaactca aaggaattga ccgggacccg 780

cacaagcggt ggaccatgtg ctttaattcg aaacaacgcg aaaaacctta ccaagtcttg 840

acatcccccc gaccggtccg taacggggcc tttccttcgg gacaggggag acaggtggtg 900

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cttatcctta gtagccagca cgtcgtggtg ggcactctag ggagactgcc agggataacc 1020

tggaggaagg tggggatgac gtcaaatcat catgcccctt atgatttggg ctacacacgt 1080

gctacaatgg cgtaaacaaa gggaggcgac cctgcgaagg taagcaaatc ccaaaaataa 1140

cgtcccagtt cggactgtag tctgcaaccc gactacacga agctggaatc gctagtaatc 1200

gcggatcaga atgccgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc 1260

atgggagtca gcaacgcccg aagtcagtg 1289

<210> 548
<211> 1482
<212> DNA
<213> Clostridium aldrichii

<220>
<221> modified_base
<222> (47)..(47)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (145)..(145)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (367)..(367)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (946)..(946)
<223> a, c, t, g, unknown or other

<400> 548
cggcgtgctt aacacatgca agtcgagcgg aaatacattg aagattnatc ggatatgtat 60

tttagcggcg gacgggtgag taacgcgtgg gcaatctgcc tcacacaggg gaataacact 120

gggaaactag tgctaatacc gcatnatata gtgaagtggc atcactttac tatcaaagga 180

gcaatccggt gtgagatgag cccgcgtccg attagctagt tggtggggta acggcccacc 240

aaggcgacga tcggtagccg aactgagagg ttgatcggcc acattgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcgc aatgggggaa accctgacgc 360

agcaacnccg cgtgaaggat gaaggttttc ggattgtaaa cttctttgat tggggacgat 420

aatgacggta cccaaaaaac aagccacggc taactacgtg ccagcagccg cggtaatacg 480

taggtggcaa gcgttgtccg gaattactgg gtgtaaaggg cgtgtaggcg gggatgcaag 540

tcagatgtga aattccgaag ctcaacttcg gcgctgcatc tgaaactgta tctcttgagt 600

gctggagagg aaagcggaat tcctagtgta gcggtgaaat gcgtagatat taggaggaac 660

accagtggcg aaggcggctt tctggacagt aactgacgct gaggcgcgaa agcgtgggga 720

gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatggatact aggtgtagga 780

ggtatcgacc ccttctgtgc cggagttaac acaataagta tcccacctgg ggagtacggc 840

cgcaaggttg aaactcaaag gaattgacgg gggcccgcac aagcagtgga gtatgtggtt 900

taattcgaag caacgcgaag aaccttacca gggcttgaca taccantgac gtacttagag 960

ataggtattc ccttcgggac aatggataca ggtggtgcat ggttgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct gttgttagtt gccatcatta 1080

agttgggcac tctagcgaga ctgccggtga caaatcggag gaaggtgggg acgacgtcaa 1140

atcatcatgc cccttatgtc ctgggctaca cacgtactac aatggctatt acagagggaa 1200

gcgaagccgc gaggtggagc aaatctccaa aaatagtccc agttcagatt gcaggctgaa 1260

actcgcctgc atgaagtcgg aattgctagt aatggcaggt cagcatactg ccgtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca caccatgaga gtctgcaaca cccgaagtca 1380

gtagtctaac tgtaaagagg acgctgccga aggtggggcc gatgattggg gtgaagtcgt 1440

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ct 1482

<210> 549
<211> 1481
<212> DNA
<213> Clostridium algidicarnis

<400> 549
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gaagttattc cttcggggat aacttagcgg cggacgggtg agtaacacgt gggtaacctg 120

cctcatagag ggggatagcc ttccgaaagg aagattaata ccccataaca tagcattatc 180

gcatgataaa gttattaaag gagtaatccg ctatgagatg gacccgcggc gcattagcta 240

gttggtgagg taacggctca ccaaggccac gatgcgtagc cgacctgaga gggtgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg aaagcctgat gcagcaacgc cgcgtgagtg atgaaggcct tcgggtcgta 420

aagctctgtc ttcggggacg ataatgacgg tacccgagga ggaagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggatttact gggcgtaaag 540

ggagcgtagg cggatactta agtgggatgt gaaatacccg ggctcaaccc gggtgctgca 600

ttccaaactg ggtatctaga gtgtgggaga ggaaagtgga attcctagtg tagcggtgaa 660

atgcgtagag attaggaaga acaccagtgg cgaaggcgac tttctggacc ataactgacg 720

ctgaggctcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatggata ctaggtgtgg gggataccaa tcctccgtgc cgtcgttaac acactaagta 840

tcccgcctgg ggagtacgat cgcaagatta aaactcaaag gaattgacgg gggcccgcac 900

aagcagcgga gcatgtggtt taattcgaag caacgcgaag aaccttacct agacttgaca 960

tctcctgaat tacctgtaat tagggaagcc cttcggggca ggaagacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat 1080

tgttagttgc taccatttag ttgagcactc tagcgagact gcctgggtta accaggagga 1140

aggtggggat gacgtcaaat catcatgccc cttatgtcta gggctacaca cgtgctacaa 1200

tggcgagtac aacgagatgc aatatcgtga ggtggagcaa aactcaaaaa actcgtccca 1260

gttcggattg taggctgaaa ctcgcctaca tgaagccgga gttgctagta atcgcgaatc 1320

agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

ttggcaatac ccgaagtccg tgcgctaacg cgtaagcgag gcagcggccg aaggtagggt 1440

cagcgattgg ggtgaagtcg taacaaggta gccgtaggag a 1481

<210> 550
<211> 1502
<212> DNA
<213> Clostridium algidixylanolyticum

<400> 550
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gaagcgattt taaggaagcc ttcgggtgga attagaattg acttagcggc ggacgggtga 120

gtaacgcgtg ggtaacctgc ctcatacagg gggataacag ttagaaatga ctgctaatac 180

cgcataagcg cacagtgctg catagcacag tgtgaaaaac tccggtggta tgagatggac 240

ccgcgtctga ttaggtagtt ggtgaggtaa cggcccacca agccgacgat cagtagccga 300

cctgagaggg tgaccggcca cattgggact gagacacggc ccaaactcct acgggaggca 360

gcagtgggga atattggaca atgggggaaa ccctgatcca gcgacgccgc gtgactgaag 420

aagtatttcg gtatgtaaag gtctatcagc agggaagaaa atgacggtac ctgactaaga 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt agggggcaag cgttatccgg 540

atttactggg tgtaaaggga gcgtagacgg ctctgcaagt ctggagtgaa agcccggggc 600

tcaaccccgg gactgctttg gaaactgtgg agctagagtg caggagaggt aagtggaatt 660

cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccagtggcga aggcggctta 720

ctggactgta actgacgttg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatacta ggtgtcgggg agcaaagctc ttcggtgccg 840

tcgctaacgc aataagtatt ccacctgggg agtacgttcg caagaatgaa actcaaagga 900

attgacgggg acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccaag tcttgacatc ggaatgacag ccttataact aaggtctccc tacggggcat 1020

tctagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttat ccttagtagc cagcagttcg gctgggcact ctggggagac 1140

tgccagggat aacctggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgatt 1200

tgggctacac acgtgctaca atggcgtaaa caaagggaag cgaaggagcg atctggagca 1260

aaccccaaaa ataacgtctc agttcggatt gtagtctgca actcgactac atgaagctgg 1320

aatcgctagt aatcgcagat cagaatgctg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gttggtaacg cccgaagtca gtgacccaac cgtaaggagg 1440

gagctgccga aggcgggact gataactggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

ga 1502

<210> 551
<211> 1454
<212> DNA
<213> Clostridium aminovalericum

<220>
<221> modified_base
<222> (465)..(466)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (572)..(573)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (774)..(774)
<223> a, c, t, g, unknown or other

<400> 551
ttaacacatg caagtcaacg gagttaatca agcgcgaagt cttcggatgg aagcttgtta 60

acttagtggc ggacgggtga gtaacgcgtg ggtaacctgc cttatacagg gggataacag 120

ccggaaacgg ttgctaatac cgcataagca tacagtgccg catggtacag tgtgaaaaag 180

attaagttca acttcgttca actctggtat aagatggacc cgcgtctgat tagctagttg 240

gtgaggtaat ggctcaccaa tggcgacgat cagtagccgg cttgagagag tgaccggcca 300

cattgggact gagacacggc ccaaactcct acgggaggca gcagtgggga atattgcaca 360

atgggggaaa ccctgatgca gcgacgccgc gtgagtgaag aagtatttcg gtatgtaaag 420

ctctatcagc agggacgata atgacggtac ctgactaaga agccnnggct aactacgtgc 480

cagcagccgc ggtaatacgt agggggcaag cgttatccgg atttactggg tgtaaaggga 540

gcgtagacgg tctggtaagt caggtgtgaa anncccgggg ctcaaccccg gattgcactt 600

gaaactaccc gactagagtg caggagaggt aagtggaatt cctagtgtag cggtgaaatg 660

cgtagatatt aggaggaaca ccagtggcga aggcggctta ctggactgta actgacgttg 720

aggctcgaaa gcgtggggag cgaaacagga ttagataccc tggtagtcca cgcngtaaac 780

gatgaatact aggtgttggg gtccataagg acttcggtgc cgtcgcaaac gcaataagta 840

ttccacctgg ggagtacgtt cgcaagaatg aaactcaaag gaattgacgg ggacccgcac 900

aagcgtggga gcatgtggtt taattcgaag caacgcgaag aaccttacca ggtcttgaca 960

tccctctgac cggtccgtaa tgggaccttt ccttcgggac agaggaacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta 1080

tctttagtag ccagcagttc ggctgggcac tctagagaga ctgccaggga taacctggag 1140

gaaggcgggg atgacgtcaa atcatcatgc cccttatgat ctgggctaca cacgtgctac 1200

aatggtgact acaaagagaa gcaaagctgt gaagtggagc caatctcaaa aaggtcatct 1260

cagttcggat tgtagtctgc aactcgacta catgaagctg gaatcgctag taatcgcaga 1320

tcagaatgct gtggtgaata cgttcccggg tcttgtacac accgcccgtc acaccatggg 1380

agttggatat gcccgaagtc agtgacccaa ccgtaaggag ggagctgccg aaggtggagc 1440

caatgactgg ggtg 1454

<210> 552
<211> 1485
<212> DNA
<213> Clostridium amygdalinum

<400> 552
ctcaggatga acgctggcgg cgtgcttaac acatgcaagt cgagcgaagc agttttaagg 60

aagttttcgg atggaattaa aattgactga gcggcggacg ggtgagtaac gcgtgggtaa 120

cctgcctcat acaggggat aacagttgga aacgactgct aataccgcat aagcgcacag 180

tgctgcatgg cacggtgtga aaaactccgg tggtatgaga tggacccgcg tctgattagg 240

tagttggtgg ggtaacggcc caccaagccg acgatcagta gccgacctga gagggtgacc 300

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt ggggaatatt 360

ggacaatggg ggaaaccctg atccagcgac gccgcgtgac tgaagaagta tttcggtatg 420

taaaggtcta tcagcaggga agaaaatgac ggtacctgac taagaagccc cggctaacta 480

cgtgccagca gccgcggtaa tacgtagggg gcaagcgtta tccggattta ctgggtgtaa 540

agggagcgta gacggcgatg caagtctgga gtgaaagccc ggggctcaac cccgggactg 600

ctttggaaac tgtgttgcta gagtgcagga gaggtaagtg gaattcctag tgtagcggtg 660

aaatgcgtag atattaggag gaacaccagt ggcgaaggcg gcttactgga ctgtaactga 720

cgttgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgaa tactaggtgt tggggagcaa agctcttcgg tgccgccgct aacgcaataa 840

gtattccacc tggggagtac gttcgcaaga atgaaactca aaggaattga cggggacccg 900

cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaagtcttg 960

acatcggaat gaccggtccg taacggggcc ttcccttcgg ggcattccag acaggtggtg 1020

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cttatcctta gtagccagca gtacggctgg gcactctggg gagactgcca gggataacct 1140

ggaggaaggt ggggatgacg tcaaatcatc atgccccttа tgatttgggc tacacacgtg 1200

ctacaatggc gtaaacaaag ggaagcgaag gagtgatccg gagcaaatct caaaaataac 1260

gtctcagttc ggattgtagt ctgcaactcg actacatgaa gctggaatcg ctagtaatcg 1320

cggatcagaa tgccgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcacacca 1380

tgggagttgg taacgcccga agtcagtgac ccaaccgtaa ggagggagct gccgaaggcg 1440

ggactgataa ctggggtgaa gtcgtaacaa ggtagccgta tcgga 1485

<210> 553
<211> 1504
<212> DNA
<213> Clostridium argentinense

<400> 553
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gatgaagctt ccttcgggaa gtggattagc ggcggacggg tgagtaacac gtgggtaacc 120

tgcctctaag aggggaatag cctcccgaaa gggagattaa taccgcataa agtatgaagg 180

tcgcatgact tttataccaa aggagtaatc cgctatgaga tggacccgcg gcgcattagc 240

tagttggtga ggtaagggct caccaaggca acgatgcgta gccgacctga gagggtgatc 300

ggccacattg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 360

gcgcaatggg ggaaaccctg acgcagcaac gccgcgtgaa tgaagaaggc cttagggttg 420

taaagttctg tcatatggga agataatgac ggtaccatat gaggaagcca cggctaacta 480

cgtgccagca gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ctgggcgtaa 540

aggatgcgta ggcggacatt taagtcagat gtgaaatacc cgggctcaac ttgggtgctg 600

catttgaaac tgggtgtcta gagtgcagga gaggaaagcg gaattcctag tgtagcggtg 660

aaatgcgtag agattaggaa gaacaccagt ggcgaaggcg gctttctgga ctgtaactga 720

cgctgaggca tgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgaa tactaggtgt aggaggtatc gacccttct gtgccgcagt taacacaata 840

agtattccgc ctggggagta cgatcgcaag attaaaactc aaaggaattg acgggggccc 900

gcacaagcag cggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctagactt 960

gacatcccct gaattacctg taatgaggga agcccttcgg ggcagggaga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttatcattag ttgctaccat taagttgagc actctagtga gactgcccgg gttaaccggg 1140

aggaaggtgg ggatgacgtc aaatcatcat gcccccttatg tctagggcta cacacgtgct 1200

acaatggttg gtacaacaag atgcaagacc gcgaggtgga gctaaactta aaaaaccaac 1260

ccagttcgga ttgtaggctg aaactcgcct acatgaagcc ggagttgcta gtaatcgcga 1320

atcagcatgt cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga 1380

gagctggtaa cacccgaagt ccgtgaggta accgtaagga gccagcgccg aaggtgggat 1440

tagtgattgg ggtgaagtcg taacaaggta gccgtaggag aacctgcggt tggatcacct 1500

cctt 1504

<210> 554
<211> 1387
<212> DNA

<213> Clostridium asparagiforme

<400> 554
tcgaacgaag cattttagat gaagttttcg gatggattct gagatgactg agtggcggac 60

gggtgagtaa cacgtggata acctgcctca cactggggga caacagttag aaatgactgc 120

taataccgca taagcgcaca gtaccgcatg gtacggtgtg aaaaactccg gtggtgtgag 180

atggatccgc gtctgattag ccagttggcg gggtaacggc ccaccaaagc gacgatcagt 240

agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa actcctacgg 300

gaggcagcag tggggaatat tgcacaatgg gcgaaagcct gatgcagcga cgccgcgtga 360

gtgaagaagt atttcggtat gtaaagctct atcagcaggg aagataatga cggtacctga 420

ctaagaagcc ccggctaact acgtgccagc agccgcggta atacgtaggg ggcaagcgtt 480

atccggattt actgggtgta aagggagcgt agacggcatg gcaagtctga agtgaaaacc 540

cagggctcaa ccctgggact gctttggaaa ctgtcaagct agagtgcagg agaggtaagt 600

ggaattccta gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc 660

ggcttactgg actgtaactg acgttgaggc tcgaaagcgt ggggagcaaa caggattaga 720

taccctggta gtccacgccg taaacgatga gtgctaggtg ttgggggca aagcccttcg 780

gtgccgtcgc aaacgcaata agcactccac ctggggagta cgttcgcaag aatgaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 900

gaaaaacctt accaagtctt gacatcctct tgaccggcgt gtaacggcgc ctttccttcg 960

ggacaagaga gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttatcctt agtagccagc attaagatgg gcactctagg 1080

gagactgcca gggacaacct ggaggaaggt ggggatgacg tcaaatcatc atgccccttа 1140

tgatttgggc tacacacgtg ctacaatggc gtaaacaaag ggaagcgacc ctgcgaaggt 1200

gagcaaatct caaaaataac gtcccagttc ggactgtagt ctgcaacccg actacacgaa 1260

gctggaatcg ctagtaatcg cgaatcagaa tgtcgcggtg aatacgttcc cgggtcttgt 1320

acacaccgcc cgtcacacca tgggagtcag caacgcccga agtcagtgac ccaaccgaaa 1380

ggaggga 1387

<210> 555
<211> 1508
<212> DNA
<213> Clostridium baratii

<400> 555
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaacacat gcaagtcgag 60

cgatgaagtt tccttcggga aacggattag cggcggacgg gtgagtaaca cgtgggtaac 120

ctgcctcata gaggggaata gcctcccgaa agggagatta ataccgcata acattgcagt 180

ttcgcatgaa acagcaatta aaggagcaat ccgctatgag atggacccgc ggcgcattag 240

ctagttggta aggtaatggc ttaccaaggc gacgatgcgt agccgacctg agagggtgat 300

cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gggaaaccct gatgcagcaa cgccgcgtga gtgatgacgg tcttcggatt 420

gtaaagctct gtctttgggg acgataatga cggtacccaa ggaggaagcc acggctaact 480

acgtgccagc agccgcggta atacgtaggt ggcgagcgtt gtccggattt actgggcgta 540

aagggagcgt aggcggattt ttaagtggga tgtgaaatac ccgggctcaa cctgggtgct 600

gcattccaaa ctgggaatct agagtgcagg aggggagagt ggaattccta gtgtagcggt 660

gaaatgcgta gagattagga agaacaccag tggcgaaggc gactctctgg actgtaactg 720

acgctgaggc tcgaaagcgt ggggagcgaa caggattaga taccctggta gtccacgccg 780

taaacgatga atactaggtg taggggtttc aacacctctg tgccgccgct aacgcattaa 840

gtattccgcc tggggagtac ggtcgcaaga ttaaaactca aaggaattga cgggggcccg 900

cacaagtagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctagacttg 960

acatcctctg cattaccctt aatcggggaa gttccttcgg gaacagagtg acaggtggtg 1020

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cctattgtta gttgctacca ttaagttgag cactctagcg agactgcctg ggttaaccag 1140

gaggaaggtg gggatgacgt caaatcatca tgccccttat gtctagggct acacacgtgc 1200

tacaatggca agtacagaga gatgctatac cgcgaggtgg agctaaactt caaaacttgt 1260

ctcagttcgg attgtaggct gaaactcgcc tacatgaagc tggagttgct agtaatcgcg 1320

aatcagcatg tcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg 1380

agagttggca atacccaaag ttcgtgagct aacgcgtaag cgaggcagcg acctaaggta 1440

gggtcagcga ttggggtgaa gtcgtaacaa ggtagccgta ggagaacctg cggctggatc 1500

acctcctt 1508

<210> 556
<211> 1364
<212> DNA
<213> Clostridium bartlettii

<400> 556
tcgagcgatt ctcttcggag aagagcggcg gacgggtgag taacgcgtgg gtaacctgcc 60

ctgtacacac ggataacata ccgaaaggta tgctaatacg ggataacata agaaattcgc 120

atgtttttct tatcaaagct ccggcggtac aggatggacc cgcgtctgat tagctagttg 180

gtgaggtaat ggctcaccaa ggcgacgatc agtagccgac ctgagagggt gatcggccac 240

attggaactg agacacggtc caaactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggcgaaag cctgatgcag caacgccgcg tgagcgatga aggccttcgg gtcgtaaagc 360

tctgtcctca aggaagataa tgacggtact tgaggaggaa gccccggcta actacgtgcc 420

agcagccgcg gtaatacgta gggggctagc gttatccgga tttactgggc gtaaagggtg 480

cgtaggcggt cttttaagtc aggagtgaaa ggctacggct caaccgtagt aagctcttga 540

aactggagga cttgagtgca ggagaggaga gtggaattcc tagtgtagcg gtgaaatgcg 600

tagatattag gaggaacacc agtagcgaag gcggctctct ggactgtaac tgacgctgag 660

gcacgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 720

gagtactagc tgtcggaggt tacccccttc ggtggcgcag ctaacgcatt aagtactccg 780

cctggggagt acgctcgcaa gagtgaaact caaaggaatt gacggggacc cgcacaagta 840

gcggagcatg tggtttaatt cgaagcaacg cgaagaacct tacctaagct tgacatcctt 900

ttgaccgatg cctaatcgca tctttccctt cggggacaga agtgacaggt ggtgcatggt 960

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgcc 1020

tttagttgcc atcattaagt tgggcactct agagggactg ccagggataa cctggaggaa 1080

ggtggggatg acgtcaaatc atcatgcccc ttatgcttag ggctacacac gtgctacaat 1140

gggtggtaca gagggcagcg aagtcgtgag gccaagctaa tcccttaaag ccattctcag 1200

ttcggattgt aggctgaaac tcgcctacat gaagctggag ttactagtaa tcgcagatca 1260

gaatgctgcg gtgaatgcgt tcccgggtct tgtacacccc gcccgtcaca ccatgggagt 1320

tgggggcgcc cgaagccggc tagctaacct tttaggaagc ggtc 1364

<210> 557
<211> 1505
<212> DNA
<213> Clostridium beijerinckii

<400> 557
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gatgaagttc cttcgggaac ggattagcgg cggacgggtg agtaacacgt gggtaacctg 120

cctcatagag gggaatagcc tttcgaaagg aagattaata ccgcataaga ttgtagtgcc 180

acatggcata gcaattaaag gagtaatccg ctatgagatg gacccgcgtc gcattagcta 240

gttggtgagg taacggctca ccaaggcgac gatgcgtagc cgacctgaga gggtgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatggggg aaaccctgat gcagcaacgc cgcgtgagtg atgacggtct tcggattgta 420

aagctctgtc ttcagggacg ataatgacgg tacctgagga ggaagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggatttact gggcgtaaag 540

ggagcgtagg tggatattta agtgggatgt gaaatactcg ggcttaacct gggtgctgca 600

ttccaaactg gatatctaga gtgcaggaga ggaaagtaga attcctagtg tagcggtgaa 660

atgcgtagag attaggaaga ataccagtgg cgaaggcgac tttctggact gtaactgaca 720

ctgaggctcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgaata ctaggtgtag gggttgtcat gacctctgtg ccgccgctaa cgcattaagt 840

attccgcctg gggagtacgg tcgcaagatt aaaactcaaa ggaattgacg ggggcccgca 900

caagcagcgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc tagacttgac 960

atctcctgaa ttactcttaa tcggggaagc ccttcggggc aggaagacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta 1080

ttgttagttg ctaccattta gttgagcact ctagcgagac tgcccgggtt aaccgggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac acgtgctaca 1200

atggctggta cagagagatg ctaaaccgcg aggtggagcc aaactttaaa accagtctca 1260

gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttgctagta atcgcgaatc 1320

agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

ttggcaatac ccaaagttcg tgagctaacg cgtaagcggg gcagcgacct aaggtagggt 1440

cagcgattgg ggtgaagtcg taacaaggta gccgtaggag aacctgcggc tggatcacct 1500

ccttt 1505

<210> 558
<211> 1329
<212> DNA
<213> Clostridium bifermentans

<220>
<221> modified_base
<222> (1316)..(1316)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1320)..(1321)
<223> a, c, t, g, unknown or other

<400> 558
gatctcttcg gagagagcgg cggacgggtg agtaacgcgt gggtaacctg ccctgtacac 60

acggataaca taccgaaagg tatactaata cgggataaca tatgaaagtc gcatggcttt 120

tgtatcaaag ctccggcggt acaggatgga cccgcgtctg attagctagt tggtaaggta 180

atggcttacc aaggcaacga tcagtagccg acctgagagg gtgatcggcc acactggaac 240

tgagacacgg tccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgaa 300

agcctgatgc agcaacgccg cgtgagcgat gaaggccttc gggtcgtaaa gctctgtcct 360

caaggaagat aatgacggta cttgaggagg aagccccggt aactactgcc ccggatacag 420

ggggtcggaa ttactgggcg taaagggtgc gtaggtggtt ttttaagtca gaagtgaaag 480

gctacggctc aaccgtagta agcttttgaa actagagaac ttgagtgcag gagaggagag 540

tagaattcct agtgtagcgg tgaaatgcgt agatattagg aggaatacca gtagcgaagg 600

cggctctctg gactgtaact gacactgagg cacgaaagcg tggggagcaa acaggattag 660

ataccctggt agtccacgcc gtaaacgatg agtactaggt gtcgggggtt acccccctcg 720

gtgccgcagc taacgcatta agtactccgc ctgggaagta cgctcgcaag agtgaaactc 780

aaaggaattg acggggaccc gcacaagtag cggagcatgt ggtttaattc aaagctacgc 840

gaagaacctt acctaagctt gacatccggc tacgcctcac ccgaagtgag cttttccatc 900

tggggaagtg gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt 960

taagtcccgc aacgagcgca acccttgcct ttagttgcca gcattaagtt gggcactcta 1020

gagggactgc cgaggataac tcggaggaag gtggggatga cgtcaaatca tcatgcccct 1080

tatgcttagg gctacacacg tgctacaatg ggtggtacag agggttgcca agccgcgagg 1140

tggagctaat cccttaaagc cattctcagt tcggattgta ggctgaaact cgcctacatg 1200

aagctggagt tactagtaat cgcagatcag aatgctgcgg tgaatgcgtt cccgggtctt 1260

gtacacaccg cccgtcacac catggaagtt gggggcgccc gaagccggtt agctancctn 1320

ntaggaagc 1329

<210> 559
<211> 1377
<212> DNA
<213> Clostridium bolteae

<220>
<221> modified_base
<222> (13)..(13)
<223> a, c, t, g, unknown or other

<400> 559
gaagcaatta aanggaagtt ttcggatgga atttgattga ctgagtggcg gacgggtgag 60

taacgcgtgg ataacctgcc tcacactggg ggataacagt tagaaatgac tgctaatacc 120

gcataagcgc acagtaccgc atggtacggt gtgaaaaact ccggtggtgt gagatggatc 180

cgcgtctgat tagccagttg gcggggtaac ggcccaccaa agcgacgatc agtagccgac 240

ctgagagggt gaccggccac attgggactg agacacggcc caaactccta cgggaggcag 300

cagtggggaa tattgcacaa tgggcgaaag cctgatgcag cgacgccgcg tgagtgaaga 360

agtatttcgg tatgtaaagc tctatcagca gggaagaaaa tgacggtacc tgactaagaa 420

gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc gttatccgga 480

tttactgggt gtaaagggag cgtagacggc gaagcaagtc tgaagtgaaa acccagggct 540

caaccctggg actgctttgg aaactgtttt gctagagtgt cggagaggta agtggaattc 600

ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa ggcggcttac 660

tggacgataa ctgacgttga ggctcgaaag cgtggggagc aaacaggatt agataccctg 720

gtagtccacg ccgtaaacga tgaatgctag gtgttggggg gcaaagccct tcggtgccgt 780

cgcaaacgca gtaagcattc cacctgggga gtacgttcgc aagaatgaaa ctcaaaggaa 840

ttgacgggga cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac 900

cttaccaagt cttgacatcc ttttgaccgg cgtgtaacgg cgccttccct tcggggcaag 960

agagacaggt ggtgcatggc cgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1020

caacgagcgc aacccttatc cttagtagcc agcaggtaga gctgggcact ctagggagac 1080

tgccagggat aacctggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgatt 1140

tgggctacac acgtgctaca atggcgtaaa caaagggaag caagacagtg atgtggagca 1200

aatcccaaaa ataacgtccc agttcggact gtagtctgca acccgactac acgaagctgg 1260

aatcgctagt aatcgcgaat cagaatgtcg cggtgaatac gttcccgggt cttgtacaca 1320

ccgcccgtca caccatggga gtcagcaacg cccgaagtca gtgacccaac tcgcaag 1377

<210> 560
<211> 1355
<212> DNA
<213> Clostridium botulinum

<400> 560
tgaagcttcc ttcgggaagt ggattagcgg cggacgggtg agtaacacgt gggtaacctg 60

cctcaaagtg ggggatagcc ttccgaaagg aagattaata ccgcataaca taagagaatc 120

gcatgatttt cttatcaaag atttattgct ttgagatgga cccgcggcgc attagctagt 180

tggtaaggta acggcttacc aaggcaacga tgcgtagccg acctgagagg gtgatcggcc 240

acattggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg aatattgcgc 300

aatgggggaa accctgacgc agcaacgccg cgtgggtgag aaggtcttcg gattgtaacc 360

tgttttctgg gacgataatg acggtaccag aggaggaagc cacggctaac tacgtgccag 420

cagccgcggt aatacgtagg tggcgagcgt tgtccggatt tactgggcgt aaagggtgcg 480

taggcggatg tttaagtggg atgtgaaatc cccgggctta acctgggggc tgcattccaa 540

actggatatc tagagtgcag gagaggaaag cggaattcct agtgtagcgg tgaaatgcgt 600

agagattagg aagaacacca gtggcgaagg cggctttctg gactgtaact gacgctgagg 660

cacgaaagcg tgggtagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 720

gatactaggt gtaggggtta tcaactcccc ctgtgccgca gttaacacaa taagtatccc 780

gcctggggag tacggtcgca agagtaaaac tcaaaggaat tgacgggggc ccgcacaagc 840

agcggagcat gtggtttaat tcgaagcaac gcgaaaaacc ttacctggac ttgacatccc 900

ttgcatagcc tagagatagg tgaagccctt cggggcaagg agacaggagg tgcatgggtg 960

tcgtcagctc gtgtcgtgag atgttaggtt aagtcctgca acgagcgcaa cccttgttat 1020

tagttgctac cattaagttg agcactctaa tgagactgcc tgggtaacca ggaggaaggt 1080

ggggatgacg tcaaatcatc atgcccctta tgtccagggc tacacacgtg ctacaatggt 1140

aggtacaata agacgcaaga ccgtgaggtg gagcaaaact tataaaacct atctcagttc 1200

ggattgtagg ctgcaactcg cctacatgaa gctggagttg ctagtaatcg cgaatcagaa 1260

tgtcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgagagctgg 1320

taacacccga agtccgtgag gtaaccgtaa ggagc 1355

<210> 561
<211> 1366
<212> DNA
<213> Clostridium butyricum

<400> 561
tcgagcgatg aagctccttc gggagtggat tagcggcgga cgggtgagta acacgtgggt 60

aacctgcctc atagagggga atagcctttc gaaaggaaga ttaataccgc ataagattgt 120

agtaccgcat ggtacagcaa ttaaaggagt aatccgctat gagatggacc cgcgtcgcat 180

tagctagttg gtgaggtaac ggctcaccaa ggcgacgatg cgtagccgac ctgagagggt 240

gatcggccac attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 300

tattgcacaa tgggggaaac cctgatgcag caacgccgcg tgagtgatga cggtcttcgg 360

attgtaaagc tctgtcttta gggacgataa tgacggtacc taaggaggaa gccacggcta 420

actacgtgcc agcagccgcg gtaatacgta ggtggcaagc gttgtccgga tttactgggc 480

gtaaagggag cgtaggtgga tatttaagtg ggatgtgaaa tacccgggct taacctgggt 540

gctgcattcc aaactggata tctagagtgc aggagaggaa aggagaattc ctagtgtagc 600

ggtgaaatgc gtagagatta ggaagaatac cagtggcgaa ggcgcctttc tggactgtaa 660

ctgacactga ggctcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 720

ccgtaaacga tgaatactag gtgtaggggt tgtcatgacc tctgtgccgc cgctaacgca 780

ttaagtattc cgcctgggga gtacggtcgc aagattaaaa ctcaaaggaa ttgacggggg 840

cccgcacaag cagcggacat gtggtttaat tgaagcaacg cgaagaacct tacctagact 900

tgacatctcc tgaattctct gtaatggaga agccacttcg gtggcaggaa gacaggtggt 960

gcatggttgt ggtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1020

ccttattgtt agttgctccc atttagttga gcactctagc gagactgccc gggttaaccg 1080

ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtctagggc tacacacgtg 1140

ctacaatggt cggtacaatg agatgcaacc tcgcgagagt gagcaaaact ataaaaccga 1200

tctcagttcg gattgtaggg tgaaactcgc ctacatgaag ctggagttgc tagtaatcgc 1260

gaatcagaat gtcgcggaga atacgttccc gggccttgta cacaccgccc gtcacaccat 1320

gagagttggc aatacccaaa gttcgtgagc taaccgcaag gaggca 1366

<210> 562
<211> 1473
<212> DNA
<213> Clostridium cadaveris

<400> 562
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gagggagcac cttcgggtgt gaactagcgg cggacgggtg agtaacacgt gggcaacctg 120

ccttacagag ggggatagcc ttccgaaagg aagattaata ccgcatatta tgatttttct 180

gcatgggaaa gtcatgaaag gagcaatccg ctgtaagatg ggcccgcggc gcattagcta 240

gttggtgagg taagggctca ccaaggcgac gatgcgtagc cgacctgaga gggtgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatggggg aaaccctgat gcagcaacgc cgcgtgagtg atgacggcct tcgggttgta 420

aagctctgtc ttcagggacg ataatgacgg tacctgagga ggaagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc gagcgttatc cggatttact gggcgtaaag 540

gatgcgtagg tggaatttta agtgggatgt gaaatacccg ggctcaacct gggaactgca 600

ttccaaactg gaattctaga gtgcaggaga ggaaagcgga attcctagtg tagcggtgaa 660

atgcgtagag attaggaaga acaccagtgg cgaaggcggc tttctggact gtaactgaca 720

ctgaggcatg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgggta ctaggtgtag gggtttcgat acctctgtgc cgccgtaaac acaataagta 840

ccccgcctgg ggagtacggt cgcaagatta aaactcaaag gaattgacgg gggcccgcac 900

aagtagcgga gcatgtggtt taattcgaag caacgcgaag aaccttacct agacttgaca 960

tgtcctgaat tacctgtaat aagggaagct ctttcgggag caggaacaca ggtggtgcat 1020

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct 1080

atagttagtt gctaacagta agatgagcac tctagctaga ctgccgtggt taacgcggag 1140

gaaggtgggg atgacgtcaa atcatcatgc cccttatgtc tagggctaca cacgtgctac 1200

aatggcgaga acaaagagaa gcaagaccgc gaggtggagc aaaactcata aaactcgtcc 1260

cagttcggat tgcaggctgc aactcgcctg catgaagccg gagttactag taatcgcgaa 1320

tcagaatgtc gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatgag 1380

agttggcaat acccaaagtc cgtgaggtaa ccgaaaggag ccagcggcct aaggtagggt 1440

cagcgattgg ggtgaagtcg taacaaggta acc 1473

<210> 563
<211> 1499
<212> DNA
<213> Clostridium carboxidivorans

<400> 563
ttgatcctgg ctcaggacga acgctggcgg cgtgcttaac acatgcaagt cgagcgatga 60

aatcccttcg gggatggatt agcggcggac gggtgagtaa cacgtgggca acctgcctca 120

aagtggggga tagccttccg aaagggagat taataccgca taacattagt ttttcacatg 180

aaatactaat taaaggagta atccgctttg agatgggccc gcggcgcatt agctagttgg 240

tgaggtaacg gctcaccaag gccacgatgc gtagccgacc tgagagggtg atcggccaca 300

ttggaactga gacacggtcc agactcctac gggaggcagc agtggggaat attgcacaat 360

gggcgaaagc ctgatgcagc aacgccgcgt gagtgatgaa ggccttcggg ttgtaaagct 420

ctgtctttgg ggacgataat gacggtaccc aaggaggaag ccacggctaa ctacgtgcca 480

gcagccgcgg taatacgtag gtggcgagcg ttgtccggat ttactgggcg taaaggatgc 540

gtaggcggat gtttaagtca gatgtgaaaa tcccgagctt aacttgggaa ctgcatttga 600

aactggatat ctagagtgcg ggagaggaga atggaattcc tagtgtagcg gtgaaatgcg 660

tagagattag gaagaacacc agtggcgaag gcgattctct ggaccgtaac tgacgctgag 720

gcatgaaagc gtgggtagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 780

gaatactagg tgtaggaggt atcgactcct tctgtgccgc agctaacgca ataagtattc 840

cgcctgggaa gtacgatcgc aagattaaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cagcggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttacctaga cttgacatcc 960

cctgaattac ctgtaatgag ggaagccctt cggggcaggg agacaggtgg tgcatggttg 1020

tcgtcagctc gtgtcgtgag atgttaggtt aagtcctgca acgagcgcaa cccttatcat 1080

tagttgctac cattaagttg agcactctag tgagactgcc cgggttaacc gggaggaagg 1140

tggggatgac gtcaaatcat catgcccctt atgtctaggg ctacacacgt gctacaatgg 1200

tgagtacaga aagatgcaag accgtgaggt ggagcaaaac ttttaaaact catctcagtt 1260

cggattgtag gctgaaactc gcctacatga agctggagtt gctagtaatc gcgaatcagc 1320

atgtcgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgagagctg 1380

gcaacacccg aagtccgtga ggtaaccgta aggagccagc ggccgaaggt ggggttagta 1440

attggggtga agtcgtaaca aggtagccgt aggagaacct gcggctggat cacctcctt 1499

<210> 564
<211> 1458
<212> DNA
<213> Clostridium carnis

<220>
<221> modified_base
<222> (1)..(3)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (92)..(92)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (96)..(97)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (606)..(607)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (837)..(837)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (930)..(944)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1172)..(1172)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1360)..(1360)
<223> a, c, t, g, unknown or other

<400> 564
nnntaggtga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taacacatgc 60

aagtcgagcg aggggagttt cttcggaaac cnaacnnagc ggcggacggg tgagtaacac 120

gtgggcaacc tgccttgtag aggggaatag ccttccgaaa ggaagattaa taccgcataa 180

tattgcagct tcgcatgaag cagtaattaa aggagcaatc cgctacaaga tgggcccgcg 240

gcgcattagc tagttggtga ggtaacggct caccaaggcg acgatgcgta gccgacctga 300

gagggtgatc ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ggaaaccctg atgcagcaac gccgcgtgag tgatgaaggt 420

tttcggatcg taaagctctg tcttcgggga cgataatgac ggtacccgag gaggaagcca 480

cggctaacta cgtgccagca gccgcggtaa tacgtaggtg gcaagcgttg tccggattta 540

ctgggcgtaa agggagcgta ggcggacttt taagtgagat gtgaaatacc cgggctcaac 600

ctgggnnctg catttcaaac tggaagtcta gagtgcagga gaggagagtg gaattcctag 660

tgtagcggtg aaatgcgtag agattaggaa gaacaccagt ggcgaaggcg actctctgga 720

ctgtaactga cgctgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag 780

tccacgccgt aaacgatgaa tactaggtgt aggggttgtc atgacctctg tgccgcngct 840

aacgcattaa gtattccgcc tggggagtac ggtcgcaaga ttaaaactca aaggaattga 900

cgggggcccg cacaagcagc ggagcatgtn nnnnnnnnnn nnnnaacgcg aagaacctta 960

cctagacttg acatctcctg cattactctt aatcgaggaa gtcctttcgg ggacaggatg 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttattgtta gttgctacca tttagttgag cactctagcg agactgcccg 1140

ggttaaccgg gaggaaggtg gggatgacgt cnaatcatca tgccccttat gtctagggct 1200

acacacgtgc tacaatggca agtacaaaga gatgcaatac cgcgaggtgg agctaaacta 1260

taaaacttgt ctcagttcgg attgtaggct gaaactcgcc tacatgaagc tggagttgct 1320

agtaatcgcg aatcagcatg tcgcggtgaa tacgttcccn ggccttgtac acaccgcccg 1380

tcacaccatg agagttggca atacccaaag ttcgtgagct aaccgcaagg aggcagcgac 1440

ctaaggtagg gtcagcga 1458

<210> 565
<211> 1012
<212> DNA
<213> Clostridium celatum

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (40)..(42)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (63)..(63)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (107)..(107)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (109)..(109)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (111)..(111)
<223> a, c, t, g, unknown or other

<400> 565
gggtgtaaag ctcngtcttc agggacgata atgacggtan nngaggagga agccacggct 60

aantacgtgc cagcagccgc ggtaatacgt aggtggcgag cgttgtncng natttactgg 120

gcgtaaaggg agcgtaggcg gacttttaag tgagatgtga aatacccggg ctcaacttgg 180

gtgctgcatt tcaaactgga agtctagagt gcaggagagg agaatggaat tcctagtgta 240

gcggtgaaat gcgtagagat taggaagaac accagtggcg aaggcgattc tctggactgt 300

aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 360

cgccgtaaac gatgaatact aggtgtaggg gttgtcatga cctctgtgcc gccgctaacg 420

cattaagtat tccgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg 480

ggcccgcaca agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccta 540

gacttgacat ctcctgaatt acccgtaact ggggaagtcg cttcggcgac aggaagacag 600

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 660

gcaaccccta ttgttagttg ctaccattaa gttgagcact ctagcgagac tgcccgggtt 720

aaccgggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac 780

acgtgctaca atggcaagta caaagagaag caagaccgcg aggtggagca aaactcaaaa 840

acttgtctca gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttgctagta 900

atcgcgaatc agcatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 960

accatgagag ttggcaatac ccaaagtgcg tgatctgact cgcaagagag ga 1012

<210> 566
<211> 1435
<212> DNA
<213> Clostridium celerecrescens

<400> 566
catgcaagtc gagcgaagcg atttcaagga agttttcgga cggaattgaa attgactgag 60

cggcggacgg gtgagtaacg cgtgggtaac ctgcctcata cagggggata acagttggaa 120

acgactgcta ataccgcata agcacacagt gccgcatggt acggtgtgaa aaactccggt 180

ggtatgagat ggacccgcgt ctgattaggt agttggtgag gtaacggccc accaagccga 240

cgatcagtag ccgacctgag agggtgaccg gccacattgg gactgagaca cggcccaaac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggg gaaaccctga tccagcgacg 360

ccgcgtgagt gaagaagtat ttcggtatgt aaagctctat cagcagggaa gaaaatgacg 420

gtacctgact aagaagcccc ggctaactac gtgccagcag ccgcggtaat acgtaggggg 480

caagcgttat ccggatttac tgggtgtaaa gggagcgtag acggcactgc aagtctggag 540

tgaaagcccg gggctcaacc ccgggactgc tttggaaact gtggtgctgg agtgcaggag 600

aggtaagtgg aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg 660

gcgaaggcgg cttactggac tgtaactgac gttgaggctc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgaat actaggtgtt ggggagcaaa 780

gctcttcggt gccgccgcta acgcaataag tattccacct ggggagtacg ttcgcaagaa 840

tgaaactcaa aggaatttga cggggacccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg aagaacctta ccaagtcttg acatcggaat gaccgggatg taacgatccc 960

ttccctacgg ggcattccag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttatcctta gtagccagca agttaagttg 1080

ggcactctgg ggagactgcc agggataacc tggaggaagg tggggatgac gtcaaatcat 1140

catgcccctt atgatttggg ctacacacgt gctacaatgg cgtaaacaaa gggaagcaaa 1200

ggagcgatct ggagcaaacc ccaaaaataa cgtctcagtt cggattgtag tctgcaactc 1260

gactacatga agctggaatc gctagtaatc gcggatcaga atgccgcggt gaatacgttc 1320

ccgggtcttg tacacaccgc ccgtcacacc atgggagttg gtaacgcccg aagtcagtga 1380

cccaaccgta aggagggagc tgccgaaggc gggactgata actggggtga agtcg 1435

<210> 567
<211> 1500
<212> DNA
<213> Clostridium cellulosi

<220>
<221> modified_base
<222> (1380)..(1381)
<223> a, c, t, g, unknown or other

<400> 567
tttgatcctg gctcaggacg aacgctggcg gcgtgcctaa cacatgcaag tcgagcggag 60

atagtacttc ggttctatct tagcggcgga cgggtgagta acgcgtgagc aacctgccct 120

gagcacgggg atagcgtctg gaaacggacg gtaataccgc ataatgtacg ttggaggcat 180

ctccgatgta ccaaaggagg aatccactca aggatgggct cgcgtccgat taggtagttg 240

gtgaggtaac ggcccaccaa gcctgcgatc ggtagccgga ctgagaggtt gtacggccac 300

attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa tattgcacaa 360

tggaggaaac tctgatgcag cgacgccgcg tgagggaaga aggtcttcgg attgtaaacc 420

tctgtctttc gggacgaagg aagtgacggt accgaaagag gaagccacgg ctaactacgt 480

gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggaattactg ggtgtaaagg 540

gtgcgtaggc gggttgtcaa gttggatgtg aaatctctgg gcttaactca gaggttgcat 600

tcaaaactgg cgatcttgag tgaggtagag gcaggcggaa ttcccggtgt agcggtgaaa 660

tgcgtagata tcgggaggaa caccagtggc gaaggcggcc tgctgggcct taactgacgc 720

tgaggcgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc atgctgtaaa 780

cgatgattgc taggtgtggg tggactgacc ccatccgtgc cggagttaac acaataagca 840

tcccacctgg ggagtacggc cgcaaggctg aaactcaaag gaattgacgg gggcccgcac 900

aagcagtgga gtatgtggtt taattcgaag caacgcgaag aaccttacca ggtcttgaca 960

tccaccgaat ccggaagaga ttctggagtg cccttcgggg agcggtgaga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttgttaatag ttgctacgca agagcactct attaagactg ccgttgataa aacggaggaa 1140

ggtggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtactacaat 1200

ggccgccaac aaagggaagc aataccgcga ggtggagcga atccccaaaa gcggtcccag 1260

ttcagattgc aggctgcaac ccgcctgcat gaagacggaa ttgctagtaa tcgcggatca 1320

gcatgccgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgagagn 1380

nggcaacacc cgaagtcgtt tgcgtaaccg aaaggagcgc ggcgccgaag gtgggatcgg 1440

tgattggggt gaagtcgtaa caaggtagcc gtatcggaag gtgcggctgg atcacctcct 1500

<210> 568
<211> 1283
<212> DNA
<213> Clostridium chauvoei

<400> 568
tgggcaacct gccttgtaga ggggaatagc cttccgaaag gaagattaat accgcataat 60

attgcagctt cgcatggagc agtaattaaa ggagcaatcc gctacaagat gggcccgcgg 120

cgcattagct agttggtgag gtaacggctc accaaggcga cgatgcgtag ccgacctgag 180

agggtgatcg gccacattgg gactgagaca cggcccagac tcctacggga ggcagcagtg 240

gggaatattg cacaatgggg gaaaccctga tgcagcaacg ccgcgtgagt gatgaaggtt 300

ttcggatcgt aaagctctgt cttcagggac gataatgacg gtacctgagg aggaagccac 360

ggctaactac gtgccagcag ccgcggtaat acgtaggtgg cgagcgttgt ccggattttt 420

tgggcgtaaa gggagcgtag gcggacttgt aagtgagatg tgaaataccc gggctcaact 480

tgggtgctgc atttcaaact ggaagtctag agtgcaggag aggagagtgg aattcctagt 540

gtagcggtga aatgcgtaga gattaggaag aacaccagtg gcgaaggcga ctctctggac 600

tgtaactgac gctgaggctc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 660

ccacgccgta aacgatggat actaggtgtg ggaggtatca actccttccg tgccgccgtt 720

aacacattaa gtatcccgcc tggggagtac ggtcgcaaga ttaaaactca aaggaattga 780

cgctagcccg cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta 840

cctagacttg acatctcctg cattactctt aatcgaggaa gtctcttcgg agacaggatg 900

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 960

gagcgcaacc cttattgtta gttgctacca tttagttgag cactctagcg agactgcccg 1020

ggttaaccgg gaggaaggtg gtagtgacgt caaatcatca tgcccccttat gtctagggct 1080

acacacgtgc tagaatggca agtacaacga gatgcaatac cgcgaggtgg agctaaacta 1140

taaaacttgt ctcagttcgg attgtaggct gaaactcgcc tacatgaagc tggagttgct 1200

agtaatcgcg aatcagcatg tcgcggtgaa tacgttcccg agccttgtac acaccgcccg 1260

tcacaccatg agagttggca ata 1283

<210> 569
<211> 1383
<212> DNA
<213> Clostridium citroniae

<220>
<221> modified_base
<222> (12)..(14)
<223> a, c, t, g, unknown or other

<400> 569
acgaagcaat tnnnaatgaa gttttcggat ggatttctga ttgactgagt ggcggacggg 60

tgagtaacgc gtggataacc tgcctcacac tgggggataa cagttagaaa tggctgctaa 120

taccgcataa gcgcacagta ccgcatggta cggtgtgaaa aactccggtg gtgtgagatg 180

gatccgcgtc tgattagtta gttggcgggg taacggccca ccaagacagc gatcagtagc 240

cgacctgaga gggtgaccgg ccacattggg actgagacac ggcccaaact cctacgggag 300

gcagcagtgg ggaatattgc acaatgggcg aaagcctgat gcagcgacgc cgcgtgagtg 360

aagaagtatt tcggtatgta aagctctatc agcagggaag aaaatgacgg tacctgacta 420

agaagccccg gctaactacg tgccagcagc cgcggtaata cgtaggggggc aagcgttatc 480

cggatttact gggtgtaaag ggagcgtaga cggcgaagca agtctggagt gaaaacccag 540

ggctcaaccc tgggactgct ttggaaactg ttttgctaga gtgtcggaga ggtaagtgga 600

attcctagtg tagcggtgaa atgcgtagat attaggagga acaccagtgg cgaaggcggc 660

ttactggacg ataactgacg ttgaggctcg aaagcgtggg gagcaaacag gattagatac 720

cctggtagtc cacgccgtaa acgatgaatg ctaggtgttg gggggcaaag cccttcggtg 780

ccgtcgcaaa cgcaataagc attccacctg gggagtacgt tcgcaagaat gaaactcaaa 840

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 900

gaaccttacc aagtcttgac atccccctga ccggtcggta aagcggcctt tccttcggga 960

caggggagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaaccct tatccttagt agccagcagg taaagctggg cactctaggg 1080

agactgccag ggataacctg gaggaaggtg gggatgacgt caaatcatca tgcccttat 1140

gatttgggct acacacgtgc tacaatggcg taaacaaagg gaagcgaccc tgcgaaggca 1200

agcaaatccc aaaaataacg tcccagttcg gactgtagtc tgcaacccga ctacacgaag 1260

ctggaatcgc tagtaatcgc gaatcagaat gtcgcggtga atacgttccc gggtcttgta 1320

cacaccgccc gtcacaccat gggagtcagc aacgcccgaa gtcagtgacc caaccgaaag 1380

gag 1383

<210> 570
<211> 1560
<212> DNA
<213> Clostridium clariflavum

<400> 570
gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc ggtcctgcat tcaacattga 60

gtattcagct gacgttggag attgagccgg cgtcaagcag aaacaaccat atactatgat 120

atgtttaaag tttctgcttc acgctgaata aagtgccaac acaaaaagga gctgagtatt 180

gaatgttgaa tgcaggatag cggcggacgg gtgagtaacg cgtgggtaat ctgcctcaca 240

caggggata acactgggaa actagtgcta ataccgcata acataacgag gtggcatcac 300

tttgttatca aaggagcaat ccggtgtgag atgagcccgc gtccgattag ctagttggtg 360

aggtaacggc tcaccaaggc gacgatcggt agccgaactg agaggttgat cggccacatt 420

gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat tgcgcaatgg 480

gggaaaccct gacgcagcaa cgccgcgtga aggaagaagg tcttcggatt gtaaacttct 540

ttggttgggg acgataatga cggtacccaa ggaacaagcc acggctaact acgtgccagc 600

agccgcggta atacgtaggt ggcgagcgtt gtccggaatt actggatgta aagggcgcgt 660

aggcggggat gcaagtcaga tgtgaaattc cggggctcaa ccccggcgct gcatctgaaa 720

ctgtatttct tgagtgttgg agaggaaagc ggaattccta gtgtagcggt gaaatgcgta 780

gagattagga ggaacaccag tggcgaaggc ggctttctgg acagtaactg acgctgaggc 840

gcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatgg 900

atactaggtg taggaggtat cgacccctc tgtgccggag ttaacacaat aagtatccca 960

cctggggagt acggccgcaa ggttgaaact caaaggaatt gacggggcc cgcacaagca 1020

gtggagtatg tggtttaatt cgaagcaacg cgaagaacct taccagggct tgacatccct 1080

ctgacagctc tagagatagg gcttctcttc ggagcagagg agacaggtgg tgcatggttg 1140

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgttgt 1200

tagttgccat cattaagttg ggcactctaa cgagactgcc ggtgataaat cggaggaagg 1260

tggggacgac gtcaaatcat catgcccctt atgtcctggg ctacacacgt actacaatgg 1320

ctgctacaaa gggaagcgag accgcgaggt ggagcaaatc cccaaaagca gtcccagttc 1380

agattgcagg ctgaaactcg cctgcatgaa gtcggaattg ctagtaatgg caggtcagca 1440

tactgccgtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgagagtctg 1500

caacacccga agtcagtagt ctaaccgaga ggagggcgct gccgaaggtg gggcagatga 1560

<210> 571
<211> 1475
<212> DNA
<213> Clostridium clostridiiformes

<220>
<221> modified_base
<222> (534)..(534)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (917)..(917)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (954)..(954)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1010)..(1010)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1453)..(1453)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1471)..(1471)
<223> a, c, t, g, unknown or other

<400> 571
aacatgagag tttgatcctg gctcaggatc aacgctggcg gcgtgcctaa cacatgcaag 60

tcgaacgaag caattaagat gaagttttcg gatggaatct tgattgactg agtggcggac 120

gggtgagtaa cgcgtggata acctgcctca cactggggga taacagttag aaatgactgc 180

taataccgca taagcgcaca gtgccgcatg gcagtgtgtg aaaaactccg gtagtgtgag 240

atggatccgc gtctgattag ccagttggcg gggtaacggc ccaccaaagc gacgatcagt 300

agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa actcctacgg 360

gaggcagcag tggggaatat tgcacaatgg gcgaaagcct gatgcagcga cgccgcgtga 420

gtgaagaagt atttcggtat gtaaagctct atcagcaggg aagaaaatga cggtacctga 480

ctaagaagcc ccggctaact acgtgccagc agccgcggta atacgtaggg ggcnagcgtt 540

atccggattt actgggtgta aagggagcgt agacggcgaa gcaagtctga agtgaaaacc 600

cagggctcaa ccctggcact gctttggaaa ctgttttgct agagtgtcgg agaggtaagt 660

ggaattccta gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc 720

ggcttactgg acgataactg acgttgaggc tcgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga atgctaggtg ttgggggca aagccttcgg 840

tgccgccgca aacgcagtaa gcattccacc tggggagtac gttcgcaaga atgaaactca 900

aaggaattga cggggganccg cacaagcggt ggagcatgtg gtttaattcg aagnaacgcg 960

aagaacctta ccaagtcttg acatcccccct gacggccggt aacgcggccn ttcttcggga 1020

caggggagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tatccttagt agccagcagg taaagctggg cactctaggg 1140

agactgccag ggataacctg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1200

gatttgggct acacacgtgc tacaatggcg taaacaaagg gaagcgagac agtgatgtgg 1260

agcaaatccc aaaaataacg tcccagttcg gactgtagtc tgcaacccga ctacacgaag 1320

ctggaatcgc tagtaatcgc gaatcagaat gtcgcggtga atacgttccc gggtcttgta 1380

cacaccgccc gtcacaccat gggagtcagc aacgcccgaa gtcagtgacc caaccgaaag 1440

gagggagctg ccnaaggcgg ggcaggtaac ngggg 1475

<210> 572
<211> 1370
<212> DNA
<213> Clostridium clostridioforme

<400> 572
attaagatga agttttcgga tggaatcttg attgactgag tggcggacgg gtgagtaacg 60

cgtggataac ctgcctcaca ctgggggata acagttagaa atgactgcta ataccgcata 120

agcgcacagt gccgcatggc agtgtgtgaa aaactccggt ggtgtgagat ggatccgcgt 180

ctgattagcc agttggcggg gtaacggccc accaaagcga cgatcagtag ccgacctgag 240

agggtgaccg gccacattgg gactgagaca cggcccaaac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggc gaaagcctga tgcagcgacg ccgcgtgagt gaagaagtat 360

ttcggtatgt aaagctctat cagcagggaa gaaaagacgg tacctgctaa gaagccccgg 420

ctaactacgt gccagcagcc gcggtaatac gtaggggggca agcgttatcc ggatttactg 480

ggtgtaaagg gagcgtagac ggcgaagcaa gtctgaagtg aaaacccagg gctcaaccct 540

gggactgctt tggaaactgt tttgctagag tgtcggagag gtaagtggaa ttcctagtgt 600

agcggtgaaa tgcgtagata ttaggaggaa caccagtggc gaaggcggct tactggacga 660

taactgacgt tgaggctcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 720

acgccgtaaa cgatgaatgc taggtgttgg ggggcaaagc ccttcggtgc cgccgcaaac 780

gcagtaagca ttccacctgg ggagtacgtt cgcaagaatg aaactcaaag gaattgacgg 840

ggacccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag aaccttacca 900

agtcttgaca tccccctgac gggccggtaa cgcgggcgtt tcattgggta gaggtagaca 960

ggtggagcat gggcgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1020

cgcaaccctt atccttagta gccagcacgt gaaggtgggc actctaggga gactgccagg 1080

gataacctgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg atttgggcta 1140

cacacgtgct acaatggcgt aaacaaaggg aagcgagaca gtgatgtgga gcaaatccca 1200

aaaataacgt cccagttcgg actgtagtct gcaacccgac tacacgaagc tggaatcgct 1260

agtaatcgcg aatcagaatg tcgcggtgaa tacgttcccg ggtcttgtac acaccgcccg 1320

tcacaccatg ggagtcagca acgcccgaag tcagtgaccc aaccgaaagg 1370

<210> 573
<211> 1521
<212> DNA
<213> Clostridium coccoides

<400> 573
tttgagtttg atcctggctc aggatgaacg ctggcggcgt gcttaacaca tgcaagtcga 60

gcgaagcgct aagacagatt tcttcggatt gaagtctttg tgactgagcg gcggacgggt 120

gagtaacgcg tgggtaacct gcctcataca gggggataac agttagaaat gactgctaat 180

accgcataag cgcacaggac cgcatggtct ggtgtgaaaa actccggtgg tatgagatgg 240

acccgcgtct gattagctag ttggaggggt aacggcccac caaggcgacg atcagtagcc 300

ggcctgagag ggtgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg 360

cagcagtggg gaatattgca caatggggga aaccctgatg cagcgacgcc gcgtgaagga 420

agaagtatct cggtatgtaa acttctatca gcagggaaga aaatgacggt acctgactaa 480

gaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggcga agcgttatcc 540

ggatttactg ggtgtaaagg gagcgtagac ggaagagcaa gtctgatgtg aaaggctggg 600

gcttaacccc aggactgcat tggaaactgt tgttctagag tgccggagag gtaagcggaa 660

ttcctagtgt agcggtgaaa tgcgtagata ttaggaggaa caccagtggc gaaggcggct 720

tactggacgg taactgacgt tgaggctcga aagcgtgggg agcaaacagg attagatacc 780

ctggtagtcc acgccgtaaa cgatgaatac taggtgtcgg gtggcaaagc cattcggtgc 840

cgcagcaaac gcaataagta ttccacctgg ggagtacgtt cgcaagaatg aaactcaaag 900

gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag 960

aaccttacca agtcttgaca tccctctgac cgtcccgtaa cgggggcttc ccttcggggc 1020

agaggagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt atccttagta gccagcacat gatggtgggc actctaggga 1140

gactgccggg gataacccgg aggaaggcgg ggacgacgtc aaatcatcat gccccttatg 1200

atttgggcta cacacgtgct acaatggcgt aaacaaaggg aagcgagaca gcgatgttga 1260

gcgaatccca aaaataacgt cccagttcgg actgcagtct gcaactcgac tgcacgaagc 1320

tggaatcgct agtaatcgcg gatcagaatg ccgcggtgaa tacgttcccg ggtcttgtac 1380

acaccgcccg tcacaccatg ggagtcagta acgcccgaag tcagtgacct aaccgaaagg 1440

aaggagctgc cgaaggcggg accgataact ggggtgaagt cgtaacaagg tagccgtatc 1500

ggaaggtgcg gctggatccc c 1521

<210> 574
<211> 1462
<212> DNA
<213> Clostridium cochlearium

<220>
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (289)..(289)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (523)..(523)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (930)..(943)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (967)..(967)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1136)..(1136)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1213)..(1213)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1363)..(1363)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1383)..(1383)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1458)..(1458)
<223> a, c, t, g, unknown or other

<400> 574
nnttaaattg agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg 60

caagtcgagc gatgaagctt ccttcgggaa gtggattagc ggcggacggg tgagtaacac 120

gtgggcaacc tgcctcaaag aggggaatag ccctccgaaa ggaggattaa taccgcataa 180

agttagagtt tcgcatgaaa ctttaaccaa aggagtaatc tgctttgaga tgggcccgcg 240

tcccattagc tagttggtaa ggtaatggct taccaaggca acgatgggna gccgacctga 300

gagggtgatc ggccacattg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcgcaatggg ggaaaccctg acgcagcaac gccgcgtggg tgatgaaggt 420

tttcggatcg taaaaccctg ttttctggga cgataatgac ggtaccagat gaggaagcca 480

cggctaacta cgtgccagca gccgcggtaa tacgtaggtg gcnagcgttg tccggattta 540

ctgggcgtaa agggtgcgta ggcggatgct taagtgagat gtgaaatacc taggcttaac 600

ttaggggctg catttcaaac tgggcatcta gagtacagga gagggaaacg gaattcctag 660

tgtagcggtg aaatgcgtag agattaggaa gaacaccagt ggcgaaggcg gtttcctgga 720

ctgtaactga cgctgaggca cgaaagcgtg ggtagcaaac aggattagat accctggtag 780

tccacgccgt aaacgatgaa tactaggtgt aggagggtcc aaccttctgt gccgcagtta 840

acacattaag tattccgcct ggggagtacg gtcgcaagac taaaactcaa aggaattgac 900

gggggcccgc acaagcagcg gagcatgtgn nnnnnnnnnn nnnaacgcga agaaccttac 960

ctggacntga catcccctga attactcgta actgaggaaa tctcttcgga gacagggaga 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttattattag ttgctaccat taagttgagc actctaatga gactgnccgg 1140

gtgaaccggg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg tccagggcta 1200

cacacgtgct acnatggtgg gtacagagag aagcgatacc gcgaggtgga gcaaatctca 1260

aaaacccatc ccagttcgga ttgcaggctg aaactcgcct gcatgaagcc ggagttgcta 1320

gtaatcgcaa atcagaatgt tgcggtgaat acgttcccgg gcnttgtaca caccgcccgt 1380

canaccatga gagttggcaa cacccgaagt ccgtgaggta accgtaagga gccagcggcc 1440

gaaggtgggg ttaatgantg gg 1462

<210> 575
<211> 1489
<212> DNA
<213> Clostridium cocleatum

<400> 575
ctcaggatga acgctggcgg cgtgcctaat acatgcaagt cgaacgcggg cacttgtgcc 60

cgagtggcga acgggtgagt aatacataag taacctggcc tttacagggg gataactgct 120

ggaaacggta gctaagaccg cataggtagg gacactgcat ggtgaccgta ttaaaagtgc 180

tgcaaggcac tggtagagga tggacttatg gcgcattagc tggttggtga ggtaacggct 240

caccaaggcg acgatgcgta gccgacctga gagggtgacc ggccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt agggaatttt cggcaatggg gggaaccctg 360

accgagcaac gccgcgtgaa ggaagaagga attcgttctg taaacttctg ttataaagga 420

agaaaggcgg atggaggaaa tgacatccga gtgacggtac tttatgagaa agccacggct 480

aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttatccgg aattattggg 540

cgtaaagagg gagcaggcgg cagcaaaggt ctgtggtgaa agactgaagc ttaacttcag 600

taagccatag aaaccaggca gctagagtgc aggagaggat cgtggaattc catgtgtagc 660

ggtgaaatgc gtagatatat ggaggaacac cagtggcgaa ggcgacgatc tggcctgtaa 720

ctgacgctca gtcccgaaag cgtggggagc aaataggatt agataccta gtagtccacg 780

ccgtaaacga tgagtactaa gtgttggaag tcaaatttca gtgctgcagt taacgcagta 840

agtactccgc ctgagtagta gcttcgcaag aatgaaactc aaaggaattg acgggggccc 900

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt 960

gacatactca taaaggatcc agagatggat agatagttat atgagataca ggtggtgcat 1020

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt 1080

atcgttagtt accatcatta agttggggac tctagcgaga ctgccagtga caagctggag 1140

gaaggcgggg atgacgtcaa atcatcatgc cccttatgac ctgggctaca cacgtgctac 1200

aatggatggt gcagagggaa gcgaagccgc gaggcgaagc aaaacccata aaaccattct 1260

cagttcggat tgtagtctgc aactcgacta catgaagttg gaatcgctag taatcgcgaa 1320

tcagcatgtc gcggtgaata cgttctcggg ccttgtacac accgcccgtc acaccatgag 1380

agttgataac acccgaagcc ggtggcctaa ccgaaaggaa ggagctgtct aaggtgggat 1440

tgatgattgg ggtgaagtcg taacaaggta tccctacggg aacgtgggg 1489

<210> 576
<211> 1451
<212> DNA
<213> Clostridium colicanis

<220>
<221> modified_base
<222> (729)..(729)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (873)..(873)
<223> a, c, t, g, unknown or other

<400> 576
agtcgagcga tgaaattttc ttcggaaatg gattagcggc ggacgggtga gtaacacgtg 60

ggtaacctgc cctatagaga gggatagcct tccgaaaggg agattaatac ctcataatat 120

cctagtatcg catgatacat ggattaaagg agcaatccgc tataggatgg acccgcggcg 180

cattagctag ttggtgaggt aacggctcac caaggcgacg atgcgtagcc gacctgagag 240

ggtgatcggc cacattggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatattgca caatggggga aaccctgatg cagcaacgcc gcgtgagtga tgacggtctt 360

cggattgtaa agctctgtct ttagggacga taatgacggt acctaaggag gaagccacgg 420

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttactg 480

ggcgtaaagg gagcgtaggc ggatctttaa gtgggatgtg aaatactcgg gctcaacctg 540

ggggctgcat tccaaactgg ggatctagag tacaggaggg gagagtggaa ttcctagtgt 600

agcggtgaaa tgcgtagaga ttaggaagaa caccagtggc gaaggcgact ctctggactg 660

taactgacgc tgaggctcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 720

acgccgtana cgatgaatac taggtgtagg gggtgtcaac tccccctgtg ccgccgctaa 780

cgcattaagt attccgcctg gggagtacgg tcgcaagatt aaaactcaaa ggaattgacg 840

ggggcccgca caagtagcgg agcatgtggt ttnattcgac gcacgcgaag aacttaccta 900

gacttgacat cttctgcatt acccttaatc ggggaagttc cttcggggac agaatgacag 960

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1020

gcaaccctta ttgttagttg ctaccattta gttgagcact ctagcgagac tgcccgggtt 1080

aaccgggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac 1140

acgtgctaca atggccggta cagaaagacg cgataccgcg aggtggagca aaactttaaa 1200

accggtctca gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttactagta 1260

atcgcgaatc agcatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1320

accatgagag ttggcaatac ccaaagttcg tgagctaacc gcaaggaggc agcgacctaa 1380

ggtagggtca gcgattgggg tgaagtcgta acaaggtagc cgtaggagaa cctgcggctg 1440

gatcacctcc t 1451

<210> 577
<211> 1473
<212> DNA
<213> Clostridium colinum

<400> 577
cggcgtgcct aacacatgca agtcgagcgg agttttatgg gagcttgctt ttataaaact 60

tagcggcgga cgggtgagta acgcgtgggt aacctgccct atacacaggg ataacattga 120

gaaattgatg ctaatacctg ataagccaac agtaggcatc tacaagttgg aaaaactgag 180

gtggtatagg aggggcccgc gtctgattag ctagttggtg gggtaaaggc ctaccaaggc 240

gacgatcagt agccgacctg agagggtgat cggccacatt ggaactgaga cacggtccaa 300

actcctacgg gaggcagcag tggggaatat tgcacaatgg ggggaaccct gatgcagcaa 360

cgccgcgtga aggaagaagt atttcggtat gtaaacttct atcgacaggg aagaaataaa 420

tgacggtacc tgaataagaa gcaccggcta aatacgtgcc agcagccgcg gtaatacgta 480

tggtgcaagc gttatccgga tttactgggt gtaaagggtg agtaggcggt tatgcaagtc 540

atatgtgaaa ttctggggct caacctcagg gctgcataag aaactgtgta actagagtac 600

aggagaggta agcggaattc ctagtgtagc ggtgaaatgc gtagatatta ggaagaacac 660

cggtggcgaa ggcggcttac tggactgaaa ctgacgctga gtcacgaaag cgtggggagc 720

gaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttgggaa 780

gagattctcg gtgccgcagc aaacgcaata agcactccac ctggggagta cgaccgcaag 840

gttgaaactc aaaggaattg acggggaccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg aagaacctta cctaaacttg acatcccgat gacaatctgt gtaatgcaga 960

ctttcttcgg aacatcggtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1020

gttgggttaa gtcccgcaac gagcgcaacc cctattctta gtagccagca wttcggatgg 1080

gcactctagg gagactgccg tggataacac ggaggaaggt ggggatgacg tcaaatcatc 1140

atgcccctta tgtttagggc tacacacgtg ctacaatggc tgtaacaaag tgaagcaaga 1200

tagtgatatg gagcaaagca caaaaaagca gtcccagttc ggattgtagt ctgcaactcg 1260

actacatgaa gttggaatcg ctagtaatcg cgaatcagaa tgtcgcggtg aatacgttcc 1320

cgggtcttgt acacaccgcc cgtcacacca tgggagttgg aagcgcccga agcctgtgac 1380

ctaaccgcaa ggaggagcag tcgaaggtga agccagtgac tggggtgaag tcgtaacaag 1440

gtagccgtat cggaaggtgc gctgatcacc tcc 1473

<210> 578
<211> 1365
<212> DNA
<213> Clostridium difficile

<220>
<221> modified_base
<222> (1347)..(1347)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1352)..(1353)
<223> a, c, t, g, unknown or other

<400> 578
ttgagcgatt tacttcggta aagagcggcg gacgggtgag taacgcgtgg gtaacctacc 60

ctgtacacac ggataacata ccgaaaggta tgctaatacg ggataatata tttgagaggc 120

atctcttgaa tatcaaaggt gagccagtac aggatggacc cgcgtctgat tagctagttg 180

gtaaggtaac ggcttaccaa ggcgacgatc agtagccgac ctgagagggt gatcggccac 240

attggaactg agacacggtc caaactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggcgaaag cctgatgcag caacgccgcg tgagtgatga aggccttcgg gtcgtaaaac 360

tctgtcctca aggaagataa tgacggtact tgaggaggaa gccccggcta actacgtgcc 420

agcagccgcg gtaatacgta gggggctagc gttatccgga tttactgggc gtaaagggtg 480

cgtaggcggt ctttcaagtc aggagtgaaa ggctacggct caaccgtagt aagctcttga 540

aactgggaga cttgagtgca ggagaggaga gtggaattcc tagtgtagcg gtgaaatgcg 600

tagatattag gaggaacacc agttgcgaag gcggctctct ggactgtaac tgacgctgag 660

gcacgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc tgtaaacgat 720

gagtactagg tgtcgggggt tacccccttc ggtgccgcag ctaacgcatt aagtactccg 780

cctgggaagt acgctcgcaa gagtgaaact caaaggaatt gacggggacc cgcacaagta 840

gcggagcatg tggtttaatt cgaagcaacg cgaagaacct tacctaagct tgacatccca 900

atgacatctc cttaatcgga aagttccctt cggggagatt ggggacagag gggaattgct 960

tgtgtagcgc tggtatgggg agatattggg ataagtcccg caacgagcgc aacccttgtc 1020

tttagttgcc atcattaagt tgggcactct agagagactg ccagggataa cctggaggaa 1080

ggtggggatg acgtcaaatc atcatgcccc ttatgcttag ggctacacac gtgctacaat 1140

gggtagtaca gagggttgcc aagccgtaag gtggagctaa tcccttaaag ctactctcag 1200

ttcggattgt aggctgaaac tcgcctacat gaagctggag ttactagtaa tcgcagatca 1260

gaatgctgcg gtgaatgcgt tcccgggtct tgtacacacc gcccgtcaca ccacgggagt 1320

tggagacgcc cgaagccgat tatctancct tnngaagaag tcgtc 1365

<210> 579
<211> 1379
<212> DNA
<213> Clostridium disporicum

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (28)..(29)
<223> a, c, t, g, unknown or other

<400> 579
tcgagcgagt ggangttctt cggaacanna gctagcggcg gacgggtgag taacacgtgg 60

gcaacctgcc tcatagaggg gaatagcctc ccgaaaggga gattaatacc gcataagatt 120

gtagcttcgc atgaagtagc aattaaagga gcaatccgct atgagatggg cccgcggcgc 180

attagctagt tggtgaggta acggctcacc aaggcgacga tgcgtagccg acctgagagg 240

gtgatcggcc acattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatggggaa accctgatgc agcaatgccg cgtgagtgat gacggccttc 360

gggttgtaaa gctctgtctt cggggacgat aatgacggta cccgaggagg aagccacggc 420

taactacgtg ccagcagccg cggtaatacg taggtggcaa gcgttgtccg gatttactgg 480

gcgtaaaggg agcgtaggcg gatttttaag tgagatgtga aatacccggg cttaacttgg 540

gtgctgcatt tcaaactgga agtctagagt gcaggagagg agaagggaat tcctagtgta 600

gcggtgaaat gcgtagagat taggaagaac accagtggcg aaggcgcttc tctggactgt 660

aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 720

cgccgtaaac gatgaatact aggtgtaggg gttgtcatga cctctgtgcc gccgctaacg 780

cattaagtat tccgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg 840

ggcccgcaca agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccta 900

gacttgacat ctcctgaatt acccgtaact ggggaagtcg cttcggcgac aggaagacag 960

taggtgcatg gaagtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1020

gcaaccctta ttgttagttg ctaccattta gttgagcact ctagcgagac tgcccgggtt 1080

aaccgggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac 1140

acgtgctaca atggcaagta caaagagaag caagaccgcg aggtggagca aaactcaaaa 1200

acttgtctca gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttgctagta 1260

atcgcgaatc agcatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1320

accatgagag ttggcaatac ccaaagtgcg tgatctaact cgcaagagag gaagcgccc 1379

<210> 580
<211> 1473
<212> DNA
<213> Clostridium estertheticum

<400> 580
cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc gatgcgatcc 60

ttcggggtca attagcggcg gacgggtgag taacacgtgg gtaacctgcc tcaaagaggg 120

gaatagcctc ccgaaaggga gattaatacc gcataatatg ttttgatcgc atgatcttaa 180

catcaaagga atttttcgga atttcacttt gagatggacc cgcggcgcat tagctagttg 240

gtgaggtaaa ggcccaccaa ggcaacgatg cgtagccgac ctgagagggt gatcggccac 300

attggaactg agacacggtc cagactccta cgggaggcag cagtggggaa tattgcgcaa 360

tgggggaaac cctgacgcag caacgccgcg tgaatgatga aggccttcgg gttgtaaagt 420

tctgtcttct gggacgataa tgacggtacc agaggaggaa gccacggcta actacgtgcc 480

agcagccgcg gtaatacgta ggtggcaagc gttgtccgga tttactgggc gtaaaggatg 540

cgtaggcgga catttaagtc agatgtgaaa tacccgagct taacttgggt gctgcatttg 600

aaactgggtg tctagagtgc aggagaggta agtggaattc ctagtgtagc ggtgaaatgc 660

gtagagatta ggaagaacac cagtggcgaa ggcgacttac tggactgtaa ctgacgctga 720

ggcatgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 780

tgaatactag gtgtcggggg tcgaacctcg gtgccgccgt taacacatta agtattccgc 840

ctggggagta cgatcgcaag attaaaactc aaaggaattg acgggggccc gcacaagcag 900

cggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctagactt gacatccctt 960

gcataactca gagatgagtg aagtccttcg ggacaaggtg acaggtggtg catggttgtc 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttatcatta 1080

gttgctacca ttaagttgag cactctagtg agactgcccg ggttaaccgg gaggaaggtg 1140

gggatgacgt caaatcatca tgccccttat gtctagggct acacacgtgc tacaatggtg 1200

agtacaaaga gatgcaagac cgcaaggtgg agccaaactc aaaaactcat cccagttcgg 1260

attgtaggct gcaactcgcc tacatgaagc cggagttgct agtaatcgcg aatcagcatg 1320

tcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg agagttggta 1380

acacccgaag tccgtgaggt aaccgtaagg agccagcggc cgaaggtggg atcgatgatt 1440

ggggtgaagt cgtaacaagg tagccgtagg aga 1473

<210> 581
<211> 1465
<212> DNA
<213> Clostridium fallax

<220>
<221> modified_base
<222> (1)..(3)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (164)..(164)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (238)..(238)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (337)..(338)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (421)..(421)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (523)..(523)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (858)..(858)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (935)..(935)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (939)..(945)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1151)..(1151)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1171)..(1172)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1360)..(1360)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (1461)..(1462)
<223> a, c, t, g, unknown or other

<400> 581
nnntaaattg agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg 60

caagtcgagc gagagagttt tcttcggaaa actatctagc ggcggacggg tgagtaacac 120

gtgggtaacc tgcctcatag agggggatag cctcccgaaa gggngattaa taccgcataa 180

catcatttta gcgcatgctc aaatgatcaa aggagtaatc cgctatgaga tggacccncg 240

gcgcattagc tagttggtga ggtaacggct caccaaggcc acgatgcgta gccgacctga 300

gagggtgatc ggccacattg ggactgagac acggccnnga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ggaaaccctg atgcagcaac gccgcgtgag tgatgacggc 420

nttcgggttg taaagctctg tctttaggga cgataatgac ggtacctaag gaggaagcca 480

cggctaacta cgtgccagca gccgcggtaa tacgtaggtg gcnagcgttg tccggattta 540

ctgggcgtaa agggagcgta ggtggattct taagtgagat gtgaaatacc cgggcttaac 600

ttgggtcctg catttcaaac tgggaatcta gagtgcagga gaggaaagtg gaattcctag 660

tgtagcggtg aaatgcgtag agattaggaa gaacaccagt ggcgaaggcg actttctgga 720

ctgtaactga cactgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag 780

tccacgccgt aaacgatgga tactaggtgt gggaggtatc aactccttcc gtgccgccgt 840

taacacatta agtatccngc ctggggagta cggtcgcaag attaaaactc aaaggaattg 900

acggggaccc gcacaagcag cggagcatgt ggttnaatnn nnnnnaacgc gaagaacctt 960

acctagactt gacatctcct gaattactct taatcgagga agcccttcgg ggacaggaag 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttattgtta gttgctacca tttagttgag cactctagcg agactgcccg 1140

ggttaaccgg naggaaggtg gggatgacgt nnaatcatca tgccccttat gtctagggct 1200

acacacgtgc tacaatggct ggtacaaaga gaagcaagac cgtgaggtgg agcaaaactc 1260

aaaaaccagt cccagttcgg attgtaggct gaaactcgcc tacatgaagc cggagttgct 1320

agtaatcgcg aatcagcatg tcgcggtgaa tacgttcccn ggtcttgtac acaccgcccg 1380

tcacaccatg agagttggca atacccgaag tctgtgagct aacctgtaaa gggggcaacg 1440

gccgaaggta gggtcagcga nnggg 1465

<210> 582
<211> 1011
<212> DNA
<213> Clostridium favososporum

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (855)..(855)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (929)..(929)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (943)..(943)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (945)..(947)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (949)..(949)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (991)..(991)
<223> a, c, t, g, unknown or other

<400> 582
gcgatgantt tccttcggga aacggattag cggcggacgg gtgagtaaca cgtgggtaac 60

ctgccttata gtgggggata gcctttcgaa aggaagatta ataccgcata agattgtagt 120

atcgcatgat atagcaatta aaggagcaat ccgctataag atggacccgc gtcgcattag 180

ctagttggtg aggtaatggc tcaccaaggc gacgatgcgt agccgacctg agagggtgat 240

cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 300

tgcacaatgg gcgaaagcct gatgcagcaa cgccgcgtga gtgatgacgg ccttcgggtt 360

gtaaaactct gtcttcaggg acgataatga cggtacctga ggaggaagcc acggctaact 420

acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggattt actgggcgta 480

aagggagcgt aggcggatgt ttaagtggga tgtgaaatac tcgggctcaa cttgagtgct 540

gcattccaaa ctggatatct agagtgcagg agaggaaagg agaattccta gtgtagcggt 600

gaaatgcgta gagattagga agaataccag tggcgaaggc gcctttctgg actgtaactg 660

acgctgaggc tcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg 720

taaacgatga atactaggtg taggggttgt catgacctct gtgccgccgc taacgcatta 780

agtattccgc ctggggagta cggtcgcaag attaaaactc aaaggaattg acgggggccc 840

gcacaagcag cggancatgt ggtttaattc gaagcaacgc gaagaacctt acctagactt 900

gacatctcct gaattactct gtaatggang aagctcttcg gancnnnana caggtggtgc 960

atggttgtcg tcagctcgtg tcgtgagatg ntgggttaag tcccgcaacg a 1011

<210> 583
<211> 1439
<212> DNA
<213> Clostridium felsineum

<400> 583
aacgctggcg gcgtgcttaa cacatgcaag tcgagcgggg aacttcggtt cccagcggcg 60

gacgggtgag taacacgtgg gtaacctgcc tcatagtggg gaatagcctt ccgaaaggaa 120

gattaatacc gcataatact cggaaatcac atgatttctg agccaaagga tttattcgct 180

atgagatgga cccgcggcgc attagcttgt tggtgaggta acggctcacc aaggcttcga 240

tgcgtagccg acctgagagg gtgatcggcc acattggaac tgagacacgg tccagactcc 300

tacgggaggc agcagtgggg aatattgcac aatgggggaa accctgatgc agcaacgccg 360

cgtgagtgat gaaggtcttc ggatcgtaaa actctgtctt atgggacgat gatgacggta 420

ccataggagg aagccacggc taactacgtg ccagcagccg cggtaatacg taggtggcaa 480

gcgttgtccg gatttactgg gcgtaaagga tgtgtaggcg gatatttaag tgagatgtga 540

aatccccggg cttaacttgg gggctgcatt tcaaactgga tgtctggagt gcaggagagg 600

aaggcagaat tcctagtgta gcggtgaaat gcgtagagat taggaagaat accagtggcg 660

aaggcggcct tctggactgt aactgacgct gaggcatgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgccgtaaac gatgaatact aggtgtagga ggtatcgact 780

ccttctgtgc cgcagttaac acaataagta ttccgcctgg gaagtacggt cgcaagatta 840

aaactcaaag gaattgacgg ggacccgcac aagcagcgga gcatgtggtt taattcgaag 900

caacgcgaag aaccttacct agacttgaca tctcctgaat tagtccgtaa tggatgaagt 960

cccttcgggg acaggatgac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1020

tgggttaagt cccgcaacga gcgcaaccct tatcattagt tgctaacatt tagttgagca 1080

ctctagtgag actgcccggg ttaaccggga ggaaggtggg gatgacgtca aatcatcatg 1140

ccccttatgt ctagggctac acacgtgcta caatggtagg gacaaaaaga tgctataccg 1200

caaggtggag ctaaactcaa aaccctatcc cagttcggat tgtaggctga aactcgccta 1260

catgaagccg gagttgctag taatcgcgaa tcagaatgtc gcggtgaata cgttcccggg 1320

tcttgtacac accgcccgtc acaccatgag agtcggcaac acccgaagcc cgtgaggtaa 1380

ccttttggaa ccagcggtcg aaggtggggt tgatgattgg ggtgaagtcg taacaaggt 1439

<210> 584
<211> 1481
<212> DNA
<213> Clostridium frigidicarnis

<400> 584
agagtttgat cctggctcag gatgaatgct ggcggcgtgc ttaacacatg caagtcgagc 60

gagagagtct cttcggagac aatagcggcg gacgggtgag taacacgtgg gcaacctgcc 120

ttgtagtggg ggatagccct ccgaaaggag gattaatacc gcatattgtc acattgaggc 180

atctcaaagt gatgaaagga gtaatccgct acaagatggg cccgcggcgc attagctagt 240

tggtgaggta acggctcacc aaggcgacga tgcgtagccg acctgagagg gtgatcggcc 300

acattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggggaa accctgatgc agcaacgccg cgtgagtgat gaaggtcttc ggattgtaaa 420

gctctgtctt cggggacgat aatgacggta cccgaggagg aagccacggc taactacgtg 480

ccagcagccg cggtaatacg taggtggcaa gcattatccg gatttactgg gcgtaaaggg 540

tgcgtaggcg gatttttaag tgagatgtga aatacccggg ctcaacctgg gggctgcatt 600

tcaaactgga aatctagagt gcaggagagg aaagtggaat tcctagtgta gcggtgaaat 660

gcgtagagat taggaagaac accagtggcg aaggcgactt tctggactgt aactgacgct 720

gaggcacgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac 780

gatggatact aggtgtggga ggtttaactc cttccgtgcc gccgttaaca cattaagtat 840

cccgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg ggcccgcaca 900

agtagcggag catgtggttt aattcgaagc aacgcgaaga accttaccta gacttgacat 960

gtcctgaatt accagtaatg tgggaagtcc ttcggggaca ggaacacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccctat 1080

tgttagttgc taccattaag ttgagcactc tagcgagact gcctgggata accaggagga 1140

aggcggggat gacgtcaaat catcatgccc cttatgtcta gggctacaca cgtgctacaa 1200

tggcaagtac aaagagatgc aagaccgcga ggtggagcta aactcataaa acttgtctca 1260

gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttactagta atcgcgaatc 1320

agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

ttggcaatac ccaacgtccg tgagctaacc tgtaagggag gcagcggcct aaggtagggt 1440

cagcgattgg ggtgaagtcg taacaaggta gccgtaggag a 1481

<210> 585
<211> 1483
<212> DNA
<213> Clostridium gasigenes

<400> 585
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gagaggagtt cttcggaacg aatctagcgg cggacgggtg agtaacacgt gggcaaccta 120

ccttatagag gggaatagcc ttccgaaagg aagattaata ccgcataaca ttgcagtttc 180

gcatgaaaca gcaattaaag gagaaatccg ctataagatg ggcccgcggc gcattagcta 240

gttggtgagg taaaggctca ccaaggcgac gatgcgtagc cgacctgaga gggtgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatggggg aaaccctgat gcagcaacgc cgcgtgagtg atgaaggttt tcggatcgta 420

aaactctgtc tttggggacg ataatgacgg tacccaagga ggaagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggatttact gggcgtaaag 540

ggagcgtagg tggattttta agtgaggtgt gaaatactcg ggctcaaccc gagaactgca 600

tttcaaactg gaaatctaga gtgcaggaga ggaaagtgga attcctagtg tagcggtgaa 660

atgcgtagat attaggaaga acaccagtgg cgaaggcgac tttctggact gtaactgaca 720

ctgaggctcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgaata ctaggtgtgg gggttgtcat gacctccgtg ccgccgctaa cgcattaagt 840

attccgcctg gggagtacgg tcgcaagatt aaaactcaaa ggaattgacg ggggcccgca 900

caagcagcgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc tagacttgac 960

atctcctgaa ttacccgtaa ttggggaagt ggcttcggcc acaggaagac aggtggtgca 1020

tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

tattgttagt tgccatcatt tagttgggca ctctagcgag actgcccggg ttaaccggga 1140

ggaaggtggg gatgacgtca aatcatcatg ccccttatgt ctagggctac acacgtgcta 1200

caatggcaag tacaaagaga agcaagaccg cgaggtggag ccaaactata aaacttgtct 1260

cagttcggat tgcaggctga aactcgcctg catgaagctg gagttgctag taatcgcgaa 1320

tcagcatgtc gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgag 1380

agttggcaat acccaaagtt cgtgagctaa cccgcaaggg aggcagcgac ctaaggtagg 1440

gtcagcgatt ggggtgaagt cgtaacaagg tagccgtagg aga 1483

<210> 586
<211> 1359
<212> DNA
<213> Clostridium ghonii

<400> 586
tcgagcgaac ccttcggggt gagcggcgga cgggtgagta acgcgtgggt aacctgccct 60

gtacacacgg ataacatacc gaaaggtatg ctaatacggg ataacatatg agagtcgcat 120

ggcttttgta tcaaagctcc ggcggtacag gatggacccg cgtctgatta gctagttggt 180

aaggtaacgg cttaccaagg caacgatcag tagccgacct gagagggtga tcggccacat 240

tggaactgag acacggtcca aactcctacg ggaggcagca gtggggaata ttgcacaatg 300

ggcgaaagcc tgatgcagca acgccgcgtg agcgatgaag gccttcgggt cgtaaagctc 360

tgtcctcaag gaagataatg acggtacttg aggaggaagc cccggctaac tacgtgccag 420

cagccgcggt aatacgtagg gggctagcgt tatccggaat tactgggcgt aaagggtgcg 480

taggcggtct ttcaagccag aagtgaaagg ctacggctca accgtagtaa gcttttggaa 540

ctgtaggact tgagtgcagg agaggagagt ggaattccta gtgtagcggt gaaatgcgta 600

gatattagga ggaacaccag tagcgaaggc ggctctctgg actgtaactg acgctgaggc 660

acgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatga 720

gtactaggtg tcgggggtta ccccccctcgg tgccgcagct aacgcattaa gtactccgcc 780

tgggaagtac gctcgcaaga gtgaaactca aaggaattga cggggacccg cacaagtagc 840

ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctaagcttg acatcccatt 900

gacctctccc taatcggaga tttcccttcg gggacagtgg tgacaggtgg tgcatggctg 960

tcgtcagctc gtgtcgtgag atgttggggt aagtcccgca acgagcgcaa cccttgcctt 1020

tagttgccag cattaagttg ggcactctag agggactgcc gaggataact cggaggaagg 1080

tggggatgac gtcaaatcat catgcccctt atgcttaggg ctacacacgt gctacaatgg 1140

gtggtacaga gggttgccaa gccgtgaggt ggagctaatc ccttaaagcc attctcagtt 1200

cggattgtag gctgaaactc gcctacatga agctggagtt actagtaatc gcagatcaga 1260

atgctgcggt gaatgcgttc ccgggtcttg tacacaccgc ccgtcacacc atgggagttg 1320

ggggcgcccg aagccggtta gctaaccttt taggaagcg 1359

<210> 587
<211> 1333
<212> DNA
<213> Clostridium glycolicum

<400> 587
ttcggagaag agcggcggac gggtgagtaa cgcgtgggta acctgcctca tacacatgga 60

taacataccg aaaggtatgc taatacagga taacataaga gattcgcatg tttctcttat 120

caaagctccg gcggtatgag atggacccgc gtctgattag ctagttggta aggtaatggc 180

ttaccaaggc gacgatcagt agccgacctg agagggtgat cggccacatt ggaactgaga 240

cacggtccaa actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgaaagcct 300

gatgcagcaa cgccgcgtga gtgatgaagg ccttcgggtc gtaaaactct gtcctcaagg 360

aagataatga cggtacttga ggaggaagcc ccggctaact acgtgccagc agccgcggta 420

atacgtaggg ggctagcgtt atccggttta ctgggcgtaa agggtgcgta ggtggtttct 480

taagtcagga gtgaaaggta cggcttaacc gtagtaagct cttgaaactg ggaaacttga 540

gtgcaggaga ggaaagtgga attcctagtg tagcggtgaa atgcgtagat attaggagga 600

acaccagtag cgaaggcggc tttctggact gtaactgaca ctgaggcacg aaagcgtggg 660

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagta ctaggtgtcg 720

ggggttaccc ccctcggtgc cgcagctaac gcattaagta ctccgcctgg ggagtacgct 780

cgcaagagtg aaactcaaag gaattgacgg ggacccgcac aagtagcgga gcatgtggtt 840

taattcgaag caacgcgaag aaccttacct aagcttgaca tccttttgac cgatgcctaa 900

tcgcattttt cccttcgggg acagaagtga caggtggggc atgggagtcg tcagctcgtg 960

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgcctttag ttgccagcat 1020

taagttgggc actctagagg gactgccagg gataacctgg aggaaggtgg ggatgacgtc 1080

aaatcatcat gccccttatg cttagggcta cacacgtgct acaatgggtg gtacagaggg 1140

cagccaagtc gtgaggccga gctaatccct taaagccatt ctcagttcgg attgtaggct 1200

gaaactcgcc tacatgaagc tggagttact agtaatcgca gatcagaatg ctgcggtgaa 1260

tgcgttcccg ggtcttgtac acaccgcccg tcacaccacg gaagttgggg gcgcccgaag 1320

ccacttagct aac 1333

<210> 588

<211> 956
<212> DNA
<213> Clostridium glycyrrhizinilyticum

<220>
<221> modified_base
<222> (907)..(907)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (935)..(935)
<223> a, c, t, g, unknown or other

<400> 588
tcgaacgaag cactttaccg gatttcttcg gaatgaaagt tttgtgactg agtggcggac 60

gggtgagtaa cgcgtgggta acctgcctca tacaggggga taacagttag aaatgactgc 120

taataccgca taagaccaca ggattgcatg gtccggtggt aaaaactccg gtggtatgag 180

atggacccgc gtctgattag gtagttggtg gggtaacggc ttaccaagcc gacgatcagt 240

agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa actcctacgg 300

gaggcagcag tggggaatat tgcacaatgg gggaaaccct gatgcagcga cgccgcgtga 360

gcgatgaagt atttcggtat gtaaagctct atcagcaggg aagaaaatga cggtacctga 420

ctaagaagca ccggctaaat acgtgccagc agccgcggta atacgtatgg tgcaagcgtt 480

atccggattt actgggtgta aagggagcgt agacggagag gcaagtctga tgtgaaaacc 540

cggggctcaa ccccgggact gcattggaaa ctgtttttct agagtgtcgg agaggtaagt 600

ggaattccta gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc 660

ggcttactgg acgatgactg acgttgaggc tcgaaagcgt ggggagcaaa caggattaga 720

taccctggta gtccacgccg taaacgatga ctgctaggtg tcgggaggca aagcctttcg 780

gtgccgcagc aaacgcaata agcagtccac ctggggagta cgttcgcaag aatgaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 900

gaagaanctt acctgccctt gacatccggc tgacnggcga gtaatgtcgc ctttcc 956

<210> 589
<211> 1465
<212> DNA
<213> Clostridium haemolyticum

<400> 589
gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc gatgaaactt ccttcgggaa 60

gtggattagc ggcggacggg tgagtaacac gtgggtaacc tgcctcaaag aggggatag 120

cctcccgaaa gggagattaa taccgcataa cattatttta tggcatcata gaataatcaa 180

aggagcaatc cgctttgaga tggacccgcg gcgcattagc tagttggtga ggtaagggct 240

caccaaggcg acgatgcgta gccgacctga gagggtgatc ggccacattg gaactgagac 300

acggtccaga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggaaaccctg 360

acgcagcaac gccgcgtgag tgatgaaggt tttcggatcg taaaactctg tctttaggga 420

cgataatgac ggtacctaag gaggaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcaagcgttg tccggattta ctgggcgtaa agagtatgta ggtgggtgct 540

taagtcagat gtgaaattcc cgggcttaac ctgggcgctg catttgaaac tgggcatcta 600

gagtgcagga gaggaaagtg gaattcctag tgtagcggtg aaatgcgtag agattaggaa 660

gaacaccagt ggcgaaggcg actttctgga ctgtaactga cactgagata cgaaagcgtg 720

ggtagcaaac aggattagat accctggtag tccacgccgt aaacgatgaa tactaggtgt 780

cgggggtac caccctcggt gccgcagcaa acgcattaag tattccgcct ggggagtacg 840

gtcgcaagat taaaactcaa aggaattgac ggggacccgc acaagcagcg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac ctagacttga catctcctga attactctta 960

atcgaggaag tcccttcggg gacaggaaga caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttattgttag ttgctactat 1080

taagttaagc actctaacga gactgccgcg gttaacgtgg aggaaggtgg ggatgacgtc 1140

aaatcatcat gcccccttatg tctagggcta cacacgtgct acaatggctg gtacaacgag 1200

cagcaaaccc gcgaggggga gcaaaacttg aaagccagtc ccagttcgga ttgtaggctg 1260

aaactcgcct acatgaagtt ggagttgcta gtaatcgcga atcagcatgt cgcggtgaat 1320

acgttcccgg gtcttgtaca caccgcccgt cacaccatga gagccggtaa cacccgaagc 1380

ccgtgaggta accgtaagga gccagcggtc gaaggtggga ttggtgattg gggtgaagtc 1440

gtaacaaggt agccgtagga gaacc 1465

<210> 590
<211> 1384
<212> DNA
<213> Clostridium hathewayi

<220>
<221> modified_base
<222> (19)..(19)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (939)..(939)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (942)..(942)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (980)..(980)
<223> a, c, t, g, unknown or other

<400> 590
gtcgagcgaa gcggtttcna tgaggttttc ggatggattt gaaattgact tagcggcgga 60

cgggtgagta acgcgtgggt aacctgcctt acactggggg ataacagtta gaaatgactg 120

ctaataccgc ataagcgcac agggccgcat ggtccggtgt gaaaaactcc ggtggtgtaa 180

gatggacccg cgtctgatta ggtagttggt ggggtaacgg cccaccaagc cgacgatcag 240

tagccgacct gagagggtga ccggccacat tgggactgag acacggccca aactcctacg 300

ggaggcagca gtggggaata ttggacaatg ggcgaaagcc tgatccagcg acgccgcgtg 360

agtgaagaag tatttcggta tgtaaagctc tatcagcagg gaagaaaatg acggtacctg 420

actaagaagc cccggctaac tacgtgccag cagccgcggt aatacagggg caagcgtccg 480

gattactggg tgtaaaggga gcgtaacggt ttagcaagtt gaagtgaaag cccggggctc 540

aaccccggta ctgctttgga aactgttaga cttgagtgca ggagaggtaa gtggaattct 600

agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg cggcttactg 660

gactgtaact gacgttgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt 720

agtccacgcc gtaaacgatg aatactaggt gtcgggggggc aaagcccttc ggtgccgccg 780

caaacgcaat aagtattcca cctggggagt acgttcgcaa gaatgaaact caaaggaatt 840

gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct 900

taccaagtct tgacatccca ttgaaaacaa gtttatccng antactctgt gcagaggggg 960

cgaaaacggt ggagcaagtn tgaagtcaac gcgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcaa cccttatcct tagtagccag cgagtagagt cgggcactct ggggagactg 1080

ccagggataa cctggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgatttg 1140

ggctacacac gtgctacaat ggcgtaaaca aagggaggca aaggagcgat ccggagcaaa 1200

ccccaaaaat aacgtctcag ttcggattgc aggctgcaac tcgcctgcat gaagctggaa 1260

tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt tcccgggtct tgtacacacc 1320

gcccgtcaca ccatgggagt tggtaacgcc cgaagtcagt gacccaaccg caaggaggga 1380

gctg 1384

<210> 591
<211> 1393
<212> DNA
<213> Clostridium hiranonis

<400> 591
acatgcaagt cgagcgattc tcttcggaga agagcggcgg acgggtgagt aacgcgtggg 60

taacctgccc tgtacacacg gataacatac cgaaaggtat gctaatacgg gataatatat 120

aagagtcgca tgacttttat atcaaagatt tttcggtaca ggatggaccc gcgtctgatt 180

agcttgttgg cggggtaacg gcccaccaag gcgacgatca gtagccgacc tgagagggtg 240

atcggccaca ttggaactga gacacggtcc aaactcctac gggaggcagc agtggggaat 300

attgcacaat gggcgcaagc ctgatgcagc aacgccgcgt gagcgatgaa ggccttcggg 360

tcgtaaagct ctgtcctcaa ggaagataat gacggtactt gaggaggaag ccccggctaa 420

ctacgtgcca gcagccgcgg taatacgtag ggggctagcg ttatccggat ttactgggcg 480

taaagggtgc gtaggcggtc tttcaagtca ggagttaaag gctacggctc aaccgtagta 540

agctcctgat actgtctgac ttgagtgcag gagaggaaag cggaattccc agtgtagcgg 600

tgaaatgcgt agatattggg aggaacacca gtagcgaagg cggctttctg gactgtaact 660

gacgctgagg cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgct 720

gtaaacgatg agtactagtt gtcggaggtt acccccttcgg tgccgcagct aacgcattaa 780

gtactccgcc tggggagtac gcacgcaagt gtgaaactca aaggaattga cggggacccg 840

cacaagtagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctaggcttg 900

acatccttct gaccgaggac taatctcctc tttccctccg gggacagaag tgacaggtgg 960

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1020

cccttgtctt tagttgccat cattaagttg ggcactctag agagactgcc agggataacc 1080

tggaggaagg tggggatgac gtcaaatcat catgcccctt atgcctaggg ctacacacgt 1140

gctacaatgg gtggtacaga gggcagccaa gccgtgaggt ggagcaaatc ccttaaagcc 1200

attctcagtt cggattgtag gctgaaactc gcctacatga agctggagtt actagtaatc 1260

gcagatcaga atgctgcggt gaatgcgttc ccgggtcttg tacacaccgc ccgtcacacc 1320

atgggagttg gagacacccg aagccgacta tctaaccttt tgggagaagt cgtccccctc 1380

gaatcaatac ccc 1393

<210> 592
<211> 1460
<212> DNA
<213> Clostridium histolyticum

<400> 592
gacgaacgct ggcggcgtgc ttaacacatg caagtcgagc gatgaagttc ccttcgggga 60

acggattagc ggcggacggg tgagtaacac gtgggtaacc tgcctcaaag aggggatag 120

cctcccgaaa gggagattaa taccgcataa tatcttttta atgcatgtta gaaagattaa 180

aggagcaatc cgctttgaga tggacccgcg gcgcattagc tagttggtga ggtaacggct 240

caccaaggcg acgatgcgta gccgacctga gagggtgatc ggccacattg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggaaaccctg 360

acgcagcaac gccgcgtgag tgatgaaggt cttcggatcg taaagctctg tcttcaggga 420

cgataatgac ggtacctgag gaggaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa agcatgcgta ggcggatatt 540

taagtgggat gtgaaatccc ggggcttaac cccggtgctg catttcaaac tggatatcta 600

gagtgcagga gaggaaagcg gaattcctag tgtagcggtg aaatgcgtag atattaggaa 660

gaacaccagt ggcgaaggcg gctttctgga ctgtaactga cgctgaggca tgaaagcgtg 720

ggtagcaaac aggattagat accctggtag tccacgccgt aaacgatggg tactaggtgt 780

cggggtttca atactccggt gccgcagtta acacattaag taccccgcct ggggagtacg 840

atcgcaagat taaaactcaa aggaattgac gggggcccgc acaagtagcg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac ctgggcttga catcccgaga atcctgtgga 960

aacataggag tgcccttcgg ggaactcggt gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctttgttgt tagttgctac 1080

cattaagttg agcactctag caagactgcc tgggtaacca ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgtccagggc tacacacgtg ctacaatggt tggtacagag 1200

agaagcaaga ccgtgaggtg gagccaatct cacaaagcca atctcagttc ggattgtagg 1260

ctgcaactcg cctacatgaa gctggagtta ctagtaatcg cgaatcagaa tgtcgcggtg 1320

aatgcgttcc cgggccttgt acacaccgcc cgtcacacca tgagagttgg taacacccga 1380

agtccgtgag gtaaccgtaa ggagccagcg gccgaaggtg ggatcgatga ttggggtgaa 1440

gtcgtaacag gtaaccgtaa 1460

<210> 593
<211> 1400
<212> DNA
<213> Clostridium hylemonae

<400> 593
tcgaacgaag caatactgtg tgaagagatt agcttgctaa gatcagaact ttgtattgac 60

tgagtggcgg acgggtgagt aacgcgtggg caacctgcct tacacagggg gataacagct 120

agaaatggct gctaataccg cataagacct cagtaccgca tggtagaggg gtaaaaactc 180

cggtggtgta agatgggccc gcgtctgatt aggtagttgg tagggtaacg gcctaccaag 240

ccgacgatca gtagccgacc tgagagggtg accggccaca ttgggactga gacacggccc 300

aaactcctac gggaggcagc agtggggaat attgcacaat gggggaaacc ctgatgcagc 360

gacgccgcgt gaaggatgaa gtatttcggt atgtaaactt ctatcagcag ggaagaagat 420

gacggtaccg actaagaagc cggctaacta cgtgccacag ccgcggtaat acgtaggggg 480

caagcgttat ccggatttac tgggtgtaaa gggagcgtag acggcatggc aagtctgaag 540

tgaaagcccg gggctcaacc ccgggactgc tttggaaact gtcaggctag agtgtcggag 600

aggcaagtgg aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg 660

gcgaaggcgg cttgctggac gatgactgac gttgaggctc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgatt actaggtgtc gggaagcaaa 780

gcttttcggt gccgcagcca acgcaataag taatccacct ggggagtacg ttcgcaagaa 840

tgaaactcaa aggaattgac ggggacccgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcga agaaccttac ctgatcttga catccccggc atgaaaagtc tgaagtactc 960

tttcttcgga acaccggtga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1020

ttgggttaag tcccgcaacg agcgcaaccc ttatctttag tagccagcat ttgaggtggg 1080

cactctagag agactgccag ggataacctg gaggaaggtg gggatgacgt caaatcatca 1140

tgccccttat gaccagggct acacacgtgc tacaatggcg taaacaaagg gaagcgaccc 1200

tgtgaaggca agcaaatccc aaaaataacg tctcagttcg gattgtagtc tgcaactcga 1260

ctacatgaag ctggaatcgc tagtaatcgc gaatcagaat gtcgcggtga atacgttccc 1320

gggtcttgta cacaccgccc gtcacaccat gggagtcagt aacgcccgaa gccggtgacc 1380

taaccgaaag gaaggagccg 1400

<210> 594
<211> 994
<212> DNA
<213> Clostridium indolis

<220>
<221> modified_base
<222> (944)..(944)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (961)..(961)
<223> a, c, t, g, unknown or other

<400> 594
cggatggaat tccttaatga ctgagtggcg gacgggtgag taacgcgtgg ggaacctgcc 60

ctatacaggg ggataacagc tggaaacggc tgctaatacc gcataagcgc acagaatcgc 120

atgattcggt gtgaaaagct ccggcagtat aggatggtcc cgcgtctgat tagctggttg 180

gcggggtaac ggcccaccaa ggcgacgatc agtagccggc ttgagagagt ggacggccac 240

attgggactg agacacggcc caaactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggggaac cctgatgcag cgacgccgcg tgagtgaaga agtatttcgg tatgtaaagc 360

tctatcagca gggaagaaaa aagacggtac ctgactaaga agccccggct aactacgtgc 420

cagcagccgc ggtaatacgt agggggcaag cgttatccgg aattactggg tgtaaagggt 480

gcgtaggtgg catggtaagt cagaagtgaa agcccggggc ttaaccccgg gactgctttt 540

gaaactgtca tgctggagtg caggagaggt aagcggaatt cctagtgtag cggtgaaatg 600

cgtagatatt aggaggaaca ccagtggcga aggcggctta ctggactgtc actgacactg 660

atgcacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgaatacta ggtgtcgggg ccgtagaggc ttcggtgccg cagcaaacgc agtaagtatt 780

ccacctgggg agtacgttcg caagaatgaa actcaaagga attgacgggg acccgcacaa 840

gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttacctgg tcttgacatc 900

taactgaccg gttcgtaatg ggacctttcc ttcgggacag ttanacaggt ggtgcatggt 960

ngtcgtcagc tcgtgtcgtg agatgttggg ttaa 994

<210> 595
<211> 1401
<212> DNA
<213> Clostridium innocuum

<220>

<221> modified_base
<222> (15)..(16)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1395)..(1395)
<223> a, c, t, g, unknown or other

<400> 595
tcgaacgaag tcttnnggaa gcttgcttcc aaaaagactt agtggcgaac gggtgagtaa 60

cacgtaggta acctgcccat gtgtccggga taactgctgg aaacggtagc taaaaccgga 120

taggtatacg gagcgcatgc tctgtatatt aaagcgccca tcaaggcgtg aacatggatg 180

gacctgcggc gcattagcta gttggtgagg taacggccca ccaaggcgat gatgcgtagc 240

cggcctgaga gggtaaacgg ccacattggg actgagacac ggcccaaact cctacgggag 300

gcagcagtag ggaattttcg tcaatggggg aaaccctgaa cgagcaatgc cgcgtgagtg 360

aagaaggtct tcggatcgta aagctctgtt gtaagtgaag aacggctcat agaggaaatg 420

ctatgggagt gacggtagct taccagaaag ccacggctaa ctacgtgcca gcagccgcgg 480

taatacgtag gtggcaagcg ttatccggaa tcattgggcg taaagggtgc gtaggtggcg 540

tactaagtct gtagtaaaag gcaatggctc aaccattgta agctatggaa actggtatgc 600

tggagtgcag aagagggcga tggaattcca tgtgtagcgg taaaatgcgt agatatatgg 660

aggaacacca gtggcgaagg cggtcgcctg gtctgtaact gacactgagg cacgaaagcg 720

tggggagcaa ataggattag ataccctagt agtccacgcc gtaaacgatg agaactaagt 780

gttggaggaa ttcagtgctg cagttaacgc aataagttct ccgcctgggg agtatgcacg 840

caagtgtgaa actcaaagga attgacgggg gcccgcacaa gcggtggagt atgtggttta 900

attcgaagca acgcgaagaa ccttaccagg ccttgacatg gaaacaaata ccctagagat 960

aggggataa ttatggatca cacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac ccttgtcgca tgttaccagc atcaagttgg 1080

ggactcatgc gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc 1140

atgccccttа tggcctgggc tacacacgta ctacaatggc gaccacaaag agcagcgaca 1200

cagtgatgtg aagcgaatct cataaaggtc gtctcagttc ggattgaagt ctgcaactcg 1260

acttcatgaa gtcggaatcg ctagtaatcg cagatcagca tgctgcggtg aatacgttct 1320

cgggccttgt acacaccgcc cgtcaaacca tgggagtcag taatacccga agccggtggc 1380

ataaccgtaa ggagngagcc g 1401

<210> 596
<211> 310
<212> DNA
<213> Clostridium irregulare

<220>
<221> modified_base
<222> (44)..(44)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (59)..(59)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (265)..(266)
<223> a, c, t, g, unknown or other

<400> 596
gacccgcgtc tgattagcta gttggtaagg taacggctta ccanggcgac gatcactanc 60

cgacctgaga gggtgatcgg ccacattgga actgaaacac ggtccaaact cctacgggag 120

gcagcagtgg ggaatattgc acaatgggcg aaagcctgat gcaccaacgc cgcgtgagcg 180

atgaaggcct tcgggtcgta aagctctgtc ctcaaggaag ataatgacgg tacttgaaga 240

ggaagccccg gctaactacg tgccnncagc cgcggtaata cgtaggggcc tagcgttatc 300

cggaattact 310

<210> 597
<211> 1023
<212> DNA
<213> Clostridium isatidis

<220>
<221> modified_base
<222> (923)..(923)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (940)..(940)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (967)..(967)
<223> a, c, t, g, unknown or other

<400> 597
cgaggtgatt ccttcgggaa tgaacctagc ggcggacggg tgagtaacac gtgggtaacc 60

tgccttatag aggggaatag cctcccgaaa gggagattaa taccgcataa tattgaagct 120

tcgcatgaag tttcaatcaa aggagcaatc cgctataaga tgggcccgcg gcgcattagc 180

tagttggtga ggtaacggct caccaaggcg acgatgcgta gccgacctga gagggtgatc 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg ggaaaccctg atgcagcaac gccgcgtgag tgatgaaggt tttcggatcg 360

taaagctctg tcttcaggga cgataatgac ggtacctgag gaggaagcca cggctaacta 420

cgtgccagca gccgcggtaa tacgtaggtg gcgagcgttg tccggattta ctgggcgtaa 480

agggagcgta ggcggacttt taagtgagat gtgaaatact cgggctcaac ccgggggctg 540

catttcaaac tgaaagtcta gagtgcagga gaggagagtg gaattcctag tgtagcggtg 600

aaatgcgtag agattaggaa gaacaccagt ggcgaaggcg gctctctgga ctgtaactga 660

cgctgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 720

aaacgatgaa tactaggtgt aggggttgtc atgacctctg tgccgccgct aacgcattaa 780

gtattccgcc tggggagtac ggtcgcaaga ttaaaactca aaggaattga cgggggcccg 840

cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctagacttg 900

acatctcctg cattaccctt aanccgggga agtcccttcn gggacaggat gacaggtggt 960

gcatggntgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1020

ccc 1023

<210> 598
<211> 1462
<212> DNA
<213> Clostridium kluyveri

<400> 598
ttaaaataag agtttgatcc tggctcagga cgaacgctgg cggcgtgcct aacacatgca 60

agtcgagcga ggaagcccct tcgggggtgg aatagcggcg gacgggtgag taacacgtgg 120

gtaacctgcc tcaaagaggg ggatagcctc ccgaaaggga gattaatacc gcatagaagg 180

taaaaatcgc atgataaatg ccttaaagga gcaatccgct ttgagatggg cccgcgtcgc 240

attagctagt tggagggata aaagcccccc aaggcgacga tgcgtagccg acctgagagg 300

gtgaacggcc acattggaac tgagatacgg tccagactcc tacgggaggc agcagtgggg 360

aatattgcac aatgggggaa accctgatgc agcaacgccg cgtgagtgaa gaaggttttc 420

ggatcgtaaa gctctgtcat ccgggacgat aatgacggta ccggaagagg aagccacggc 480

taactacgtg ccagcagccg cggtaatacg taggtggcga gcgttgtccg gaattactgg 540

gcgtaaaggg tgtgcaggcg gatatttaag tgagatgtga aagacccggg cttaacccgg 600

gcagtgcatt tcaaactgga tatctagagt gcaggagagg agaacggaat tcctagtgta 660

gcggtgaaat gcgtagagat taggaagaac accagtggcg aaggcggttc tctggactgt 720

aactgacgct gaggcacgaa agcgtgggta gcaaacagga ttagataccc tggtagtcca 780

cgccgtaaac gatgagtact aggtgtaggg ggtatcgacc ccccctgtgc cgcagtaaac 840

acaataagta ctccgcctgg gaagtacgat cgcaagatta aaactcaaag gaattgacgg 900

ggacccgcac aagcagcgga gcatgtggtt taattcgaag caacgcgaag aaccttacct 960

ggacttgaca tcccctgaat gactcgtaat ggaggaagcc ctacggggca gggagacagg 1020

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttag gttaagtcct gcaacgagcg 1080

caacccctgt cgttagttgc cagcacgtaa aggtgggcac cctaacgaga ctgccgcggt 1140

taacgtggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgtc cagggcaaca 1200

cacgtgctac aatgggcaga acagagagaa gcaataccgc gaggaggagc aaatctcaaa 1260

aactgccccc agttcggatt gcaggctgaa acccgcctgc atgaagttgg agttgctagt 1320

aatcgcgaat cagcatgtcg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca 1380

caccatgaga gctggcaaca cccgaagtcc gtagtctaac caaggaggac gcggccgaag 1440

gtggggttag tgattggggt ga 1462

<210> 599
<211> 1361
<212> DNA
<213> Clostridium lactatifermentans

<400> 599
agagcttcgg caggatttct atctatctta gtggcggacg ggtgagtaac gtgtgggcaa 60

cctgccctgt actggggaat aatcattgga aacgatgact aataccgcat gtggtcctcg 120

gaaggcatct tctgaggaag aaaggattta ttcggtacag gatgggcccg catctgatta 180

gctagttggt gagataacag cccaccaagg cgacgatcag tagccgacct gagagggtga 240

tcggccacat tgggactgag acacggccca aactcctacg ggaggcagca gtggggaata 300

ttgcacaatg ggcgaaagcc tgatgcagca acgccgcgtg aaggatgaag ggtttcggct 360

cgtaaacttc tatcaatagg gaagaaataa atgacggtac ctaaataaga agccccggct 420

aactacggcc agcagccgcg gtaatactag ggggcaagcg ttatccggaa ttactgggtg 480

taaagggagc gtaggcggca tggtaagcca gatgtgaaag ccttgggctt aacccgagga 540

ttgcatttgg aactatcaag ctagagtaca ggagaggaaa gcggaattcc tagtgtagcg 600

gtgaaatgcg tagatattag gaagaacacc agtggcgaag gcggctttct ggactgaaac 660

tgacgctgag ctcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 720

gtaaacgatg agtgctaggt gtcggggagg aatcctcggt gccgcagcta acgcaataag 780

cactccacct ggggagtacg accgcgaggt tgaaactcaa aggaattgac gggggcccgc 840

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac caaggcttga 900

catcccgatg accgctctag agatagagct tctcttcgta gcatcggtga ccgggggtgc 960

atgggagtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1020

ttatcttcag tagccatcat tcagttgggc actctggaga gactgccgtg gataacacgg 1080

aggaaggtgg ggatgacgtc aaatcatcat gcccccttatg tcttgggcta cacacgtgct 1140

acaatggctg gtaacaaagt gacgcaagac ggcgacgtta agcaaatcac aaaaacccag 1200

tcccagttcg gattgtagtc tgcaactcga ctacatgaag ctggaatcgc tagtaatcgc 1260

gaatcagcat gtcgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccat 1320

gggagttgga agcacccgaa gtcggtgacc taaccgtaag g 1361

<210> 600
<211> 1381
<212> DNA
<213> Clostridium lavalense

<220>
<221> modified_base
<222> (17)..(19)

<223> a, c, t, g, unknown or other

<400> 600
tcgaacgaag cattttnnna tgaagttttc ggatggattc tgagatgact gagtggcgga 60

cgggtgagta acacgtggat aacctgcctc acactggggg acaacagtta gaaatgactg 120

ctaataccgc ataagcgcac agtaccgcat ggtacagtgt gaaaaactcc ggtggtgtga 180

gatggatccg cgtctgatta gccagttggc ggggtaacgg cccaccaaag cgacgatcag 240

tagccgacct gagagggtga ccggccacat tgggactgag acacggccca aactcctacg 300

ggaggcagca gtggggaata ttgcacaatg ggcgaaagcc tgatgcagcg acgccgcgtg 360

agtgaagaag tatttcggta tgtaaagctc tatcagcagg gaagataatg acggtacctg 420

actaagaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt 480

tatccggatt tactgggtgt aaagggagcg tagacggcat ggcaagtctg aagtgaaaac 540

ccagggctca accctgggac tgctttggaa actgtcaagc tagagtgcag gagaggtaag 600

tggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg 660

cggcttactg gactgtaact gacgttgagg ctcgaaagcg tggggagcaa acaggattag 720

ataccctggt agtccacgcc gtaaacgatg agtgctaggt gttggggggc aaagcccttc 780

ggtgccgtcg caaacgcaat aagcactcca cctggggagt acgttcgcaa gaatgaaact 840

caaaggaatt gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 900

cgaagaacct taccaagtct tgacatcctc ttgaccggcg tgtaacggcg cctttccttc 960

gggacaagag agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1020

aagtcccgca acgagcgcaa cccttatcct tagtagccag caataagatg ggcactctag 1080

ggagactgcc agggacaacc tggaggaagg tggggatgac gtcaaatcat catgcccctt 1140

atgatttggg ctacacacgt gctacaatgg cgtaaacaaa gggaagcgac cctgcgaagg 1200

tgagcaaatc tcaaaaataa cgtcccagtt cggactgtag tctgcaaccc gactacacga 1260

agctggaatc gctagtaatc gcgaatcaga atgtcgcggt gaatacgttc ccgggtcttg 1320

tacacaccgc ccgtcacacc atgggagtca gcaacgcccg aagtcagtga cccaactcgc 1380

a 1381

<210> 601
<211> 1505
<212> DNA
<213> Clostridium leptum

<400> 601
cgacgctggc ggcgtgccta acacatgcaa gtcgaacgga gttaaattcg acacccgagt 60

atccggccgg gaggcggggt gctgggggtt ggatttaact tagtggcgga cgggtgagta 120

acgcgtgagt aacctgcctt tcagaggggg ataacgttct gaaaagaacg ctaataccgc 180

ataacatcaa tttatcgcat gataggttga tcaaaggagc aatccgctgg aagatggact 240

cgcgtccgat tagccagttg gcggggtaac ggcccaccaa agcgacgatc ggtagccgga 300

ctgagaggtt gaacggccac attgggactg agacacggcc cagactccta cgggaggcag 360

cagtggggga tattgcacaa tgggggaaac cctgatgcag caacgccgcg tgagggaaga 420

aggttttcgg attgtaaacc tctgttctta gtgacgataa tgacggtagc taaggagaaa 480

gctccggcta actacgtgcc agcagccgcg gtaatacgta gggagcgagc gttgtccgga 540

tttactgggt gtaaagggtg cgtaggcggc gaggcaagtc aggcgtgaaa tctatgggct 600

taacccataa actgcgcttg aaactgtctt gcttgagtga agtagaggta ggcggaattc 660

ccggtgtagc ggtgaaatgc gtagagatcg ggaggaacac cagtggcgaa ggcggcctac 720

tgggctttaa ctgacgctga agcacgaaag catgggtagc aaacaggatt agataccctg 780

gtagtccatg ccgtaaacga tgattactag gtgtgggggg tctgaccccc tccgtgccgc 840

agttaacaca ataagtaatc cacctgggga gtacggccgc aaggttgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cagtggagta tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaggt cttgacatcc gtctaacgaa gcagagatgc attaggtgcc cttcggggaa 1020

aggcgagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt gtttctagtt gctacgcaag agcactctag agagactgcc 1140

gttgacaaaa cggaggaagg tggggacgac gtcaaatcat catgcccctt atgacctggg 1200

ccacacacgt actacaatgg ctgtaaacag agggaagcaa agccgcgagg tggagcaaaa 1260

ccctaaaagc agtcccagtt cggatcgcag gctgcaaccc gcctgcgtga agtcggaatt 1320

gctagtaatc gcggatcagc atgccgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcacacc atgggagccg gtaatacccg aagccagtag ttcaaccgca aggagagcgc 1440

tgtcgaaggt aggattggcg actggggtga agtcgtaaca aggtagccgt atcggaaggt 1500

gcggc 1505

<210> 602
<211> 1500
<212> DNA
<213> Clostridium limosum

<400> 602
tggctcagga cgaacgctgg cggcgtgctt aacacatgca agtcgagcga tgaagcttcc 60

ttcgggaagt ggattagcgg cggacgggtg agtaacacgt gggtaacctg cctcaaagag 120

ggggatagcc ttccgaaagg aagattaata ccgcataata tcatttcaat gcatgttgaa 180

atgattaaag gagtaatccg ctttgagatg gacccgcggc gcattagcta gttggtgagg 240

taacggctca ccaaggcgac gatgcgtagc cgacctgaga gggtgatcgg ccacattggg 300

actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc gcaatggggg 360

aaaccctgac gcagcaacgc cgcgtgagtg atgacggtct tcggattgta aagctctgtt 420

ttcagggacg ataatgacgg tacctgagga ggaagccacg gctaactacg tgccagcagc 480

cgcggtaata cgtaggtggc gagcgttgtc cggatttatt gggcgtaaag catgcgtagg 540

cggatactta agtgggatgt gaaatcccgg ggctcaaccc cggtgctgca ttccaaactg 600

ggtatctaga gtacaggaga ggaaagcgga attcctagtg tagcggtgaa atgcgtagag 660

attaggaaga acaccagtgg cgaaggcggc tttctggact gtaactgacg ctgaggcatg 720

aaagcgtggg tagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagta 780

ctaggtgtcg gggtttcaat acttcggtgc cgcagttaac acattaagta ctccgcctgg 840

gaagtacgat cgcaagatta aaactcaaag gaattgacgg gggcccgcac aagtagcgga 900

gcatgtggtt taattcgaag caacgcgaag aaccttacct gggcttgaca tcccaagaat 960

cctgtggaaa cacgggagtg cccttcgggg aacttggtga caggtggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgttgttag 1080

ttgctaccat taagttgagc actctagcaa gactgcctgg gtaaccagga ggaaggtggg 1140

gatgacgtca aatcatcatg ccccttatgt ccagggctac acacgtgcta caatggttgg 1200

tacaaagaga agcaagaccg tgaggtggag caaatctcat aaaaccaatc tcagttcgga 1260

ttgtaggctg aaactcgcct acatgaagct ggagttacta gtaatcgcga atcagaatgt 1320

cgcggtgaat gcgttcccgg gccttgtaca caccgcccgt cacaccatga gagttggtaa 1380

cacccgaagt ccgtgaggta accgcaagga gccagcggcc gaaggtggga tcgatgattg 1440

gggtgaagtc gtaacaaggt agccgtagga gaacctgcgg ctggatcacc tcctttctga 1500

<210> 603
<211> 1387
<212> DNA
<213> Clostridium magnum

<220>
<221> modified_base
<222> (816)..(816)
<223> a, c, t, g, unknown or other

<400> 603
ggacgggtga gtaacacgtg ggtaacctgc ctcaaagagg gggatagcct cccgaaaggg 60

agattaatac cgcataacat tagtttttcg catgaagaac taattaaagg agtaatccgc 120

tttgagatgg acccgcggcg cattagctag ttggtgaggt aaaggctcac caaggcgacg 180

atgcgtagcc gacctgagag ggtgatcggc cacattggaa ctgagacacg gtccagactc 240

ctacgggagg cagcagtggg gaatattgca caatgggcga aagcctgatg cagcaacgcc 300

gcgtgagtga tgaaggcctt cgggttgtaa agctctgtct tttgggacga taatgacggt 360

accaaaggag gaagccacgg ctaactacgt gccagcagcc gcggtaatac gtaggtggcg 420

agcgttgtcc ggatttactg ggcgtaaagg tagcgtaggc ggatatttaa gtgagatgtg 480

aaatacccga gcttaacttg ggtagctgca tttcaaactg gatatctaga gtgcgggaga 540

ggagaatgga attcctagtg tagcggtgaa atgcgtagag attaggaaga acaccagtgg 600

cgaaggcgat tctctggacc gtaactgacg ctgaggcatg aaagcgtggg tagcaaacag 660

gattagatac cctggtagtc cacgccgtaa acgatgagta ctaggtgtag gagggtccaa 720

ccttctgtgc cgcagttaac acaataagta ctccgcctgg gaagtacgat cgcaagatta 780

aaactcaaag gaattgacgg gggcccgcac aagcanggac atgtggttta attcgaagca 840

acgcgaagaa ccttacctgg acttgacatc ccctgaatag tgcagagatg catgaagctt 900

cgggcaggag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttaggttaa 960

gtcctgcaac gagcgcaacc cctatcatta gttgctacca ttaagttgag cactctagtg 1020

agactgcccg ggttaaccgg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1080

gccagggcta cacacgtgct acaatggtag gtacagagag atgcaagacc gcgaggtgga 1140

gcaaaactca aaaacctatc ccagttcgga ttgtaggctg caactcgcct acatgaagcc 1200

ggagttgcta gtaatcgcga atcagaatgt cgcggtgaat acgttcccgg gccttgtaca 1260

caccgcccgt cacaccatga gagctggcaa cacccgaagt ccgtgaggta accgtgaaag 1320

gagccagcgg aaaggtgggg ttagtgattg gggtgaagtc gtaacaaggt agccgtagga 1380

ctcgctg 1387

<210> 604
<211> 1498
<212> DNA
<213> Clostridium malenominatum

<400> 604
gtttgatcct ggctcaggac gaacgctggc ggcgtgccta acacatgcaa gtcgagcgat 60

gatatccctt cggggattga ttagcggcgg acgggtgagt aacacgtggg taacctgcct 120

caaagagggg gatagccctc cgaaaggagg attaataccg cataaagttg agagttcgca 180

tgaacattca accaaaggag caatccgctt tgagatggac ccgcgtccca ttagctagtt 240

ggtgaggtaa tagctcacca aggcgacgat gggtagccga cctgagaggg tgatcggcca 300

cattggaact gagatacggt ccagactcct acgggaggca gcagtgggga atattgcgca 360

atgggggaaa ccctgacgca gcaacgccgc gtgggcgacg aaggtcttcg gattgtaaag 420

ccctgtcttc tgggacgata atgacggtac cagaggagga agccacggct aactacgtgc 480

cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg aattactggg cgtaaagggt 540

gcgtaggcgg atatttaagt gggatgtgaa atacctgagc tcaactcggg tgctgcattc 600

caaactggat atctagagtg caggagagga gaatggaatt cctagtgtag cggtgaaatg 660

cgtagagatt aggaagaaca ccagtggcga aggcgattct ctggactgta actgacgctg 720

aggcacgaaa gcgtgggtag caaacaggat tagataccct ggtagtccac gccgtaaact 780

atgaatacta ggtgtagggg ggaacctccc tctgtgccgc agttaacaca ataagtattc 840

cgcctgggga gtacggtcgc aagactaaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cagcggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttacctgaa cttgacatcc 960

cctgcattac tcgtaatgga ggaaatccct tcggggacag ggagacaggt ggtgcatggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt 1080

attagttgct accattaagt tgagcactct aatgagactg cccgggttaa ccgggaggaa 1140

ggtggggatg acgtcaaatc atcatgcccc ttatgttcag ggctacacac gtgctacaat 1200

ggtgagaaca acgagacgca agaccgcaag gtggagcaaa cctcaaaaac tcatcccagt 1260

tcggattgta ggctgaaact cgcctacatg aagccggagt tgctagtaat cgcgaatcag 1320

catgtcgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgagagtt 1380

ggcaacaccc gaagtccgtg aggtaaccgt aaggagccag cggccgaagg tggggtcaat 1440

gattggggtg aagtcgtaac aaggtagccg taggagaacc tgcggctgga tcacctcc 1498

<210> 605
<211> 1347
<212> DNA
<213> Clostridium mayombei

<400> 605
tcgagcgatt ctcttcggag aagagcggcg gacgggtgag taacgcgtgg gtaacctgcc 60

tcatacacat ggataacata ccgaaaggta tgctaataca ggataacata agagattcgc 120

atgtttctct tatcaaagct ccggcggtat gagatggacc cgcgtctgat tagctagttg 180

gtaaggtaat ggcttaccaa ggcgacgatc agtagccgac ctgagagggt gatcggccac 240

attggaactg agacacggtc caaactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggcgaaag cctgatgcag caacgccgcg tgagtgatga aggccttcgg gtcgtaaaac 360

tctgtcctca aggaagataa tgacggtact tgaggaggaa gccccggcta actacgtgcc 420

agcagccgcg gtaatacgta gggggctagc gttatccgga tttactgggc gtaaagggtg 480

cgtaggtggt ttcttaagtc aggagtgaaa ggtacggctt aaccgtagta agctcttgaa 540

actgggaaac ttgagtgcag gagaggaaag tggaattcct agtgtagcgg tgaaatgcgt 600

agatattagg aggaacacca gtagcgaagg cggctttctg gactgtaact gacactgagg 660

cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 720

agtactaggt gtcgggggtt acccccctcg gtgccgcagc taacgcatta agtactccgc 780

ctggggagta cgctcgcaag agtgaaactc aaaggaattg acggggaccc gcacaagtag 840

cggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctaagctt gacatccttt 900

tgaccgatgc ctaatcgcat ttttcccttc ggggacagaa gtgacaggtg gtgcatggat 960

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgcct 1020

ttagttgcca gcattaagtt gggcactcta gagggactgc cagggataac ctggaggaag 1080

gtggggatga cgtcaaatca tcatgcccct tatgcttagg gctacacacg tgctacaatg 1140

ggtggtacag agggcagcca agtcgtgagg ccgagctaat cccttaaagc cattctcagt 1200

tcggattgta ggctgaaact cgcctacatg aagctggagt tactagtaat cgcagatcag 1260

aatgctgcgg tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac cacggaagtt 1320

gggggcgccc gaagcctact tagctaa 1347

<210> 606

<211> 1363
<212> DNA
<213> Clostridium methylpentosum

<400> 606
ttgttttggt gaagcccttc ggggtggaac cggctcaact tagtggcgga cgggtgagta 60

acacgtgagc aacctgcctt acagagggga ataacgtttg gaaacgaacg ctaataccgc 120

ataacataac gggatcgcat gattttgtta tcaaagattt tatcgctgta agatgggctc 180

gcgtctgatt agatagttgg tgaggtaatg gctcaccaag tcgacgatca gtagccggac 240

tgagaggttg aacggccaca ttgggactga gacacggccc agactcctac gggaggcagc 300

agtggggaat attgcacaat gggggaaacc ctgatgcagc gacgccgcgt gaaggaagaa 360

ggccttcggg ttgtaaactt ctgtcttcag ggacgataat gacggacctg ggggaagctc 420

cggctaacta cgtgccagca gccgcggtaa tacgtaggga gcgagcgttg tccggaatta 480

ctgggtgtaa agggagcgta ggcgggattg caagttgaat gtgaaatcta tgggcttaac 540

ccataaactg cgttcaaaac tgcagttctt gagtgaagta gaggcaggcg gaattcctag 600

tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg gcctgctggg 660

ctttaactga cgctgaggct cgaaagcgtg ggtagcaaac aggattagat accctggtag 720

tccacgctgt aaacgatgat tactaggtgt agggggggtca accttctgtg ccggagttaa 780

cacaataagt aatccacctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 840

ggggcccgca caagcagtgg agtatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 900

aggtcttgac atccaactaa cgaagtagag atacattaga cgcccttcgg ggaaagttga 960

gacaggtgga gcatgggcgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1020

cgagcgcaac ccttacattt agttgctacg caagagcact ctagatggac tgccgttgac 1080

aaaacggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac 1140

acgtactaca atggctatta acagagggaa gcaatactgt gaagtggagc aaacccctaa 1200

aaatagtctc agttcggatt gtaggctgca actcgcctac atgaagccgg aattgctagt 1260

aatcgcggat cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1320

caccatgaga gttggcaaca cccgaagtca gtagtctaac cgc 1363

<210> 607
<211> 1392
<212> DNA
<213> Clostridium nexile

<400> 607
tcgaacgaag cgcttaaatg gatttcttcg gattgaagtt tttgtgactg agtggcggac 60

gggtgagtaa cgcgtgggta acttgcctca tacaggggga taacagttag aaatgactgc 120

taataccgca taagcgcaca gtgctgcatg gcacagtgtg aaaaactccg gtggtatgag 180

atggacccgc gtctgattag ctagttggtg gggtaacggc ctaccaaggc gacgatcagt 240

agccggcctg agagggtgaa cggccacatt gggactgaga cacggcccaa actcctacgg 300

gaggcagcag tggggaatat tgcacaatgg gggaaaccct gatgcagcga cgccgcgtga 360

gcgaagaagt atttcggtat gtaaagctct atcagcaggg aagaaaatga cggtacctga 420

ctaagaagca ccggctaaat acgtgccagc agccgcggta atacgtatgg tgcaagcgtt 480

atccggattt actgggtgta aagggagcgt agacggttgt gtaagtctga tgtgaaagcc 540

cggggctcaa ccccgggact gcattggaaa ctatgtaact agagtgtcgg agaggtaagc 600

ggaattccta gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc 660

ggcttactgg acgatcactg acgttgaggc tcgaaagcgt ggggagcaaa caggattaga 720

taccctggta gtccacgccg taaacgatga ctactaggtg tcggggagca aagctcttcg 780

gtgccgcagc aaacgcaata agtagtccac ctggggagta cgttcgcaag aatgaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 900

gaagaacctt acctggtctt gacatcccgg tgaccggcaa gtaatgttgc ctttccttcg 960

ggacaccggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccctatcttc agtagccagc atttaaggtg ggcactctgg 1080

agagactgcc agggataacc tggaggaagg tggggatgac gtcaaatcat catgcccctt 1140

atgaccaggg ctacacacgt gctacaatgg cgtaaacaaa gggaagcgaa cctgtgaggg 1200

gaagcaaatc tcaaaaataa cgtctcagtt cggattgtag tctgcaactc gactacatga 1260

agctggaatc gctagtaatc gcgaatcagc atgtcgcggt gaatacgttc ccgggtcttg 1320

tacacaccgc ccgtcacacc atgggagtca gtaacgcccg aagtcagtga cccaaccgta 1380

aggagggagc tg 1392

<210> 608
<211> 1493
<212> DNA
<213> Clostridium novyi

<400> 608
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaacacat gcaagtcgag 60

cgatgaagct tccttcggga agtggattag cggcggacgg gtgagtaaca cgtgggtaac 120

ctgcctcaaa gagtgggata gcctcccgaa agggagatta ataccgcata acattatttt 180

acggcatcgt agaataatca aaggagcaat ccgctttgag atggacccgc ggcgcattag 240

ctagttggtg aggtaacggc tcaccaaggc aacgatgcgt agccgacctg agagggtgat 300

cggccacatt ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcgcaatgg gggaaaccct gacgcagcaa cgccgcgtga gtgatgaagg ttttcggatc 420

gtaaaactct gtcattaggg acgataatga cggtacctaa tgaggaagcc acggctaact 480

acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggattt actgggcgta 540

aagagtatgt aggtgggcat ttaagtcaga tgtgaaattc ccgggcttaa cctgggagct 600

gcatttgata ctgggtgtct agagtgcagg agaggaaagt ggaattccta gtgtagcggt 660

gaaatgcgta gagattagga agaacaccag tggcgaaggc gactttctgg actgtaactg 720

acactgagat acgaaagcgt gggtagcaaa caggattaga taccctggta gtccacgccg 780

taaacgatga atactaggtg tcgggggta ccaccctcgg tgccgcagca aacgcattaa 840

gtattccgcc tggggagtac ggtcgcaaga ttaaaactca aaggaattga cggggacccg 900

cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctagacttg 960

acatctcctg aattactcgt aactgaggaa gtcccttcgg ggacaggaag acaggtggtg 1020

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cttattgtta gttgctacta ttaagttaag cactctaacg agactgccgc ggttaacgtg 1140

gaggaaggtg gggatgacgt caaatcatca tgcccccttat gtctagggct acacacgtgc 1200

tacaatggct ggtacaacga gcagcaatcc cgcgaggggg agcaaaactt gaaagccagt 1260

cccagttcgg attgtaggct gaaactcgcc tacatgaagt tggagttgct agtaatcgcg 1320

aatcagcatg tcgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccatg 1380

agagccggta acacccgaag cccgtgaggt aaccgtaagg agccagcggt cgaaggtggg 1440

attggtgatt ggggtgaagt cgtaacaagg tagccgtagg agaacctgcg gct 1493

<210> 609
<211> 1391
<212> DNA
<213> Clostridium orbiscindens

<220>
<221> modified_base
<222> (16)..(16)
<223> a, c, t, g, unknown or other

<400> 609
tcgaacgggg tgctcntgac ggaggattcg tccaacggat tgagttacct agtggcggac 60

gggtgagtaa cgcgtgagga acctgccttg gagaggggaa taacactccg aaaggagtgc 120

taataccgca tgatgcagtt gggtcgcatg gctctgactg ccaaagattt atcgctctga 180

gatggcctcg cgtctgatta gctagtaggc ggggtaacgg cccacctagg cgacgatcag 240

tagccggact gagaggttga ccggccacat tgggactgag acacggccca gactcctacg 300

ggaggcagca gtggggaata ttgggcaatg ggcgcaagcc tgacccagca acgccgcgtg 360

aaggaagaag gctttcgggt tgtaaacttc ttttgtcggg gacgaaacaa atgacggtac 420

ccgacgaata agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag 480

cgttatccgg atttactggg tgtaaagggc gtgtaggcgg gattgcaagt cagatgtgaa 540

aactgggggc tcaacctcca gcctgcattt gaaactgtag ttcttgagtg ctggagaggc 600

aatcggaatt ccgtgtgtag cggtgaaatg cgtagatata cggaggaaca ccagtggcga 660

aggcggattg ctggacagta actgacgctg aggcgcgaaa gcgtggggag caaacaggat 720

tagataccct ggtagtccac gccgtaaacg atggatacta ggtgtggggg gtctgacccc 780

ctccgtgccg cagttaacac aataagtatc ccacctgggg agtacgatcg caaggttgaa 840

actcaaagga attgacgggg gcccgcacaa gcggtggagt atgtggttta attcgaagca 900

acgcgaagaa ccttaccagg tgtgtgtaac cggcgagtga agcagagatg cattaggtgc 960

ccttcgggga aagtggagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1020

tgggttaagt cccgcaacga gcgcaaccct tattgttagt tgctacgcaa gagcactcta 1080

gcgagactgc cgttgacaaa acggaggaag gtggggacga cgtcaaatca tcatgcccct 1140

tatgtcctgg gccacacacg tactacaatg gtggttaaca gagggaggca ataccgcgag 1200

gtggagcaaa tccctaaaag ccatcccagt tcggattgca ggctgaaacc cgcctgtatg 1260

aagttggaat cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacac catgagagtc gggaacaccc gaagtccgta gcctaaccgc 1380

aaggagggcg c 1391

<210> 610
<211> 1342
<212> DNA
<213> Clostridium oroticum

<400> 610
cggattgaaa gagtgttgcg actgagcggc ggacgggtga gtaacgcgtg ggtaacctgc 60

ctcatacagg gggataacag ttagaaatga ctgctaatac cgtataagac cacggtgccg 120

catggcacag tggtaaaaac tccggtggta tgagatggac ccgcgtctga ttagctagtt 180

ggtagggtaa cggcttacca aggcgacgat cagtagccga cctgagaggg tgaccggcca 240

cattgggact gagacacggc ccaaactcct acgggaggca gcagtgggga atattgcaca 300

atgggggaaa ccctgatgca gcgacgccgc gtgaaggatg aagtatttcg gtatgtaaac 360

ttctatcagc agggaagaaa atgacggtac ctgactaaga agccccggct aactacgtgc 420

cagcagccgc ggtaatacgg gggagcgcgg atttactggg tgtaaaggga gcgtagacgg 480

tgatgcaagt tgatgtgaaa acccggggct caaccccggg actgcattgg aaactgtgtg 540

actagagtgt cggagaggta agtggaattc ctagtgtagc ggtgaaatgc gtagatatta 600

ggaggaacac cagtggcgaa ggcggcttac tggacgatga ctgacgttga ggctcgaaag 660

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgaatactag 720

gtgtcgggtg gcaaagccat tcggtgccgc agcaaacgca gtaagtattc cacctgggga 780

gtacgttcgc aagaatgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca 840

tgtggtttaa ttcgaagcaa cgcgaagaac cttacctgct cttgacatcc cgctgagctg 900

tcaaggaagc ggacatgccg ttgggggtgt ggagacaggt ggtgcatggt tgtcgtcagc 960

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatc tttagtagcc 1020

agcggtcagg ccgggcactc tagagagact gccagggata acctggagga aggtggggat 1080

gacgtcaaat catcatgccc cttatgagca gggctacaca cgtgctacaa tggcgtaaac 1140

aaagggaggc aatactgtga agtggagcaa atcccaaaaa taacgtctca gttcggattg 1200

tagtctgcaa ctcgactaca tgaagctgga atcgctagta atcgcgaatc agaatgtcgc 1260

ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accatgggag ttggtaacgc 1320

ccgaagtcag tgacccaacc gc 1342

<210> 611
<211> 1377
<212> DNA
<213> Clostridium paraputrificum

<400> 611
gtcgagcgat gaagttcctt cgggaacgga ttagcggcgg acgggtgagt aacacgtggg 60

caacctgcct tatagagggg aatagccttc cgaaaggaag attaataccg cataagattg 120

tagcttcgca tgaagcagca attaaaggag caatccgcta taagatgggc ccgcggcgca 180

ttagctagtt ggtgaggtaa cggctcacca aggcgacgat gcgtagccga cctgagaggg 240

tgatcggcca cattgggact gagacacggc ccagactcct acgggaggca gcagtgggga 300

atattgcaca atggggaaa ccctgatgca gcaacgccgc gtgagtgatg acggccttcg 360

ggttgtaaag ctctgtcttt ggggacgata atgacggtac ccaaggagga agccacggct 420

aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg atttactggg 480

cgtaaaggga gcgtaggcgg atttttaagt gggatgtgaa atacccgggc tcaacctggg 540

tgctgcattc caaactggaa atctagagtg caggagggga aagtggaatt cctagtgtag 600

cggtgaaatg cgtagagatt aggaagaaca ccagtggcga aggcgacttt ctggactgta 660

actgacgctg aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac 720

gccgtaaacg atgaatacta ggtgtagggg ttgtcatgac ctctgtgccg ccgctaacgc 780

attaagtatt ccgcctgggg agtacggtcg caagattaaa actcaaagga attgacgggg 840

gcccgcacaa gtagcggagc atgtggttta attcgaagca acgcgaagaa ccttacctag 900

acttgacatc tcctgaatta ccatgtaatg tgggaagtcc cttcggggac aggaagacag 960

gtggtgcatg ggtgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1020

gcaaccctta ttgttagttg ctaccattta gttgagcact ctagcgagac tgcccgggtt 1080

aaccgggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac 1140

acgtgctaca atggccggta caacgagatg caataccgtg aggtggagca aaactataaa 1200

accggtctca gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttactagta 1260

atcgcgaatc agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1320

accatgagag ttggcaatac ccaaagttgg tgatctaacc cgtaagggag gaagcca 1377

<210> 612
<211> 1374
<212> DNA
<213> Clostridium perfringens

<400> 612
tcgagcgatg aagtttcctt cgggaaacgg attagcggcg gacgggtgag taacacgtgg 60

gtaacctgcc tcatagagtg gaatagcctt ccgaaaggaa gattaatacc gcataatgtt 120

gaaagatggc atcatcattc aaccaaagga gcaatccgct atgagatgga cccgcggcgc 180

attagctagt tggtggggta acggcctacc aaggcgacga tgcgtagccg acctgagagg 240

gtgatcggcc acattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatggggaa accctgatgc agcaacgccg cgtgagtgat gaaggttttc 360

ggatcgtaaa gctctgtctt tggggaagat aatgacggta cccaaggagg aagccacggc 420

taactacgtg ccagcagccg cggtaatacg taggtggcga gcgttatccg gatttactgg 480

gcgtaaaggg agcgtaggcg gatgattaag tgggatgtga aatacccggg ctcaacttgg 540

gtgctgcatt ccaaactggt tatctagagt gcaggagagg agagtggaat tcctagtgta 600

gcggtgaaat gcgtagagat taggaagaac accagtggcg aaggcgactc tctggactgt 660

aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 720

cgccgtaaac gatgaatact aggtgtgggg gtttcaacac ctccgtgccg ccgctaacgc 780

attaagtatt ccgcctgggg agtacggtcg caagattaaa actcaaagga attgacgggg 840

acccgcacaa gtagcggagc atgtggttta attcgaagca acgcgaagaa ccttacctac 900

acttgacatc ccttgcatta ctcttaatcg aggaggacca ttaggggga tgggaaatag 960

ccgggctcaa cttgggtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1020

caacccttgt cgttagttac taccattaag ttgaggactc tagcgagact gcctgggtta 1080

accaggagga aggtggggat gacgtcaaat catcatgccc cttatgtgta gggctacaca 1140

cgtgctacaa tggctggtac agagagatgc aataccgcga ggtggagcca aacttaaaaa 1200

ccagtctcag ttcggattgt aggctgaaac tcgcctacat gaagctggag ttactagtaa 1260

tcgcgaatca gaatgtcgcg gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca 1320

ccatgagagt tggcaatacc cgaagtccgt gagctaaccg caaggaggca gcgg 1374

<210> 613
<211> 1523
<212> DNA
<213> Clostridium phytofermentans

<400> 613
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggagttttta aatggaagtc ctcggatgga agtttagaaa cttagtggcg gacgggtgag 120

taacgcgtgg gtaacctgcc tcatacaggg ggataacagt cggaaacgat tgctaaaacc 180

gcataacata gcgaaaccgc atgattttgc tatcaaatat ttataggtat gagatggacc 240

cgcgtctgat tagctagttg gtggggtaat ggcctaccaa ggcgacgatc agtagccggc 300

ttgagagagt gaccggccac attgggactg agacacggcc caaactccta cgggaggcag 360

cagtggggaa tattggacaa tgggggaaac cctgatccag cgacgccgcg tgagtgaaga 420

agtatttcgg tatgtaaagc tctatcagca gggaagataa tgacagtacc tgactaagaa 480

gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc gttatccgga 540

tttactgggt gtaaagggag cgtaggtggt aggtcaagtc agatgtgaaa gcccagggct 600

caaccctggg actgcatttg aaactggctt actagagtgc aggagaggta agtggaattc 660

ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa ggcggcttac 720

tggactgtaa ctgacactga ggctcgaaag cgtggggagc aaacaggatt agataccctg 780

gtagtccacg ccgtaaacga tgaatactag ctgtcggggc tatcatggct tcggtggcgc 840

agctaacgca ataagtattc cacctgggga gtacgttcgc aagaatgaaa ctcaaaggaa 900

ttgacgggga cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaagt cttgacatcc ctctgacaac cgagtaacgt cggtcttcct tcgggacaga 1020

ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

caacgagcgc aacccctatc tttagtagcc agcagttcgg ctgggcactc tagagagact 1140

gccagggata acctggagga aggcggggat gacgtcaaat catcatgccc cttatgattt 1200

gggctacaca cgtgctacaa tggtgactac aaagagaagc aagcctgcga gggggagcaa 1260

atctcaaaaa ggtcatccca gttcggattg tactctgcaa ctcgagtaca tgaagctgga 1320

atcgctagta atcgcgaatc agaatgtcgc ggtgaatacg ttcccgggtc ttgtacacac 1380

cgcccgtcac accatgggag taggtaacgc ccgaagtcag tgacccaacc gtaaggaggg 1440

agctgccgaa ggcgggatct ataactgggg tgaagtcgta acaaggtagc cgtatcggaa 1500

ggtgcggctg gatcacctcc ttt 1523

<210> 614
<211> 1482
<212> DNA
<213> Clostridium piliforme

<400> 614
agagtttgat catggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

ggggatataa tagcgttaat cgctaatata ttctagcggc ggacgggtga gtaacgcgtg 120

ggtaacctgc cctatacact gggataacat cgagaaatcg gtgctaatac cggataagct 180

aacagtaagg catcttatag ttagaaaaac tgaggtggta taggaggggc ccgcgtctga 240

ttagctagtt ggtgtggtaa aagcatacca aggcgacgat cagtagccga cctgagaggg 300

tgatcggcca cattggaact gagacacggt ccaaactcct acgggaggca gcagtgggga 360

atattgcaca atgggggaa ccctgatgca gcaacgccgc gtgaaggaag aagtatttcg 420

gtatgtaaac ttctatcgac agggaagaaa aaaatgacgg tacctgaata agaagcaccg 480

gctaaatacg tgccagcagc cgcggtaata cgtatggtgc aagcgttatc cggatttact 540

gggtgtaaag ggtgagtagg cggttagata agtcatatgt gaaattctgg ggctcaactc 600

cagcgctgca taagaaacta tttaactaga gtacaggaga ggtaagcgga attcctagtg 660

tagcggtgaa atgcgtagat attaggaaga acaccggtgg cgaaggcggc ttactggact 720

gaaactgacg ctgagtcacg aaagcgtggg gagcgaacag gattagatac cctggtagtc 780

cacgctgtaa acgatgagtg ctaggtgttg ggaagaaatt ctcggtgccg cagcaaacgc 840

aataagcact ccacctgggg agtacgaccg caaggttgaa actcaaagga attgacgggg 900

acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttacctaa 960

acttgacata ccattgacag gctacgtaaa gtagctttcc ttcggggcaa tggatacagg 1020

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccctat tcttagtagc cagcactttg ggtgggcact ctaaggagac tgccgtggat 1140

aacacggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgttt agggctacac 1200

acgtgctaca atggctataa caaagtgaag cgagacagtg atgtggagca aagcacataa 1260

aagtagtccc agttcggatt gtagtctgca actcgactac atgaagttgg aatcgctagt 1320

aatcgcgaat cagaatgtcg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca 1380

caccatggga gttggaagca cccgaagcct gtgacctaac cgtaagggag gagcagtcga 1440

aggtgaagcc agtgactggg gtgaagtcgt aacaaggtaa cc 1482

<210> 615
<211> 1487
<212> DNA
<213> Clostridium putrefaciens

<400> 615
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gaagttattc cttcgggaat aacttagcgg cggacgggtg agtaacacgt gggtaacctg 120

cctcatagag ggggatagcc ttccgaaagg aagattaata ccccataaca tagcattatc 180

gcatgataaa gttattaaag gagtaatccg ctatgagatg gacccgcggc gcattagcta 240

gttggtgagg taacggctca ccaaggccac gatgcgtagc cgacctgaga gggtgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg aaagcctgat gcagcaacgc cgcgtgagtg atgaaggcct tcgggtcgta 420

aagctctgtc ttcggggacg ataatgacgg tacccgagga ggaagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggatttact gggcgtaaag 540

ggagcgtagg cggatactta agtgggatgt gaaatacccg ggctcaaccc gggtgctgca 600

ttccaaactg ggtatctaga gtgtgggaga ggaaagtgga attcctagtg tagcggtgaa 660

atgcgtagat attaggaaga acaccagtgg cgaaggcgac tttctggacc ataactgacg 720

ctgaggctcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatggata ctaggtgtgg gggataccaa tcctccgtgc cgtcgttaac acactaagta 840

tcccgcctgg ggagtacgat cgcaagatta aaactcaaag gaattgacgg gggcccgcac 900

aagcagcgga gcatgtggtt taattcgaag caacgcgaag aaccttacct agacttgaca 960

tctcctgaat tacctgtaat tagggaagcc cttcggggca ggaagacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat 1080

tgttagttgc taccatttag ttgagcactc tagcgagact gcctgggtta accaggagga 1140

aggtggggat gacgtcaaat catcatgccc cttatgtcta gggctacaca cgtgctacaa 1200

tggcgagtac aacgagacgc aataccgcga ggtggagcaa aactcaaaaa actcgtccca 1260

gttcggattg taggctgaaa ctcgcctaca tgaagccgga gttgctagta atcgcgaatc 1320

agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

ttggcaatac ccgaagtccg tgtgctaacg cgtaagcgag gcagcggccg aaggtagggt 1440

cagcgattgg ggtgaagtcg taacaaggta gccgtagaag aacctgc 1487

<210> 616
<211> 1477
<212> DNA
<213> Clostridium quinii

<400> 616
tttatcctga ctcagacgaa cgcttggcgg cgtgcctaac acatgcaagt cgagcgagga 60

gattccttcg ggatgatcct agcggcggac gggtgagtaa cacgtgggca acctgcctca 120

tagagaggaa tagcctcccg aaagggagat taatacctca taacattgca gtttgcatgg 180

gacagcaatt aaaggagcaa tccgctatga gatgggcccg cggcgcatta gctagttggt 240

gaggtaacgg ctcaccaagg cgacgatgcg tagccgacct gagagggtga tcggccacat 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg 360

ggggaaaccc tgatgcagca acgccgcgtg agtgatgacg gccttcgggt tgtaaagctc 420

tgtcttcagg gacgataatg acggtacctg aggaggaagc cacggctaac tacgtgccag 480

cagccgcggt aatacgtagg tggcaagcgt tgtccggatt tactgggcgt aaagggagcg 540

taggcggact tttaagtgag atgtgaaata cccgggctca acctgggtgc tgcatttcaa 600

actggaagtc tagagtgcag gagaggagag tggaattcct agtgtagcgg tgaaatgcgt 660

agagattagg aagaacacca gtggcgaagg cgactctctg gactgtaact gacgctgagg 720

ctcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 780

aatactaggt gtaggggttg tcgatgacct ctgtgccgcc gtaacgcatt aagtattccg 840

cctggggagt acggtcgcaa gattaaaact caaaggaatt gacggggcc cgcacaagca 900

gcggagcatg tggtttaatt cgaagcaacg cgaagaacct tacctagact tgacatctcc 960

tgaattactc ttaatcgagg aagtcttcag acagggaaga caggttgtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttattgttag 1080

ttgctaccat ttagttgagc actctagcga gactgcccgg gttaaccggg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccccttatg tctagggcta cacacgtgct acaatggcaa 1200

gtacaaagag aagcaagacc gcgaggtgga gcaaaactca aaaacttgtc tcagttcgga 1260

ttgtaggctg aaactcgcct acatgaagct ggagttgcta gtaatcgcga atcagcatgt 1320

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagttggcaa 1380

tacccaaagt tggtggtcta acctgaagga ggaagccacc taaggtaggg tcagcgattg 1440

gggtgaagtc gtaacaaggt agccgtagag aaccttg 1477

<210> 617
<211> 1040
<212> DNA
<213> Clostridium ramosum

<220>
<221> modified_base
<222> (7)..(9)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (12)..(12)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (18)..(18)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (20)..(20)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (22)..(22)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (27)..(27)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (43)..(43)
<223> a, c, t, g, unknown or other

<400> 617
gcgtgannng angttttngn tntaaantct ntataaagga agnacggcgg ctacaggaaa 60

tggtagccga gtgacggtac tttattagaa agccacggct aactacgtgc cagcagccgc 120

ggtaatacgt aggtggcaag cgttatccgg aattattggg cgtaaagagg gagcaggcgg 180

cagcaagggt ctgtggtgaa agcctgaagc ttaacttcag taagccatag aaaccaggca 240

gctagagtgc aggagaggat cgtggaattc catgtgtagc ggtgaaatgc gtagatatat 300

ggaggaacac cagtggcgaa ggcgacgatc tggcctgcaa ctgacgctca gtcccgaaag 360

cgtggggagc aaataggatt agataccct a gtagtccacg ccgtaaacga tgagtactaa 420

gtgttggatg tcaaagttca gtgctgcagt taacgcaata agtactccgc ctgagtagta 480

cgttcgcaag aatgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 540

ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatactca taaaggctcc 600

agagatggag agatagctat atgagataca ggtggtgcat ggttgtcgtc agctcgtgtc 660

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt atcgttagtt accatcatta 720

agttggggac tctagcgaga ctgccagtga caagctggag gaaggcgggg atgacgtcaa 780

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggatggt gcagagggaa 840

gcgaagccgc gaggtgaagc aaaacccata aaaccattct cagttcggat tgtagtctgc 900

aactcgacta catgaagttg gaatcgctag taatcgcgaa tcagcatgtc gcggtgaata 960

cgttctcggg ccttgtacac accgcccgtc acaccacgag agttgataac acccgaagcc 1020

ggtggcctaa ccgcaaggaa 1040

<210> 618
<211> 1505
<212> DNA
<213> Clostridium rectum

<400> 618
gagagtttga tcctggctca ggatgaacgc tgacagaatg cttaacacat gcaagtctag 60

cttgatcctt cgggtgatgg tggcggacgg gtgagtaacg cgtaaagaac ttgccctgca 120

gtctgggaca acatttggaa acgaatgcta ataccggata ttatgtgagt ttcgcatgaa 180

attcatatga aagctatatg cgctgcagga gagctttgcg tcctattagc tagttggtga 240

ggtaacggct caccaaggcg atgataggta gccggcctga gagggtgaac ggccacaagg 300

ggactgagac acggccctta ctcctacggg aggcagcagt ggggaatatt ggacaatgga 360

ccaaaagtct gatccagcaa ttctgtgtgc acgatgaagt tttcggaatg taaagtgctt 420

tcagttggga cgaagtaagt gacggtacca acagaagaag cgacggctaa atacgtgcca 480

gcagccgcgg taatacgtat gtgcaagcgt tatccggatt tattgggcgt aaagcgcgtc 540

gtaggcggtt tggtaagtct gatgtgaaaa tgcggggctc aactccgtat tgcgttggaa 600

actgtccaaa ctagagtact ggagaggtgg gcggaactac aagtgtagag gtgaaattcg 660

tagatatttg taggaatgcc gatggggaag ccagcccact ggacagatac tgacgctaaa 720

gcgcgaaagc gtgggtagca aacaggatta gataccctgg cctggtagtc cacgccgtaa 780

acgatgatta ctaggtgttg ggggtcgaac ctcagcgccc aagctaacgc gataagtaat 840

ccgcctgggg agtacgtacg caagtatgaa actcaaagga attgacgggg acccgcacaa 900

gcggtggagc atgtggttta attcgacgca acgcgaggaa ccttaccagc gtttgacatc 960

ctaagaaatt agcagagatg cttttgtgcc ttcgggggaa cttagtgaca ggtggtgcat 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct 1080

ttcgtatgtt gccatcatta agttgggcac tcatgcgata ctgcctgcga tcagcaggag 1140

gaaggtgggg atgacgtcaa gtcatcatgc cccttatacg ctgggctaca cacgtgctac 1200

aatgggtagt acagagagtc gcaaacctgc gaggggggagc taatctcaga aaactattct 1260

cagttcggat tgtactctgc aactcgagta catgaagttg gaatcgctag taatcgcaaa 1320

tcagctatgt tgcggtgaat acgttctcgg gtcttgtaca caccgcccgt cacaccacga 1380

gagttggttg cacctgaagt agcaggccta accgcaagga gggatgctcc gagggtgtga 1440

ttagcgattg gggtgaagtc gtaacaaggt atccgtacgg gaacgtgcgg ctggatcacc 1500

tcctt 1505

<210> 619
<211> 1326
<212> DNA
<213> Clostridium saccharogumia

<400> 619
gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa gacataagta acctgccctt tacaggggga taactattgg 120

aaacgatagc taagaccgca tagtaaaact ggtagaggat ggacttatgg cgcattagct 180

ggttggtgag gtaacggctc accaaggcga cgatgcgtag ccgacctgag agggtgaccg 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta gggaattttc 300

ggcaatgggg ggaaccctga ccgagcaacg ccgcgtgaag gaggaaggtc ttcggactgt 360

aaacttctgt tataaaggaa gatgacggta ctttatgagg aagccacggc taactacgtg 420

ccagcagccg cggtaatacg taggtggcaa gcgttatccg gaattattgg gcgtaaagag 480

ggagcaggcg gcagcaaggg tctgtggtga aagactgaag cttaacttca gtaagccata 540

gaaaccgggc agctagagtg caggagagga tcgtggaatt ccatgtgtag cggtgaaatg 600

cgtagatata tggaggaaca ccagtggcga aggcgacgat ctggcctgac tgacgctcag 660

tcccgaaagc gtggggagca aataggatta gataccctag tagtccacgc cgtaaacgat 720

gagtactaag tgttgggatc tcagtgctgc agttaacgca gtaagtactc cgcctgagta 780

gtacgttcgc aagaatgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 840

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatat acaggtggtg 900

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cttatcgtta gttaccatca tggggactct agcgagactg ccagtgacaa gctggaggaa 1020

ggcggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat 1080

ggatggcaga gggaagcgaa gccgcgaggt ggagcgaaac ccagccattc tcagttcgga 1140

tgtagtctgc aactcgacta cagaagttgg aatcgctagt aatcgcgaat cagcatgtcg 1200

cggtgaatac gttctcgggc cttgtacaca ccgcccgtca caccatgaga gttgataaca 1260

cccgaagccg gtgcctaggg agctgtctaa ggtgggattg atgattgggg tgaagtcgta 1320

acaagg 1326

<210> 620
<211> 1519
<212> DNA
<213> Clostridium saccharolyticum

<400> 620

agagttcgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gaagcacttt taaggaagtt ttcggatgga attaaaagtg actgagcggc ggacgggtga 120

gtaacgcgtg ggtaacctgc ctcatacagg gggataacag ttggaaacga ctgctaatac 180

cgcataagca cacagtgccg catggtacgg tgtgaaaaac tccggtggta tgagatggac 240

ccgcgtctga ttaggtagtt ggtgaggtaa cggcccacca agccgacgat cagtagccga 300

cctgagaggg tgaccggcca cattgggact gagacacggc ccaaactcct acgggaggca 360

gcagtgggga atattggaca atgggggaaa ccctgatcca gcgacgccgc gtgagtgaag 420

aagtatttcg gtatgtaaag ctctatcagc agggaagaaa atgacggtac ctgactaaga 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt aggggcaag cgttatccgg 540

atttactggg tgtaaaggga gcgtagacgg cactgcaagt ctggagtgaa agcccggggc 600

tcaaccccgg gactgctttg gaaactgtgg tgctggagtg caggagaggt aagtggaatt 660

cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccagtggcga aggcggctta 720

ctggactgta actgacgttg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatacta ggtgttgggg agcaaagctc ttcggtgccg 840

ccgctaacgc aataagtatt ccacctgggg agtacgttcg caagaatgaa actcaaagga 900

attgacgggg acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccaag tcttgacatc ggaatgaccg gtccgtaacg gggccttccc ttcggggcat 1020

tccagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttat ccttagtagc cagcagttcg gctgggcact ctggggagac 1140

tgccagggat aacctggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgatt 1200

tgggctacac acgtgctaca atggcgtaaa caaagggaag caaaggagcg atctggagca 1260

aaccccaaaa ataacgtctc agttcggatt gtagtctgca actcgactac atgaagctgg 1320

aatcgctagt aatcgcggat cagaatgccg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gttggtaacg cccgaagtca gtgacccaac cgtaaggagg 1440

gagctgccga aggcgggact gataactggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtgcggct ggatcacct 1519

<210> 621
<211> 1519
<212> DNA
<213> Clostridium sardiniense

<400> 621
tttaaattga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taacacatgc 60

aagtcgagcg atgaagtttc cttcgggaaa cggattagcg gcggacgggt gagtaacacg 120

tgggtaacct gcctcataga ggggaatagc cttccgaaag gaagattaat accgcataac 180

attgcagttt cgcatgaaac agcaattaaa ggagcaatcc gctatgagat ggacccgcgg 240

cgcattagct agttggtaag gtaatggctt accaaggcga cgatgcgtag ccgacctgag 300

agggtgatcg gccacattgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggg gaaaccctga tgcagcaacg ccgcgtgagt gatgacggtc 420

ttcggattgt aaagctctgt ctttggggac gataatgacg gtacccaagg aggaagccac 480

ggctaactac gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt ccggatttac 540

tgggcgtaaa gggagcgtag gcggattttt aagtgggatg tgaaataccc gggctcaacc 600

tgggtgctgc attccaaact gggaatctag agtgcaggag gggagagtgg aattcctagt 660

gtagcggtga aatgcgtaga gattaggaag aacaccagtg gcgaaggcga ctctctggac 720

tgtaactgac gctgaggctc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 780

ccacgccgta aacgatgaat actaggtgta ggggtttcga tacctctgtg ccgccgctaa 840

cgcattaagt attccgcctg gggagtacgg tcgcaagatc aaaactcaaa ggaattgacg 900

ggggcccgca caagtagcgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 960

tagacttgac atcttctgca ttacccttaa tcggggaagt cctttcgggg acagaatgac 1020

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaacccc tattgttagt tgctaccatt aagttgagca ctctagcgag actgcccggg 1140

ttaaccggga ggaaggtggg gatgacgtca aatcatcatg ccccttatgt ctagggctac 1200

acacgtgcta caatggcaag tacagagaga tgcaataccg tgaggtggag ctaaacttca 1260

aaacttgtct cagttcggat tgtaggctga aactcgccta catgaagctg gagttactag 1320

taatcgcgaa tcagcatgtc gcggtgaata cgttcccggg ccttgtacac accgcccgtc 1380

acaccatgag agttggcaat acccaaagtt cgtgagctaa cgcgtaagcg aggcagcgac 1440

ctaaggtagg gtcagcgatt ggggtgaagt cgtaacaagg tagccgtagg agaacctgcg 1500

gctggatcac ctcctttct 1519

<210> 622
<211> 1470
<212> DNA
<213> Clostridium sartagoforme

<400> 622
ggctcaggac gaacgctggc ggcgtgccta acacatgcaa gtcgagcgag gagattccct 60

tcggggatga acctagcggc ggacgggtga gtaacacgtg ggcaacctgc cttatagagg 120

ggaatagcct tccgaaagga agattaatac cgcataacat tacattttcg catgaagaag 180

taattaaagg agtaatccgc tataagatgg gcccgcggcg cattagctag ttggtgaggt 240

aacggctcac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc cacattggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatattgca caatggggga 360

aaccctgatg cagcaacgcc gcgtgagtga tgaaggtctt cggatcgtaa agctctgtct 420

tcagggacga taatgacggt acctgaggag gaagccacgg ctaactacgt gccagcagcc 480

gcggtaatac gtaggtggcg agcgttgtcc ggatttactg ggcgtaaagg gagcgtaggc 540

ggatttttaa gtgagatgtg aaatacccgg gctcaacttg ggtgctgcat ttcaaactgg 600

aagtctagag tgcaggagag gagagtggaa ttcctagtgt agcggtgaaa tgcgtagaga 660

ttaggaggaa caccagtggc gaaggcgact ctctggactg taactgacgc tgaggctcga 720

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgaatac 780

taggtgtagg ggttgtcatg acctctgtgc cgccgcaaac gcattaagta ttccgcctgg 840

ggagtacggt cgcaagatta aaactcaaag gaattgacgg gggcccgcac aagcagcgga 900

gcatgtggtt taattcgaag caacgcgaag aaccttacct agacttgaca tctcctgaat 960

tactcttaat cgaggaagtc ccttcgggga caggaagaca ggtggtgcat ggttgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt attgttagtt 1080

gctaccatta agttgagcac tctagcaaga ctgcccgggt taaccgggag gaaggtgggg 1140

atgacgtcaa atcatcatgc cccttatgtc tagggctaca cacgtgctac aatggcaagt 1200

acaaaaagat gcaataccgc aaggtggagc taaacttaaa aacttgtctc agttcggatt 1260

gtaggctgaa actcgcctac atgaagctgg agttgctagt aatcgcgaat cagaatgtcg 1320

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatgaga gttggcaata 1380

cccaaagttc gtgagctaac ccgtaaggga ggcagcgacc taaggtaggg tcagcgaatg 1440

gggtgaagtc gtaacaaggt agccgtagga 1470

<210> 623
<211> 1529
<212> DNA
<213> Clostridium scindens

<400> 623
gagagtttga tcctggctca ggatgaacgc tggcggcgtg cctaacacat gcaagtcgaa 60

cgaagcgcct ggccccgact tcttcggaac gaggagcctt gcgactgagt ggcggacggg 120

tgagtaacgc gtgggcaacc tgccttgcac tgggggataa cagccagaaa tggctgctaa 180

taccgcataa gaccgaagcg ccgcatggcg cggcggccaa agccccggcg gtgcaagatg 240

ggcccgcgtc tgattaggta gttggcgggg taacggccca ccaagccgac gatcagtagc 300

cgacctgaga gggtgaccgg ccacattggg actgagacac ggcccagact cctacgggag 360

gcagcagtgg ggaatattgc acaatggggg aaaccctgat gcagcgacgc cgcgtgaagg 420

atgaagtatt tcggtatgta aacttctatc agcagggaag aagatgacgg tacctgacta 480

agaagccccg gctaactacg tgccagcagc cgcggtaata cgtaggggcc aagcgttatc 540

cggatttact gggtgtaaag ggagcgtaga cggcgatgca agccagatgt gaaagcccgg 600

ggctcaaccc cgggactgca tttggaactg cgtggctgga gtgtcggaga ggcaggcgga 660

attcctagtg tagcggtgaa atgcgtagat attaggagga acaccagtgg cgaaggcggc 720

ctgctggacg atgactgacg ttgaggctcg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgccgtaa acgatgacta ctaggtgtcg ggtggcaagg ccattcggtg 840

ccgcagcaaa cgcaataagt agtccacctg gggagtacgt tcgcaagaat gaaactcaaa 900

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 960

gaaccttacc tgatcttgac atcccgatgc caaagcgcgt aacgcgctct ttcttcggaa 1020

catcggtgac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaacccc tatcttcagt agccagcatt ttggatgggc actctggaga 1140

gactgccagg gagaacctgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg 1200

accagggcta cacacgtgct acaatggcgt aaacaaaggg aggcgaaccc gcgagggtgg 1260

gcaaatccca aaaataacgt ctcagttcgg attgtagtct gcaactcgac tacatgaagt 1320

tggaatcgct agtaatcgcg aatcagaatg tcgcggtgaa tacgttcccg ggtcttgtac 1380

acaccgcccg tcacaccatg ggagtcagta acgcccgaag ccggtgaccc aacccgtaag 1440

ggagggagcc gtcgaaggtg ggaccgataa ctggggtgaa gtcgtaacaa ggtagccgta 1500

tcggaaggtg cggctggatc acctccttc 1529

<210> 624
<211> 1507
<212> DNA
<213> Clostridium septicum

<400> 624
agagtttgat catggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gaggggagtt tcttcggaaa caaacctagc ggcggacggg tgagtaacac gtgggcaacc 120

tgccttgtag aggggaatag cctcccgaaa gggagattaa taccgcataa cattgcagct 180

tcgcatggag cagcaattaa aggagtaatc cgctacaaga tgggcccgcg gcgcattagc 240

tagttggtga ggtaacggct caccaaggcg acgatgcgta gccgacctga gagggtgatc 300

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg ggaaaccctg atgcagcaac gccgcgtgag tgatgaaggt tttcggatcg 420

taaagctctg tcttcaggga cgataatgac ggtacctgag gaggaagcca cggctaacta 480

cgtgccagca gccgcggtaa tacgtaggtg gcgagcgttg tccggattta ctgggcgtaa 540

agggagcgta ggcggacttt taagtgagat gtgaaatacc cgggctcaac ctgggggctg 600

catttcaaac tggaagtcta gagtgcagga gaggagagtg gaattcctag tgtagcggtg 660

aaatgcgtag agattaggaa gaacaccagt ggcgaaggcg actctctgga ctgtaactga 720

cgctgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgga tactaggtgt gggaggtatc aactccttcc gtgccgccgt taacacatta 840

agtatcccgc ctggggagta cggtcgcaag attaaaactc aaaggaattg acgggggccc 900

gcacaagcag cggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctagactt 960

gacatctcct gcattactct taatcgagga agtcccttcg gggacaggat gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttattgtt agttgctacc atttagttga gcactctagc gagactgccc gggttaaccg 1140

ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtctagggc tacacacgtg 1200

ctacaatggc aagtacaacg agatgcaata ccgygaggtg gagctaaact ataaaacttg 1260

tctcagttcg gattgtaggc tgaaactcgc ctacatgaag ctggagttgc tagtaatcgc 1320

gaatcagcat gtcgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccat 1380

gagagttggc aatacccaaa gttcgtgagc taaccgcaag gaggcagcga cctaaggtag 1440

ggtcagcgat tggggtgaag tcgtaacaag gtagccgtag gagaacctgc ggctggatca 1500

cctcctt 1507

<210> 625
<211> 1364
<212> DNA
<213> Clostridium sordellii

<220>
<221> modified_base
<222> (12)..(12)
<223> a, c, t, g, unknown or other

<400> 625
gtcgagcgat cncttcggag agagcggcgg acgggtgagt aacgcgtggg taacctgccc 60

tgtacacacg gataacatac cgaaaggtat actaatacgg gataacatat gaaagtcgca 120

tggcttttgt atcaaagctc cggcggtaca ggatggaccc gcgtctgatt agctagttgg 180

taaggtaatg gcttaccaag gcaacgatca gtagccgacc tgagagggtg atcggccaca 240

ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat attgcacaat 300

gggcgaaagc ctgatgcagc aacgccgcgt gagcgatgaa ggccttcggg tcgtaaagct 360

ctgtcctcaa ggaagataat gacggtactt gaggaggaag ccccggctaa ctacgtgcca 420

gcagccgcgg taatacgtag ggggctagcg ttatccggaa ttactgggcg taaagggtgc 480

gtaggtggtt ttttaagtca gaagtgaaag gctacggctc aaccgtagta agcttttgaa 540

actagagaac ttgagtgcag gagaggagag tagaattcct agtgtagcgg tgaaatgcgt 600

agatattagg aggaatacca gtagcgaagg cggctctctg gactgtaact gacactgagg 660

cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 720

agtactaggt gtcgggggtt acccccctcg gtgccgcagc taacgcatta agtactccgc 780

ctgggaagta cgctcgcaag agtgaaactc aaaggaattg acggggaccc gcacaagtag 840

cggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctaagctt gacatcccac 900

tgacctctcc ctaatcggag atttcccttc ggggacagtg gtgacaggtg gagcatggaa 960

gtcgtcagct cgtgtcgtga gatgttggga ttagtcccgc aacgagcgca acccttgcct 1020

ttagttgcca gcattaagtt gggcactcta gagggactgc cgaggataac tcggaggaag 1080

gtggggatga cgtcaaatca tcatgcccct tatgcttagg gctacacacg tgctacaatg 1140

ggtggtacag agggttgcca agccgcgagg tggagctaat cccttaaagc cattctcagt 1200

tcggattgta ggctgaaact cgcctacatg aagctggagt tactagtaat cgcagatcag 1260

aatgctgcgg tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac catggaagtt 1320

gggggcgccc gaagccggtt agctaacctt ttaggaagcg gccg 1364

<210> 626
<211> 1378
<212> DNA
<213> Clostridium sp. 7_2_43FAA

<400> 626
tcgagcgaga ggagttcctt cgggaacaaa tctagcggcg gacgggtgag taacacgtgg 60

gcaacctgcc ttgtagaggg gaatagcctt ccgaaaggaa gattaatacc gcataatatt 120

acattttcgc atgaagaagt aattaaagga gcaatccgct acaagatggg cccgcggcgc 180

attagctagt tggtgaggta acggctcacc aaggcgacga tgcgtagccg acctgagagg 240

gtgatcggcc acattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatggggaa accctgatgc agcaacgccg cgtgagtgat gaaggtcttc 360

ggatcgtaaa gctctgtctt cagggacgat aatgacggta cctgaggagg aagccacggc 420

taactacgtg ccagcagccg cggtaatacg taggtggcga gcgttgtccg gatttactgg 480

gcgtaaaggg agcgtaggcg gatttttaag tgagatgtga aatacccggg ctcaacttgg 540

gtgctgcatt tcaaactgga agtctagagt gcaggagagg agagtggaat tcctagtgta 600

gcggtgaaat gcgtagagat taggaagaac accagtggcg aaggcgactc tctggactgt 660

aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 720

cgccgtaaac gatgaatact aggtgtaggg gttgtcatga cctctgtgcc gccgcaaacg 780

cattaagtat tccgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg 840

ggcccgcaca agcagcggac catgtggttt aattcgaagc aacgcgaaga accttaccta 900

gacttgacat ctcctgcatt actcttaatc gaggaagtcc tttcggggac aggatgacag 960

gtgctgcatg ttaaactgga agtctagagt gcaggagtgg ggtgaggacc tccaagtagc 1020

gcaaccctta ttgttagttg ctaccattta gttgagcact ctagcgagac tgcccgggtt 1080

aaccgggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac 1140

acgtgctaca atggcaagta caaagagatg cgataccgcg aggtggagct aaactataaa 1200

acttgtctca gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttgctagta 1260

atcgcgaatc agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1320

accatgagag ttggcaatac ccaaagttcg tgagctaacc cgtaagggag gcagcgac 1378

<210> 627
<211> 1390
<212> DNA
<213> Clostridium sp. D5

<220>
<221> modified_base
<222> (1252)..(1252)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1302)..(1302)
<223> a, c, t, g, unknown or other

<400> 627
tcgagcgaag cgctttactt agatttcttc ggattgaaga gtgttgcgac tgagcggcgg 60

acgggtgagt aacgcgtggg taacctgcct catacagggg gataacagtt agaaatgact 120

gctaataccg cataagacca cagtaccgca tggtacagtg ggaaaaactc cggtggtatg 180

agatggaccc gcgtctgatt agctagttgg taaggtaacg gcttaccaag gcgacgatca 240

gtagccgacc tgagagggtg accggccaca ttgggactga gacacggccc aaactcctac 300

gggaggcagc agtggggaat attgcacaat gggggaaacc ctgatgcagc gacgccgcgt 360

gaaggatgaa gtatttcggt atgtaaactt ctatcagcag ggaagaaaat gacggtacct 420

gactaagaag ccccggctaa ctacgtgcca gcagccgcgg taatacgtag ggggcaagcg 480

ttatccggat ttactgggtg taaagggagc gtagacggtt atgtaagtct gatgtgaaaa 540

cccggggctc aaccccggga ctgcattgga aactatgtaa ctagagtgtc ggagaggtaa 600

gtggaattcc tagtgtagcg gtgaaatgcg tagatattag gaggaacacc agtggcgaag 660

gcggcttact ggacgatgac tgacgttgag gctcgaaagc gtggggagca aacaggatta 720

gataccctgg tagtccacgc cgtaaacgat gcatactagg tgtcgggtgg caaagccatt 780

cggtgccgca gcaaacgcaa taagtatgcc acctggggag tacgttcgca agaatgaaac 840

tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttatt tcaaagcaac 900

gcgaagaatc ttacctgctc ttgacatccc cctgaccggc gcgtaatggt gcctttcctt 960

cgggacaggg gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt 1020

taagtcccgc aacgagcgca acccttatct ttagtagcca gcggttcggc cgggcactct 1080

agagagactg ccagggataa cctggaggaa ggtggggatg acgtcaaatc atcatgcccc 1140

ttatgagcag ggttacacac gtgctacaat ggcgtaaaca aagggaggca atcccgcgag 1200

gttgagcaaa tcccaaaaat aacgtttcac ttcggatcgt agtgtgcaac tngattacac 1260

gaagctggca ttcatagtaa tcgggaatca gaatgtcgcg gngaatacgt tcccgggtct 1320

tgtacacacc gcccgtcaca ccatgggagt tggtaacgcc cgaagtcagt gacccaaccg 1380

taaggaggga 1390

<210> 628
<211> 1381
<212> DNA
<213> Clostridium sp. HGF2

<220>
<221> modified_base
<222> (15)..(15)
<223> a, c, t, g, unknown or other

<400> 628
tcgaacgaag tttcnaggaa gcttgcttcc aaagagactt agtggcgaac gggtgagtaa 60

cacgtaggta acctgcccat gtgtccggga taactgctgg aaacggtagc taaaaccgga 120

taggtatacg gagcgcatgc tctgtatatt aaagcgccca tcaaggcgtg aacatggatg 180

gacctgcggc gcattagcta gttggtgagg taacggccca ccaaggcgat gatgcgtagc 240

cggcctgaga gggtaaacgg ccacattggg actgagacac ggcccaaact cctacgggag 300

gcagcagtag ggaattttcg tcaatggggg aaaccctgaa cgagcaatgc cgcgtgagtg 360

aagaaggtct tcggatcgta agctctgtt gtaagtgaag aacggctcat agaggaaatg 420

ctatgggagt gacggtagct taccagaaag ccacggctaa ctacgtgcca gcagccgcgg 480

taatacgtag gtggcaagcg ttatccggaa tcattgggcg taaagggtgc gtaggtggcg 540

tactaagtct gtagtaaaag gcaatggctc aaccattgta agctatggaa actggtatgc 600

tggagtgcag aagagggcga tggaattcca tgtgtagcgg taaaatgcgt agatatatgg 660

aggaacacca gtggcgaagg cggtcgcctg gtctgtaact gacactgagg cacgaaagcg 720

tggggagcaa ataggattag ataccctagt agtccacgcc gtaaacgatg agaactaagt 780

gttggaggaa ttcagtgctg cagttaacgc aataagttct ccgcctgggg agtatgcacg 840

caagtgtgaa actcaaagga attgacgggg gcccgcacaa gcggtggagt atgtggttta 900

attcgaagca acgcgaaaac cttaccaggc cttgacatgg aaaccctaga gatagggga 960

taattatgga tcacacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1020

ttaagtcccg caacgagcgc aacccttgtc gcatgttacc agcatcaagt tggggactca 1080

tgcgagactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgcccc 1140

ttatggcctg ggctacacac gtactacaat ggcgaccaca aagagcagcg acttggtgac 1200

aagaagcgaa tctcataaag gtcgtctcag ttcggattga agtctgcaac tcgacttcat 1260

gaagtcggaa tcgctagtaa tcgcagatca gcatgctgcg gtgaatacgt tctcgggcct 1320

tgtacacacc gcccgtcaaa ccatgggagt cagtaatacc cgaagccggt ggcataaccg 1380

t 1381

<210> 629
<211> 1274
<212> DNA
<213> Clostridium sp. HPB-46

<400> 629
agtcgagcgg gaaacttcgg tttccagcgg cggacgggtg agtaacacgt gggcaacctg 60

cctcacaatg agggatagcc ttccgaaagg aagattaata cctcataaca caagagaaac 120

gcatgtttct cttgccaaag aatttcgttg tgagatgggc ccgcggcgca ttagcttgtt 180

ggtgaggtaa cggctcacca aggctgcgat gcgtagccga cctgagaggg tgatcggcca 240

cattggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattgcaca 300

atggaggaaa ctctgatgca gcaacgccgc gtgagtgatg aaggtcttcg gattgtaaag 360

ctctgtcttc tgggacgata atgacggcac cagaggagga agccacggct aactacgtgc 420

cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg atttactggg cgtaaaggat 480

gtgtaggcgg atatttaagt gagatgtgaa atccccaggc tcaacttggg ggctgcattt 540

caaactggat atctagagtg caggagagga aagcggaatt cctagtgtag cggtgaaatg 600

cgtagagatt aggaagaaca tcagtggcga aggcggcttt ctggactgta actgacgctg 660

aggcatgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgaatacta ggtgtaggag gtatcgactc cttctgtgcc gcagttaaca caataagtat 780

tccgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg ggcccgcaca 840

agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccca gacttgacat 900

ctcctgaatt aatcgtaatt gatgaaatcc cttcggggac aggaagacag gtggtgcatg 960

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta 1020

tcattagttg ctaacattaa gttgagcact ctagtgagac tgcccgggtt aaccgggagg 1080

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct ggggctacac acgtgctaca 1140

atggtgggaa caaagagatg caataccgca aggtggagcc aaacttcaag acccatccca 1200

gttcggattg taggctgaaa ctcgcctaca tgaagctgga gtgtagtaat cgcgaatcag 1260

agtgtagcgg tgaa 1274

<210> 630
<211> 1358
<212> DNA
<213> Clostridium sp. JC122

<400> 630
cgatgaagct ccttcgggag tgaattagcg gcggacgggt gagtaacacg tgggtaacct 60

gcctcataga ggggaatagc cttccgaaag ggagattaat accgcataac atagcactac 120

cgcatggtag agttatcaaa ggagcaatcc gctatgagat ggacccgcgg cgcattagct 180

agttggtgag gtaacggctc accaaggcga cgatgcgtag ccgacctgag agggtgatcg 240

gccacattgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 300

cgcaatgggg gaaaccctga cgcagcaacg ccgcgtgagt gaagaaggcc ttagggttgt 360

aaagctctgt catatgggaa gataatgacg gtaccataag aggaagccac ggctaactac 420

gtgccagcag ccgcggtaat acgtaggtgg cgagcgttgt ccggatttac tgggcgtaaa 480

ggatgcgtag gcggatattt aagtgggatg tgaaatcccc gagcttaact cgggggctgc 540

attccaaact ggatatctag agtgtcggag gggaaagtgg aattcctagt gtagcggtga 600

aatgcgtaga gattaggaag aacaccagtg gcgaaggcga ctttctggac gataactgac 660

gctgaggcat gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 720

aacgatgaat actaggtgta ggaggtatcg actccttctg tgccgcagtt aacacattaa 780

gtattccgcc tggggagtac gatcgcaaga ttaaaactca aaggaattga cgggggcccg 840

cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctagacttg 900

acatctcctg cattactctt aacagaggaa gtccttcggg acaggatgac aggtggtgca 960

tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1020

tatcattagt tgctaccatt aagttgagca ctctagtgag actgcccggg ttaaccggga 1080

ggaaggtggg gatgacgtca aatcatcatg ccccttatgt ctagggctac acacgtgcta 1140

caatggtagg tacaacaaga tgcaataccg tgaggtggag ctaaactcaa aaacctatcc 1200

cagttcggat tgtaggctga aactcgccta catgaagccg gagttgctag taatcgcgaa 1260

tcagcatgtc gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatgag 1320

agccgataac acccgaagtc cgtgaggtaa ccgtaagg 1358

<210> 631
<211> 1345
<212> DNA
<213> Clostridium sp. L2-50

<400> 631
cttgcactga tccgatcgag tggcggacgg gtgagtaacg cgtgggtaac ctgcctcata 60

caggggaata acagttggaa acggctgcta aaaccgcata agcgcacagt atcgcatgat 120

acagtgtgaa aaactccggt ggtatgagat ggacccgcgt ctgattagct agttggtgag 180

gtaacggccc accaaggcaa cgatcagtag ccggcctgag agggtgaacg gccacattgg 240

gactgagaca cggcccaaac tcctacggga ggcagcagtg gggaatattg cacaatgggg 300

gaaaccctga tgcagcgacg ccgcgtgagt gatgaagtat ttcggtatgt aaagctctat 360

cagcagggaa gataatgacg gtacctgact aagaagcacc ggctaaatac gtgccagcag 420

ccgcggtaat acgtatggtg caagcgttat ccggatttac tgggtgtaaa gggtgcgtag 480

gtggtgagac aagtctgaag tgaaaatccg gggcttaacc ccggaactgc tttggaaact 540

gcctgactag agtacaggag aggtaagtgg aattcctagt gtagcggtga aatgcgtaga 600

tattaggagg aacaccagtg gcgaaggcga cttactggac tgctactgac actgaggcac 660

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgaat 720

actaggtgtc ggggcccaaa gggcttcggt gccgcaggga cgcaataagt attccacctg 780

gggagtacgt tcgcaagaat gaaactcaaa ggaattgacg gggacccgca caagcggtgg 840

agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aagtcttgac atcctgctga 900

ccgttcctta accggaattt tccttcggga cagcagagac aggtggggca tggttgtcgt 960

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc tatttccagt 1020

agccagcagt cagatgggca ctctggagag actgccgggg ataacccgga ggaaggtggg 1080

gatgacgtca aatcatcatg ccccttatga tttgggctac acacgtgcta caatggcagt 1140

tacaaagaga agcgaaactg tgaagtggag caaacctcaa aaaggctgtc tcagttcgga 1200

ttgtagtctg caactcgact acatgaagct ggaatcgcta gtaatcgcag atcagaatgc 1260

tgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccatgg gagtcggaaa 1320

cgcccgaagt cagtgaccca accgc 1345

<210> 632
<211> 1464
<212> DNA
<213> Clostridium sp. LMG 16094

<400> 632
gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc gaggggagtt cttcggaaca 60

aacctagcgg cggacgggtg agtaacacgt gggcaacctg cctcaaagag gggaatagcc 120

tcccgaaagg gagattaata ccgcataaag ttatttttc gcatgaagag ataaccaaag 180

gagcaatccg ctttgagatg ggcccgcggc gcattagcta gttggtgagg taacggctca 240

ccaaggcgac gatgcgtagc cgacctgaga gggtgatcgg ccacattgga actgagacac 300

ggtccagact cctacgggag gcagcagtgg ggaatattgc gcaatggggg aaaccctgac 360

gcagcaacgc cgcgtgagcg atgaaggtct tcggattgta aagctctgtc ttttgggacg 420

ataatgacgg taccaaagga ggaagccacg gctaactacg tgccagcagc cgcggtaata 480

cgtaggtggc aagcgttgtc cggatttact gggcgtaaag agtatgtagg cggacattta 540

agtcagatgt gaaattcccg ggcttaacct gggagctgca tttgatactg ggtgtctaga 600

gtgcaggaga ggaaagtgga attcctagtg tagcggtgaa atgcgtagag attaggaaga 660

acaccagtgg cgaaggcgac tttctggact gtaactgacg ctgagatacg aaagcgtggg 720

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgaata ctaggtgtcg 780

gagggtacca ccttcggtgc cgcagcaaac gcaataagta ttccgcctgg ggagtacggt 840

cgcaagatta aaactcaaag gaattgacgg ggacccgcac aagcagcgga gcatgtggtt 900

taattcgaag caacgcgaag aaccttacct agacttgaca tctcctgaat tactcgtaac 960

agaggaagcc cttcggggca ggaagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc taccattaag 1080

ttgagcactc tagcaagact gcctgggtta accaggagga aggtggggat gacgtcaaat 1140

catcatgscc cttatgtcta gggctacaca cgtgctacaa tggtcggtac aaaaagatgc 1200

aaacccgtga gggggagcta aacttaaaaa ccgatcccag ttcggattgt aggctgaaac 1260

tcgcctacat gaagttggag ttgctagtaa tcgcgaatca gcatgtcgcg gtgaatacgt 1320

tcccgggtct tgtacacacc gcccgtcaca ccatgagagc cggtaacacc cgaagcccgt 1380

gaggtaaccg waaggagcca gcggtcgaag gtgggattgg tgattggggt gaagtcgtaa 1440

caaggtagcc gtaggagaac ctgc 1464

<210> 633
<211> 1045
<212> DNA
<213> Clostridium sp. M62/1

<220>
<221> modified_base

<222> (967)..(968)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (977)..(977)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (984)..(985)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1010)..(1010)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1014)..(1015)
<223> a, c, t, g, unknown or other

<400> 633
aacgaagcgg tttagcggaa gttttcggat ggaagttaaa ctgactgagt ggcggacggg 60

tgagtaacgc gtgggtaacc tgcctcacac agggggacaa cagctagaaa tggctgctaa 120

taccgcataa gcgcacagct tcgcatgaag cagtgtgaaa aactccggtg gtgtgagatg 180

gacccgcgtc tgattagctg gttggtgagg taacggctca ccaaggcgac gatcagtagc 240

cgacctgaga gggtgaccgg ccacattggg actgagacac ggcccaaact cctacgggag 300

gcagcagtgg ggaatattgc acaatggggg aaaccctgat gcagcgacgc cgcgtgagtg 360

aagaagtatt tcggtatgta aagctctatc agcagggaag agaatgacgg tacctgacta 420

agaagccccg gctaactacg tgccagcagc cgcggtaata cgtaggggcc aagcgttatc 480

cggatttact gggtgtaaag ggagcgtaga cggcttagca agtctgaagt gaaagcccgg 540

ggctcaaccc cgggactgct ttggaaactg ttaagctgga gtgctggaga ggtaagcgga 600

attcctagtg tagcggtgaa atgcgtagat attaggagga acaccagtgg cgaaggcggc 660

ttactggaca gtaactgacg ttgaggctcg aaagcgtggg gagcaaacag gattagatac 720

cctggtagtc cacgccgtaa acgatgaata ctaggtgttg gtgggcaaag cccatcggtg 780

ccgtcgcaaa cgcaataagt attccacctg gggagtacgt tcgcaagaat gaaactcaaa 840

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 900

gaaccttacc aagtcttgac atcccactga ccggacagta atgtgtcctt ctcttcggag 960

cagtggnnac aggtggngca tggnngtcgt cagctcgtgt cgtgagatgn tggnnaagtc 1020

ccgcaacgag cgcaaccctt atcct 1045

<210> 634
<211> 935
<212> DNA
<213> Clostridium sp. MLG055

<220>

<221> modified_base
<222> (776)..(776)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (890)..(891)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (893)..(893)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (895)..(895)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (910)..(912)
<223> a, c, t, g, unknown or other

<400> 634
acttagtggc gaacgggtga gtaacacgta gataacctgc ctgtatgacc gggataacag 60

ttggaaacga ctgctaatac cggataggca gagaggaggc atctcttctc tgttaaagtt 120

gggatacaac gcaaacagat ggatctgcgg tgcattagct agttggtgag gtaacggccc 180

accaaggcga tgatgcatag ccggcctgag agggcgaacg gccacattgg gactgagaca 240

cggcccaaac tcctacggga ggcagcagta gggaattttc ggcaatgggg gaaaccctga 300

ccgagcaatg ccgcgtgagt gaagacggcc ttcgggttgt aaagctctgt tgtaagggaa 360

gaacggcata gagagggaat gctctatgag tgacggtacc ttaccagaaa gccacggcta 420

actacgtgcc agcagccgcg gtaatacgta ggtggcaagc gttatccgga attattgggc 480

gtaaagggtg cgtaggcggc gagataagtc tgaggtaaaa gcccgtggct caaccacggt 540

aagccttgga aactgtctgg ctggagtgca ggagaggaca atggaattcc atgtgtagcg 600

gtaaaatgcg tagatatatg gaggaacacc agtggcgaag gcggttgtct ggcctgtaac 660

tgacgctgaa gcacgaaagc gtggggagca aataggatta gataccctag tagtccacgc 720

cgtaaacgat gagaactaag tgttggggaa actcagtgct gcagttaacg caatangttc 780

tccgcctggg ggagtatgca cgcaagtgtg aaactcaaag gaattgacgg gggcccgcac 840

aagcggtgga gtatgtggtt taattcgacg caacgcgaag aaccttaccn ngncntgaca 900

tggtatcaan nncctagaga tagggagata gttat 935

<210> 635
<211> 1364
<212> DNA
<213> Clostridium sp. MT4 E

<400> 635
catgcacgtc gagcgactct tctggagaga gcggcggacg ggagagcacg cgagggtacc 60

tgccctgtca cacggataac actaccgaaa ggtatactaa tacggggact aacatactga 120

aagtcgcatg gcttttgtat caaagctccg gcggtacagg atggacccgc gtctgattag 180

ctagttggta aggtaatggc ttaccaaggc aacgatcagt agccgacctt gagaagggtg 240

aatcgggcca ctactggaaa tgaagacacg ggtccaagac tcctactggg gaggcagcag 300

tggggaatat tgcacaatgg gcgaaagcct gatgcagcaa cgccgcgtga gcggatgaag 360

gccttcgggt cgtaaagctc tgtcctcaag gaagataatg acgggtactt tgaggaggaa 420

gccccgggct aactacgtgc cagcagccgc gggtaatacg gtaggggggct agcgttatcc 480

gggaaattac tgggcgtaaa gggtgcggta aggtggtttt tttaagtcag aagtgaaagg 540

ctacggctca accggtagta agctttttga aactagagaa ctttgagtgc aggagaggag 600

agtagaattc ctagtgtagc ggtgaaatgc gtaaatttag gaggaatacc agtagcgaag 660

gcggcttctc tggacttgta actgacactg aggccgaaag cgggggagca acaggattag 720

atccctggta gtcccgccgt aaacgatgag tactagggtg tcgggggtta ccccccctcgg 780

tgccgcagct aacgcattaa gtactccgcc tgggaagtac gctcgcaaga gtaaactcaa 840

aggaattgac cgggacccgc acaaagtagc ggagcatgtg gtttaattcg aagcaaacgc 900

gaagaacctt acctaagctt gacatcccac tgacctctcc ctaaatcgga gatttccctt 960

cggggccagt ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1020

ttaagtcccg caacgagcgc aacccttgcc tttagttgcc agcattaagt tgggcactct 1080

agagggactg ccgaggataa ctcggaggaa ggtggggatg acgtcaaatc atcatgcccc 1140

ttatgcttag ggctacacca ccgtgctaca atgggtggta cagagggttg ccaagccgcg 1200

aaggtggagc taatccctta aagccattct cagttcggat tgtaggctga aactcgccta 1260

catgaagctg gagttactag taatcgcaat cagaatgctg cggtgatgcg ttcccgggtc 1320

ttgtacacac cgcccgtcac accattggaa gttggggcgc caga 1364

<210> 636
<211> 1205
<212> DNA
<213> Clostridium sp. NMBHI-1

<400> 636
aaagggagat taataccgca taatgtatga gaatcgcatg atttttgtac caaaggagca 60

atccgctatg agatggaccc gcggcgcatt agctagttgg tgaggtaaag gctcaccaag 120

gcgacgatgc gtagccgacc tgagagggtg atcggccaca ttggaactga gacacggtcc 180

agactcctac gggaggcagc agtggggaat attgcgcaat gggggaaacc ctgacgcagc 240

aacgccgcgt gaatgaagaa ggccttaggg ttgtaaagtt ctgtcatatg ggaagataat 300

gacggtacca tatgaggaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 360

gtggcaagcg ttgtccggat ttactgggcg taaaggatgc gtaggcggac atttaagtca 420

gatgtgaaat acccgggctc aacttgggtg ctgcatttga aactgggtgt ctagagtgca 480

ggagaggaaa gcggaattcc tagtgtagcg gtgaaatgcg tagagattag gaagaacacc 540

agtggcgaag gcggctttct ggactgtaac tgacgctgag gcatgaaagc gtggggagca 600

aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatactagg tgtaggaggt 660

atcgacccct tctgtgccgc agttaacaca ataagtattc cgcctgggga gtacgatcgc 720

aagattaaaa ctcaaaggaa ttgacggggg cccgcacaag cagcggagca tgtggtttaa 780

ttcgaagcaa cgcgaagaac cttacctaga cttgacatcc cctgaattac ctgtaatgag 840

ggaagccctt cggggcaggg agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 900

atgttgggtt aagtcccgca acgagcgcaa cccttatcat tagttgctac cattaagttg 960

agcactctag tgagactgcc cgggttaacc gggaggaagg tggggatgac gtcaaatcat 1020

catgcccctt atgtctaggg ctacacacgt gctacaatgg ttggtacaat aagatgcaat 1080

accgcgaggt ggagctaaac ttataaaacc aatcccagtt cggattgtag gctgaaactc 1140

gcctacatga agccgggagt tgctagtaat cgcgaatcag catgtcgcgg tgaatacgtt 1200

cccgg 1205

<210> 637
<211> 1389
<212> DNA
<213> Clostridium sp. NML 04A032

<400> 637
tcgacggggt gcctatgata gaggattcgt ccaattgatt aggctaccta gtggcggacg 60

ggtgagtaac gcgtgagtaa cctgccttgg agtggggaat aacagtccga aaggactgct 120

aataccgcat gatgcagcga ggtcgcatgg ccttgctgcc aaagatttat cgctctgaga 180

tggactcgcg tctgattagc tggttggcgg ggtaacggcc caccaaggcg acgatcagta 240

gccggactga gaggttggcc ggccacattg ggactgagac acggcccaga ctcctacggg 300

aggcagcagt ggggaatatt gggcaatggg cgcaagcctg acccagcaac gccgcgtgaa 360

ggaagaaggc tctcgggttg taaacttctt ttatcaggga cgaaagaaat gacggtacct 420

gatgaataag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg 480

ttatccggat ttactgggtg taaagggcgt gtaggcggga aagcaagtca ggcgtgaaaa 540

ctatgggctc aacccatagc ctgcgtttga aactgttttt cttgagtgtc ggagaggcaa 600

tcggaattcc gtgtgtagcg gtgaaatgcg tagatatacg gaggaacacc agtggcgaag 660

gcggattgct ggacgataac tgacgctgag gcgcgaaagc gtggggagca aacaggatta 720

gataccctgg tagtccacgc cgtaaacgat ggatactagg tgtgggggt ctgaccccct 780

ccgtgccgca gttaacacaa taagtatccc acctggggag tacgatcgca aggttgaaac 840

tcaaaggaat tgacgggggc ccgcacaagc ggtggagtat gtggtttaat tcgaagcaac 900

gcgaagaacc ttaccagggc ttgacatcgt actaacgaag cagacatgca ttagatgccc 960

ttcggggaaa gtatagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1020

ggttaagtcc cgcaacgagc gcaaccccta ttgttagttg ctacgcaaga gcactctagc 1080

gagactgccg ttgacaaaac ggaggaaggt ggggacgacg tcaaatcatc atgcccctta 1140

tgtcctgggc cacacacgta ctacaatggc ggtcaacaga gggaggcaat accgcgaggt 1200

ggagcaaatc cctaaaagcc gtcccagttc ggattgcagg ctgaaacccg cctgcatgaa 1260

gttggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca tgagagtcgg gaacacccga agtccgtagc ctaaccgcaa 1380

gggggggcgc 1389

<210> 638
<211> 1031
<212> DNA
<213> Clostridium sp. SS2/1

<220>
<221> modified_base
<222> (16)..(16)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (26)..(27)
<223> a, c, t, g, unknown or other

<400> 638
cgtgagtgaa gaagtnttct cggtannnaa agctctatca gcagggaaga aaatgacggt 60

acctgactaa gaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggggca 120

agcgttatcc ggaattactg ggtgtaaagg gtgcgtaggt ggtatggcaa gtcagaagtg 180

aaaacccagg gcttaactct gggactgctt ttgaaactgt cagactagag tgcaggagag 240

gtaagcggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaggaa catcagtggc 300

gaaggcggct tactggactg aaactgacac tgaggcacga aagcgtgggg agcaaacagg 360

attagatacc ctggtagtcc acgccgtaaa cgatgaatac taggtgtcgg ggccgtagag 420

gcttcggtgc cgcagccaac gcagtaagta ttccacctgg ggagtacgtt cgcaagaatg 480

aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 540

caacgcgaag aaccttacct ggtcttgaca tccttctgac cggtccttaa ccggactttt 600

ccttcgggac aggagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt 660

gggttaagtc ccgcaacgag cgcaacccct atctttagta gccagcatat aaggtgggca 720

ctctagagag actgccaggg ataacctgga ggaaggtggg gacgacgtca aatcatcatg 780

ccccttatga ccagggctac acacgtgcta caatggcgta aacagaggga agcagcctcg 840

tgagagtgag caaatcccaa aaataacgtc tcagttcgga ttgtagtctg caactcgact 900

acatgaagct ggaatcgcta gtaatcgcga atcagaatgt cgcggtgaat acgttcccgg 960

gtcttgtaca caccgcccgt cacaccatgg gagtcagtaa cgcccgaagt cagtgaccca 1020

accgtaagga g 1031

<210> 639
<211> 1375
<212> DNA

<213> Clostridium sp. SY8519

<400> 639
tttatggagt ttgatcctgg ctcaggatga acgctggcgg cgtgcctaac acatgcaagt 60

cgaacgagtg gcggacgggt gagtaacgcg tggataacct gcctcaaaca gggggataac 120

agccggaaac ggctgctaat accgcataag aaaaagtggt ttgagatgga tccgcgtctg 180

attagttagt tggcggggta acggcccacc aaggcgacga tcagtagccg gcctgagagg 240

gtgaacggcc acattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatgggggaa accctgatgc agcaacgccg cgtgagcgaa gaagtatttc 360

ggtatgtaaa gctctatcag cagggaagat gacggtacct gactaagaag ctccggctaa 420

atacgtgcca gcagccgcgg taatacgtat ggagcaagcg ttatccggat ttactgggtg 480

taaagggagc gcaggcggtg gcgcaagtct gatgtgaaaa cccggggccc aaccccggga 540

ctgcattgga aactgcgtga cttgagtgtc ggaggggtaa gtggaattcc tagtgtagcg 600

gtgaaatgcg tagatattag gaggaacacc agtggcgaag gcggcttact ggacgaactg 660

acgctgaggc tcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg 720

taaacgatga atactaggtg ttggcatgtc agtgccgcag caaacgcatt aagtattcca 780

cctggggagt acgttcgcaa gaatgaaact caaaggaatt gacggggacc cgcacaagcg 840

gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggcct tgacatcgac 900

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 960

gcgcaaccct tgtgtatagt agccagcggc cgggcactct atacagactg ccagggacaa 1020

cctggaggaa ggcggggatg acgtcaaatc atcatgcccc ttatggcctg ggcgacacac 1080

gtgctacaat ggcgtacaga gggaggcaaa gccgcgaggt ggagcgaatc ccaaaacgtc 1140

tcagttcgga tgcaggctgc aacccgcctg cagaagctgg aatcgctagt aatcgcagat 1200

cagcatgctg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccatggga 1260

gtcggaaatg cccgaagccg gtacccaggg agccgtcgaa ggcaggtctg ataactgggg 1320

tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1375

<210> 640
<211> 1267
<212> DNA
<213> Clostridium sp. TM-40

<400> 640
acatgcaagt cggacgagtg gcgaacgggt gagtaagaca taagcaacct gcccctgtga 60

gggggataac tgctggaaac ggcagctaag accgcatagt aaattagcac agggatgggc 120

ttatgacgca ttagccagct ggtgaggtaa cggctcacca gggcgacgat gcgtagccgg 180

cctgagaggg tggacggcca cactgggact gagacacggc ccagactcct acgggaggca 240

gcagtaggga attttcggca atgggcgaaa gcctgaccga gcaacgccgc gtgaaggaag 300

aagtcattcg tgatgtaaac ttctgttatg aaggaagatg acggtacttc atgaggaagc 360

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcgagcgt tatccggaat 420

cattgggcgt aaagagggag caggcggcag tgcaggtctg cggtgaaaga ccggagctaa 480

acttcggtaa gccgtggaaa ccgcacagct agagagcatc agaggatcgc ggaattccat 540

gtgtagcggt gaaatgcgta gatatatgga ggaacaccag tggcgaaggc ggcggtctgg 600

ggtggctgac gctcagtccc gaaagcgtgg ggagcaaata ggattagata ccctagtagt 660

ccacgccgta aacgatgagt gctaagtgtt ggggcctcag tgctggagtt aacgcaataa 720

gcactccgcc tgagtagtac gttcgcaaga atgaaactca aaggaattga cgggggcccg 780

cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaggtcttg 840

acatgcacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 900

cgcaacgagc gcaacccctg ttgccagttg ccagcatggg gactctggcg agactgcctc 960

tgcaaggagg aggaaggcgg ggatgacgtc aaatcatcat gccccttatg acctgggcta 1020

cacacgtgct acaatggacg gcagagggag gcgaagccgc gaggtggagc gaaacccagc 1080

cgttcacagt tcggatgcag tctgcaactc gactgcagaa gctggaatcg ctagtaatcg 1140

cgaatcagca tgtcgcggtg aatacgttct cgggccttgt acacaccgcc cgtcacacca 1200

tgagagttgg taacacccga agccggtgcc cagggagctg tctaaggtgg gactgatgat 1260

tggggtg 1267

<210> 641
<211> 1320
<212> DNA
<213> Clostridium sp. YIT 12069

<400> 641
gacgaacgct ggcggcgtgc ctaacacatg caagtcgaac gagtggcgga cgggtgagta 60

acgcgtgagc aacctgcctc aaagaggggg ataacgtctg gaaacggacg ctaataccgc 120

atgaccaaag ccgctttgag atgggctcgc gtctgattag ctagttggtg gggtaaaggc 180

ctaccaaggc gacgatcagt agccggactg agaggttgaa cggccacatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag tgggggatat tgcacaatgg gggaaaccct 300

gatgcagcaa cgccgcgtga aggaagacgg ttttcggatt gtaaacttct gttcttagtg 360

acgatgacgg tagctaagga gaaagctccg gctaactacg tgccagcagc cgcggtaata 420

cgtagggagc gagcgttgtc cggaattact gggtgtaaag ggagcgtagg cgggagatca 480

agtcagatgt gaaaactatg ggctcaaccc ataacctgca tttgaaactg ttcttcttga 540

gtgaagtaga ggcaggcgga attccgagtg tagcggtgaa atgcgtagat attcggagga 600

acaccagtgg cgaaggcggc ctgctgggct tactgacgct gaggctcgaa agcatgggga 660

gcaaacagga ttagataccc tggtagtcca tgccgtaaac gatgattact aggtgtgggg 720

tattccgtgc cggagttaac acaataagta atccacctgg ggagtacggc cgcaaggttg 780

aaactcaaag gaattgacgg gggcccgcac aagcagtgga gtatgtggtt taattcgaag 840

caacgcgaag aaccttacca ggtcttgaca tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtca ttagttgcta 960

cagcactcta atgagactgc cgttgacaaa acggaggaag gtggggacga cgtcaaatca 1020

tcatgcccct tatgacctgg gctacacacg tactacaatg gccgtcagag ggaagcaata 1080

ctgtgaagtg gagcaaaccc ctacggtccc agttcagatg caggctgcaa cccgcctgca 1140

gaagtcggaa ttgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggcct 1200

tgtacacacc gcccgtcaca ccatgggagc cggtaatacc cgaagtcggt gtctaggacg 1260

ccgccgaagg taggattggc gactggggtg aagtcgtaac aaggtagccg tatcggaagg 1320

<210> 642
<211> 1319
<212> DNA
<213> Clostridium sp. YIT 12070

<400> 642
gacgaacgct gtcggcgcgc ctaacacatg caagtcgaac gagtggcgga cgggtgagta 60

acgcgtgagt aacctgcctt tcagaggggg ataacgtctg gaaacggacg ctaataccgc 120

ataaccaaag ccgctgaaag atggactcgc gtccaattag ctagttggtg aggtaacggc 180

ccaccaaggc gacgattggt agccggactg agaggttgaa cggccacatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gggaaaccct 300

gatgcagcga cgccgagtga gggaagaagg ttttcggatt gtaaacctct gtccttggtg 360

aagatgacgg taaccaagga ggaagctacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtagc gagcgttgtc cggaattact gggtgtaaag ggagcgtagg cgggattgca 480

agttgaatgt taaatctatg ggctcaaccc atagccgcgt tcaaaactgc agttcttgag 540

tgaagtagag gcaggcggaa ttcctagtgt agcggtgaaa tgcgtaaata ttaggaggaa 600

caccagtggc gaaggcggcc tgctgggctt actgacgctg aggctcgaaa gcgtgggtag 660

caaacaggat tagataccct ggtagtccac gctgtaaacg atgattacta ggtgtggggg 720

cttccgtgcc ggagttaaca caataagtaa tccacctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcagtggag tatgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttacgtt tagttgctac 960

agcactctag acggactgcc gttgacaaaa cggaggaagg tggggatgac gtcaaatcat 1020

catgcccctt atgacctggg ctacacacgt actacaatgg ctatcagagg gaagcaagat 1080

ggtgacatgg agcaaacccc tatagtctca gttcggatgc aggctgcaac ccgcctgcag 1140

aagccggaat tgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt 1200

gtacacaccg cccgtcacac catgagagtt ggcaacaccc gaagccgatg tctaggacgt 1260

cgtcgaaggt ggggttgatg attggggtga agtcgtaaca aggtagccgt atcggaagg 1319

<210> 643

<211> 1522
<212> DNA
<213> Clostridium sphenoides

<220>
<221> modified_base
<222> (1)..(7)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1455)..(1455)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1513)..(1514)
<223> a, c, t, g, unknown or other

<400> 643
nnnnnnngag agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca 60

agtcgagcga agcgattcaa atgaagtttc ggacggattt tgaattgact tagcggcgga 120

cgggtgagta acgcgtgggt aacctgcctc atacaggggg ataacagtcg gaaacgactg 180

ctaataccgc ataacacaca gtgccgcatg gtacggtgtg aaaaactccg gtggtatgag 240

atggacccgc gtctgattag gtagttggtg aggtaacggc ccaccaagcc gacgatcagt 300

agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa actcctacgg 360

gaggcagcag tggggaatat tggacaatgg gggaaaccct gatccagcga cgccgcgtga 420

gtgaagaagt atttcggtat gtaaagctct atcagcaggg aagaaaatga cggtacctga 480

ctaagaagcc ccggctaact acgtgccagc agccgcggta atacgtaggg ggcaagcgtt 540

atccggattt actgggtgta aagggagcgt agacggcact gcaagtctgg agtgaaagcc 600

cggggctcaa ccccggactg ctttggaaac tgtggtgcta gagtgcagga gaggtaagtg 660

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg 720

gcttactgga ctgtaactga cgttcgaggc tcgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga atactaggtg ttggggagca aagctcttcg 840

gtgccgccgg taacgcaata agtattccac ctggggagta cgttcgcaag aatgaaactc 900

aaaggaattg acggggaccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 960

aagaccttac caagtcttga catcggaatg accgggatgt aacgatccct tcccttcggg 1020

gcatccagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tatccttagt agccagcaag tcaagctggg cactctgggg 1140

agactgccag ggataacctg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1200

gatttgggct acacacgtgc tacaatggcg taaacaaagg gaagcaaagg agcgatctgg 1260

agcaaacccc aaaaataacg tctcagttcg gattgtagtc tgcaactcga ctacatgaag 1320

ctggaatcgc tagtaatcgc ggatcagaat gccgcggtga atacgttccc gggtcttgta 1380

cacaccgccc gtcacaccat gggagttggt aacgcccgaa gtcagtgacc caaccgtaag 1440

gagggagctg ccgangggac tgataactgg ggtgaagtcg taacaaggta gccgtatcgg 1500

aaggtgcggc tgnntcacct cc 1522

<210> 644
<211> 1367
<212> DNA
<213> Clostridium spiroforme

<220>
<221> modified_base
<222> (41)..(42)
<223> a, c, t, g, unknown or other

<400> 644
agcaatgctc gagtggcgaa cgggtgagta atacataagt nncctgccct agacaggggg 60

ataactgctg gaaacggcag ctaagaccgc ataggtatgg acactgcatg gtgaccatat 120

taaaagtgcc aaggcactgg tagaggatgg acttatggcg cattagctgg ttggtgaggt 180

aacggctcac caaggcgacg atgcgtagcc gacctgagag ggtgaccggc cacactggga 240

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaattttcgg caatgggggg 300

aaccctgacc gagcaacgcc gcgtgaagga agaaggaatt cgttctgtaa acttctgtta 360

taaaggaaga acggcggata tagggaatga tatccgagtg acggtacttt atgagaaagc 420

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcgagcgt tatccggaat 480

tattgggcgt aaagagggag caggcggcgg cagaggtctg tggtgaaaga ctgaagctta 540

acttcagtaa gccatagaaa ccgggctgct agagtgcagg agaggatcgt ggaattccat 600

gtgtagcggt gaaatgcgta gatatatgga ggaacaccag tggcgaaggc gacggtctgg 660

cctgtaactg acgctcattc ccgaaagcgt ggggagcaaa taggattaga taccctagta 720

gtccacgccg taaacgatga gtactaagtg ttgggagtca aatttcagtg ctgcagttaa 780

cgcaataagt actccgcctg agtagtacgt tcgcaagaat gaaactcaaa ggaattgacg 840

ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gagcgttacc 900

aggtcttgac atccggatga agacctcata aatgagggct tcagtaagcc atagaaaccg 960

ggctgctgga gtccagcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1020

aacccttgtc gctagttacc atcattaagt tggggactct agcgagactg ccagtgacaa 1080

gctggaggaa ggcggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac 1140

gtgctacaat ggatggagca gagggaagcg aagccgcgag gtgaagcaaa acccataaaa 1200

ccattctcag ttcggattgt agtctgcaac tcgactacat gaagttggaa tcgctagtaa 1260

tcgcgaatca gcatgtcgcg gtgaatacgt tctcgggcct tgtacacacc gcccgtcaca 1320

ccatgagagt tgataacacc cgaagccggt ggcctaaccg caaggag 1367

<210> 645
<211> 1516
<212> DNA

<213> Clostridium sporogenes

<400> 645
ttaaaattga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgagcg atgaagcttc cttcgggaag tggattagcg gcggacgggt gagtaacacg 120

tgggtaacct gcctcaaagt gggggatagc cttccgaaag gaagattaat accgcataac 180

ataagagaat cgcatgattt tcttatcaaa gatttattgc tttgagatgg acccgcggcg 240

cattagctag ttggtaaggt aacggcttac caaggcaacg atgcgtagcc gacctgagag 300

ggtgatcggc cacattggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 360

gaatattgcg caatggggga aaccctgacg cagcaacgcc gcgtgggtga tgaaggtctt 420

cggattgtaa agccctgttt tctgggacga taatgacggt accagaggag gaagccacgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggatttactg 540

ggcgtaaagg gtgcgtaggc ggatgtttaa gtgggatgtg aaatccccgg gcttaacctg 600

ggggctgcat tccaaactgg atatctagag tgcaggagag gaaagcggaa ttcctagtgt 660

agcggtgaaa tgcgtagaga ttaggaagaa caccagtggc gaaggcggct ttctggactg 720

taactgacgc tgaggcacga aagcgtgggt agcaaacagg attagatacc ctggtagtcc 780

acgccgtaaa cgatggatac taggtgtagg gggtatcaac tccccctgtg ccgcagttaa 840

cacaataagt atcccgcctg gggagtacgg tcgcaagatt aaaactcaaa ggaattgacg 900

ggggcccgca caagcagcgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 960

tggacttgac atcccttgca tagcctagag ataggtgaag cccttcgggg caaggagaca 1020

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt aggttaagtc ctgcaacgag 1080

cgcaaccctt gttattagtt gctaccatta agttgagcac tctaatgaga ctgcctgggt 1140

aaccaggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtcc agggctacac 1200

acgtgctaca atggtaggta caataagacg caagaccgtg aggtggagca aaacttataa 1260

aacctatctc agttcggatt gtaggctgca actcgcctac atgaagctgg agttgctagt 1320

aatcgcgaat cagaatgtcg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

caccatgaga gctggtaaca cccgaagtcc gtgaggtaac cgtaaggagc cagcggccga 1440

aggtgggatt agtgattggg gtgaagtcgt aacaaggtag ccgtaggaga acctgcggct 1500

ggatcacctc ctttct 1516

<210> 646
<211> 1400
<212> DNA
<213> Clostridium sporosphaeroides

<220>
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (832)..(832)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (836)..(836)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (862)..(862)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (922)..(922)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (926)..(926)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1141)..(1141)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1169)..(1169)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1272)..(1274)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1278)..(1278)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1293)..(1293)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1375)..(1375)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1380)..(1381)
<223> a, c, t, g, unknown or other

<400> 646
nntgaactta gcttagtggc ggacgggtga gtaacgcgtg agtawcctgc ctttcrgagg 60

gggatamcgt tcctgaaaac aacgctaata ccgcataata tattggtgtc gcatggcacc 120

ggtatcaaag gagcaatccg ctgcaagatg gactcgcgtc cgatyagcca gtkgatkggg 180

taaaggccca ccaaagcgac gatcggtagc cgggttgaga gactgaacgg ccacattggg 240

actgagacac ggcccagact cctacgggag gcagcagtgg gggatattgc acaatggagg 300

aaactctgat gcagcaatgc cgcgtgaggg aagacggtct tcggattgta aacctctgtc 360

cttggtgaag ataatgacgg tagccaagga ggaagctccg gctaactacg tgccagcagc 420

cgcggtaata cgtagggagc aagcgttgtc cggatttact gggtgtaaag ggtgcgtagg 480

cggctcttta agtcgggcgt gaaagctgtg ggcttaaccc acaaattgcg ttcgaaactg 540

gagggcttga gtgaagtaga ggtaggcgga attcccggtg tagcggtgaa atgcgtagag 600

atcgggagga acaccagtgg cgaaggcggc ctactgggct ttaactgacg ctgaggcacg 660

aaagcatggg tagcaaacag gattagatac cctggtagtc catgccgtaa acgatgatta 720

ctaggtgtgg ggggtctgac cccttccgtg ccggagttaa cacaataagt aatccacctg 780

gggagtacgg ccgcaaggtt gaaactcaaa ggaattgacg ggggcccgca cnagcngtgg 840

agtatgtggt ttaattcgaa gnaacgcgaa gaaccttacc aggtgttgac atccaactaa 900

cgaggcagag atgcattagg tngctncggg gaaagttgag acaggtggtc catggttgtc 960

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgtgatta 1020

gttstacgca agagcactct aatcagactg ccgttgacaa aacggaggaa ggtggggacg 1080

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtactacaat ggtcgccaac 1140

ngagggaagc caagccgcga ggtggagcna acccccaaaa gcgatctcag ttcggattgt 1200

aggctgcaac ccgcctacat gaagttggaa ttgctagtaa tcgcggatca gcatgccgcg 1260

gcgaatacgt tnnngggnct tgtacacacc gcncgtcaca ccatgggagc cggtaatacc 1320

cgaagccaat agtctaaccg caaggaggac gttgtcgaag gtaggattgg cgacnggggn 1380

naagtcgtaa caaggtaacc 1400

<210> 647
<211> 1518
<212> DNA
<213> Clostridium stercorarium

<400> 647
tgatcctggc tcaggacgaa cgctggcggc gtgcctaaca catgcaagtc gaacgggatc 60

cgtgttacgg aggtctttgg accgaagtgg catggtgaga gtggcggacg ggcgagtaac 120

gcgtgagcaa cctgccctat gctgggggat aacaccggga aaccggtgct aataccgcat 180

aagaccacag tgacgcatgt cacagtggta aaagctgagg cggcatagga tgggctcgcg 240

tccgattagc tagttggtag ggtaacggcc taccaaggcg acgatcggta gccggactga 300

gaggttggcc ggccgcattg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatatt gcgcaatggg ggaaaccctg acgcagcgac gccgcgtgga ggaagaaggc 420

ctttgggttg taaactcctt tgatcgggga cgaagatgac ggtacccgaa gaacaagcca 480

cggctaacta cgtgccagca gccgcggtaa tacgtaggtg gcgagcgttg tccggaatta 540

ctgggtgtaa agggcgtgta ggcggggtgc caagtcaggt gtgaaatacc ggggcttaac 600

ctcgggggtg catctgaaac tggtgctctt gagtgccgga gaggaaagcg gaattcccag 660

tgtagcggtg aaatgcgtag atattgggag gaacaccagt ggcgaaggcg gctttctgga 720

cggtaactga cgctgaggcg cgaaagcgtg gggagcaaac aggattagat accctggtag 780

tccacgctgt aaacgatgga tactaggtgt aggaggtatc gacccttct gtgccgtagt 840

taacacaata agtatcccac ctggggagta cggccgcaag gctgaaactc aaaggaattg 900

acgggggccc gcacaagcag tggagcatgt ggtttaattc gaagcaacgc gaagaacctt 960

accagggctt gacatccccc tgacggatgt agagatacat cttctccgca aggagcaggg 1020

gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccttgtcg ttagttgcca gcagtaagat gggcactcta acgagactgc 1140

cggcgagaag tcggaggaag gtggggatga cgtcaaatca tcatgcccct tatgtcctgg 1200

gctacacacg tgctacaatg gcgactacag agggaagcaa atccgcgagg aggagcaaat 1260

cccgaaaggt cgtcccagtt cggattgcag gctgcaactc gcctgcatga agccggaatt 1320

gctagtaatg gcaggtcagc atctgccgtg aatacgttcc cgggctttgt acacaccgcc 1380

cgtcacacca tgagagctgg caacacccga agccggtagc ctaaccgaga ggggggcgcc 1440

gtcgaaggtg gggtcagtga ttggggtgaa gtcgtaacaa ggtagccgta tcggaaggtg 1500

cggctggatc acctcctt 1518

<210> 648
<211> 1437
<212> DNA
<213> Clostridium sticklandii

<220>
<221> modified_base
<222> (47)..(49)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (71)..(71)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (90)..(90)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (169)..(169)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (309)..(309)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (339)..(339)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (346)..(346)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (361)..(361)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (426)..(426)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (457)..(457)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (480)..(480)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (494)..(494)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (511)..(511)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (520)..(520)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (568)..(569)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (808)..(808)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (811)..(811)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (857)..(857)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1040)..(1040)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1058)..(1058)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1065)..(1065)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1117)..(1117)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1143)..(1144)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1173)..(1173)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1246)..(1246)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1308)..(1308)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1342)..(1342)
<223> a, c, t, g, unknown or other

<400> 648
tatttgagag tttgatcctg gctcaggatg aacgctggcg gcgtgcnnna cacatgcaag 60

tcgaaaatgc nagcggcgga cgggtgcgtn acacgtgggt aacctgcccc tatcactggg 120

ataacacact gaaaagtgtg ctaataccag ataacataag cttttggcnt cattagctta 180

tcaaagaatt tcggataggg atgggcccgc gtctgattag ctagttggtg aggtaacggc 240

tcaccaaggc aacgatcagt agccgacctg agagggtgat cggccacact ggaactgaga 300

cacggtccng actcctacgg gaggcagcag tggggaatnt tgcacnatgg gcgaaagcct 360

natgcagcaa cgccgcgtga gcgatgaagg ccttcgggtc gtaaagctct gtcctatggg 420

aagatnatga cggtaccata ggaggaagcc ccggctnact acgtgccagc agccgcggtn 480

atacgtaggg ggcnagcgtt atccggaatt nctgggcgtn aagggtgcgt aggcggttta 540

tcaagtcagg ggtgaaaggc tacggctnna ccgtagtgag cctctgaaac tggtgaactt 600

gagtgtagga gaggaaagtg gaattcccag tgtagcggtg aaatgcgtag atattgggag 660

gaacaccagt ggcgaaggcg actttctgga ctacaactga cgctgaggca cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgctgt aaacgatgag tactaggtgt 780

cggctgtcaa aggtcggtgc cggcgttnac ncattaagta ctccgcctgg ggagtacgct 840

cgcaagagtg aaactcnaag gaattgacgg ggacccgcac aagtagcgga gcatgtggtt 900

taattcgaag caacgcgaag aaccttacct aggcttgaca tccctttgca aagyccttaa 960

ccggrctcct yttsttcgsa aracaaaggt gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggttn agtcccgcaa cgagcgcnac ccctnttttt agttgccatc 1080

agttaggctg ggcactctag aaagactgcc gaggacnact cggaggaagg tggggatgac 1140

gtnnaatcat catgcccctt atgcttaggg ctncacacgt gctacaatgg ctgttacaaa 1200

gggctgcgag accgcgaggt ggagccaatc ccagaaaaac agtctnagtt cggattgtag 1260

gctgaaactc gcctacatga agccggagtt actagtaatc gcagatcnga atgctgcggt 1320

gaatgcgttc ccgggtcttg tncacaccgc ccgtcacacc atggaagttg ggggcaccca 1380

aagttagtta tccaacctta cgggggaggc tacctaaggt gaattcaatg actgggg 1437

<210> 649
<211> 1447
<212> DNA
<213> Clostridium straminisolvens

<220>
<221> modified_base
<222> (56)..(56)
<223> a, c, t, g, unknown or other

<400> 649
gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc ggagatatat tgaagnttta 60

tcggatatat atcttagcgg cggacgggtg agtaacgcgt gggtaacctg cctcatacag 120

ggggataaca cagggaaact tgtgctaata ccgcataaca taacgaggcg gcatcgcttt 180

gttatcaaag gagcaatccg gtatgagatg ggcccgcgtc cgattagcta gttggtgagg 240

taacggctca ccaaggcgac gatcggtagc cgaactgaga ggttgatcgg ccacattggg 300

actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc gcaatggggg 360

aaaccctgac gcagcaacgc cgcgtgaagg aagaaggcct tcgggttgta aacttctttg 420

attggggacg aagaaagtga ctgtacccaa aaaacaagcc acggctaact acgtgccagc 480

agccgcggta atacgtaggt ggcaagcgtt gtccggaatt actgggtgta aagggcgtgt 540

aggcggggat gcaagtcaga tgtgaaattc cggggcttaa ccccggcgct gcatctgaaa 600

ctgtatctct tgagtgctgg agaggaaagc ggaattccta gtgtagcggt gaaatgcgta 660

gatattagga ggaacaccag tggcgaaggc ggctttctgg acagtaactg acgctgaggc 720

gcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatgg 780

atactaggtg taggaggtat cgacccccttc tgtgccggag ttaacacaat aagtatccca 840

cctggggagt acggccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagca 900

gtggagtatg tggtttaatt cgaagcaacg cgaagaacct taccagggct tgacatccct 960

tgaaagtcct agagatagga tttctcttcg gagcaaggag acaggtggtg catggttgtc 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctgttgtta 1080

gttgccatca ttaagttggg cactctagcg agactgccgg tgacaaatcg gaggaaggtg 1140

gggacgacgt caaatcatca tgccccttat gtcctgggct acacacgtac tacaatggct 1200

gttacaaagg gaagctaagc cgcgaggtgg agcaaatccc caaaggcagc cccagttcag 1260

attgcaggct gaaactcgcc tgcatgaagt cggaattgct agtaatggca ggtcagcata 1320

ctgccgtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg agagtctgca 1380

acacccgaag tcagtagtct aaccgcaagg aggacgctgc cgaaggtggg gccgatgatt 1440

ggggtga 1447

<210> 650
<211> 1504
<212> DNA
<213> Clostridium subterminale

<400> 650
agagggttga tcatggctca ggacgaacgc tggcggcgtg cctaacacat gcaagtcgag 60

cgatgaagcc cttcggggtg aattagcggc ggacgggtga gtaacacgtg ggtaacctgc 120

cttatagagg gggatagcct tccgaaagga agattaatac cgcataatat gtttttatcg 180

catggtagaa acatcaaagg agcaatccgc tataagatgg acccgcggcg cattagctag 240

ttggtgaggt aacggcccac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc 300

cacattggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg gaatattgcg 360

caatggggga aaccctgacg cagcaacgcc gcgtgaatga agaaggcctt agggttgtaa 420

agttctgttt tctgggacga taatgacggt accagaggag gaagccaggg ctaactacgt 480

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttactg ggcgtaaagg 540

atgcgtaggc ggatgtttaa gtgagatgtg aaatacccga gctcaacttg ggtgctgcat 600

ttcaaactgg atatctagag tgcaggagag gaaagcggaa ttcctagtgt agcggtgaaa 660

tgcgtagaga ttaggaagaa caccagtggc gaaggcggct ttctggactg taactgacgc 720

tgaggcatga aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa 780

cgatgaatac taggtgtagg aggtatcgac tccttctgtg ccgcagttaa cacaataagt 840

attccgcctg gggagtacga tcgcaagatt aaaactcaaa ggaattgacg ggggcccgca 900

caagcagcgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc tagacttgac 960

atctcctgaa ttacccttaa tcggggaagc ccttcggggc aggaagacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta 1080

tcattagttg ctaccattaa gttgagcact ctagtgagac tgccacggtt aacgtggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac acgtgctaca 1200

atggtgaata caaatagatg caataccgcg aggtggagcc aaactataaa attcatccca 1260

gttcggattg tagtctgaaa ctcgactaca tgaagccgga gttgctagta atcgcgaatc 1320

agcatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

ctggtaacac ccgaagtccg tgaggtaacc gtaaggagcc agcggccgaa ggtgggatta 1440

gtgattgggg tgaagtcgta acaaggtagc cgtaggagaa cctgcggttg gatcaccttc 1500

ctta 1504

<210> 651
<211> 1504
<212> DNA
<213> Clostridium sulfidigenes

<400> 651
tgagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gatgaagccc ttcggggtga ttagcggcg gacgggtgag taacacgtgg gtaacctgcc 120

ttatagaggg ggatagcctt ccgaaaggaa gattaatacc gcatgaaatg tttttatcgc 180

atggtagaaa catcaaagga gtaatccgct ataagatgga cccgcggcgc attagctagt 240

tggtgaggta acggcccacc aaggcgacga tgcgtagccg acctgagagg gtgatcggcc 300

acattggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg aatattgcgc 360

aatgggggaa accctgacgc agcaacgccg cgtgaatgaa gaaggcctta gggttgtaaa 420

gttctgtttt ctgggacgat aatgacggta ccagaggagg aagccacggc taactacgtg 480

ccagcagccg cggtaatacg taggtggcaa gcgttgtccg gatttactgg gcgtaaagga 540

tgcgtaggcg gatgtttaag tgagatgtga aatacccgag ctcaacttgg gtgctgcatt 600

tcaaactgga tatctagagt gcaggagagg aaagcggaat tcctagtgta gcggtgaaat 660

gcgtagagat taggaagaac accagtggcg aaggcggctt tctggactgt aactgacgct 720

gaggcatgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac 780

gatgaatact aggtgtagga ggtatcgact ccttctgtgc cgcagttaac acaataagta 840

ttccgcctgg ggagtacgat cgcaagatta aaactcaaag gaattgacgg gggcccgcac 900

aagcagcgga gcatgtggtt taattcgaag caacgcgaag aaccttacct agacttgaca 960

tctcctgaat tacccttaac cggggaaagc ttcggggcag gaagacaggt ggtgcatggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatc 1080

attagttgct accattaagt tgagcactct agtgagactg ccacggttaa cgtggaggaa 1140

ggtggggatg acgtcaaatc atcatgcccc ttatgtctag ggctacacac gtgctacaat 1200

ggtgaataca aatagatgca ataccgcgag gtggagccaa actataaaat tcatcccagt 1260

tcggattgta gtctgaaact cgactacatg aagccggagt tgctagtaat cgcgaatcag 1320

catgtcgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgagagct 1380

ggtaacaccc gaagtccgtg aggtaaccgt aaggagccag cggccgaagg tgggattagt 1440

gattggggtg aagtcgtaac aaggtagccg taggagaacc tgcggctgga tcacctcctt 1500

tcta 1504

<210> 652
<211> 1384
<212> DNA
<213> Clostridium symbiosum

<400> 652
gaacgaagcg atttaacgga agttttcgga tggaagttga attgactgag tggcggacgg 60

gtgagtaacg cgtgggtaac ctgccttgta ctgggggaca acagttagaa atgactgcta 120

ataccgcata agcgcacagt atcgcatgat acagtgtgaa aaactccggt ggtacaagat 180

ggacccgcgt ctgattagct agttggtaag gtaacggctt accaaggcga cgatcagtag 240

ccgacctgag agggtgaccg gccacattgg gactgagaca cggcccaaac tcctacggga 300

ggcagcagtg gggaatattg cacaatgggc gaaagcctga tgcagcgacg ccgcgtgagt 360

gaagaagtat ttcggtatgt aaagctctat cagcagggaa gaaaatgacg gtacctgact 420

aagaagcccc ggctaactac gtgccagcag ccgcggtaat acgtaggggg caagcgttat 480

ccggatttac tgggtgtaaa gggagcgtag acggtaaagc aagtctgaag tgaaagcccg 540

cggctcaact gcgggactgc tttggaaact gtttaactgg agtgtcggag aggtaagtgg 600

aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg gcgaaggcga 660

cttactggac gataactgac gttgaggctc gaaagcgtgg ggagcaaaca ggattagata 720

ccctggtagt ccacgccgta aacgatgaat actaggtgtt ggggagcaaa gctcttcggt 780

gccgtcgcaa acgcagtaag tattccacct ggggagtacg ttcgcaagaa tgaaactcaa 840

aggaattgac ggggacccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 900

agaaccttac caggtcttga catcgatccg acgggggagt aacgtcccct tcccttcggg 960

gcggagaaga aaggtggtgc atggagtgtc ggagctcgtg tcgtgagatg ttgggttaag 1020

tcccgcaacg agcgcaaccc ttattctaag tagccagcgg ttcggccggg aactcttggg 1080

agactgccag ggataacctg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1140

gatctgggct acacacgtgc tacaatggcg taaacaaaga gaagcaagac cgcgaggtgg 1200

agcaaatctc aaaaataacg tctcagttcg gactgcaggc tgcaactcgc ctgcacgaag 1260

ctggaatcgc tagtaatcgc gaatcagaat gtcgcggtga atacgttccc gggtcttgta 1320

cacaccgccc gtcacaccat gggagtcagt aacgcccgaa gtcagtgacc caaccgcaag 1380

gagg 1384

<210> 653
<211> 1378
<212> DNA
<213> Clostridium tertium

<400> 653
gtcgagcgag aggagttcct tcgggaacaa atctagcggc ggacgggtga gtaacacgtg 60

ggcaacctgc cttgtagagg ggaatagcct tccgaaagga agattaatac cgcataacat 120

tacattttcg catgaagaag taattaaagg agcaatccgc tacaagatgg gcccgcggcg 180

cattagctag ttggtgaggt aacggctcac caaggcgacg atgcgtagcc gacctgagag 240

ggtgatcggc cacattggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatattgca caatggggga aaccctgatg cagcaacgcc gcgtgagtga tgaaggtttt 360

cggatcgtaa agctctgtct tcagggacga taatgacggt acctgaggag gaagccacgg 420

ctaactacgt gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggatttactg 480

ggcgtaaagg gagcgtaggc ggatttttaa gtgagatgtg aaatacccgg gctcaacttg 540

ggtgctgcat ttcaaactgg aagtctagag tgcaggagag gagagtggaa ttcctagtgt 600

agcggtgaaa tgcgtagaga ttaggaagaa caccagtggc gaaggcgact ctctggactg 660

taactgacgc tgaggctcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 720

acgccgtaaa cgatgaatac taggtgtagg ggttgtcatg acctctgtgc cgccgcaaac 780

gcattaagta ttccgcctgg ggagtacggt cgcaagatta aaactcaaag gaattgacgg 840

gggcccgcac aagcagcgga gcatgtggtt taattcgaag caacgcgaag aaccttacct 900

agacttgaca tctcctgcat tactcttaat cgaggaagtc ccttcgggga caggatgaca 960

ggtggtgcat gggcgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1020

cgcaaccctt attgttagtt gctaccattt agttgagcac tctagcgaga ctgcccgggt 1080

taaccgggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgtc tagggctaca 1140

cacgtgctac aatggcaagt acaaagagat gcgataccgc gaggtggagc taaactataa 1200

aacttgtctc agttcggatt gtaggctgaa actcgcctac atgaagctgg agttgctagt 1260

aatcgcgaat cagaatgtcg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1320

caccatgaga gttggcaata cccaaagttc gtgagctaac ccgtaaggga ggcagcga 1378

<210> 654
<211> 1515
<212> DNA
<213> Clostridium tetani

<400> 654
taaattgaga gtttgatcct ggctcaggac gaacgctggc ggcgtgctta acacatgcaa 60

gtcgagcgat gaagcttcct tcgggaagtg gattagcggc ggacgggtga gtaacacgtg 120

ggcaacctgc ctcaaagagg ggaatagccc tccgaaagga ggattaatac cgcataaagt 180

taaggtttcg catgaaactt taaccaaagg agtaatctgc tttgagatgg gcccgcgccc 240

cattagctag ttggtaaggt aatggcttac caaggcgacg atgggtagcc gacctgagag 300

ggtgatcggc cacattggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 360

gaatattgcg caatggggga aaccctgacg cagcaacgcc gcgtgggtga tgaaggtttt 420

cggatcgtaa aaccctgttt tctgggacga taatgacggt accagatgag gaagccacgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttactg 540

ggcgtaaagg gtgcgtaggc ggatgcttaa gtgagatgtg aaatacctaa gcttaactta 600

ggggctgcat ttcaaactgg gcatctagag tacaggagag ggaaacggaa ttcctagtgt 660

agcggtgaaa tgcgtagaga ttaggaagaa caccagtggc gaaggcggtt tcctggactg 720

taactgacgc tgaggcacga aagcgtgggt agcaaacagg attagatacc ctggtagtcc 780

acgccgtaaa cgatgaatac taggtgtagg agggtccaac cttctgtgcc gcagttaaca 840

cattaagtat tccgcctggg gagtacggtc gcaagactaa aactcaaagg aattgacggg 900

ggcccgcaca agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccta 960

gacttgacat accctgaatt actcgtaact gaggaagtcc cttcggggac agggatacag 1020

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctta ttattagttg ctaccattaa gttgagcact ctaatgagac tgcctgggtg 1140

aaccaggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac 1200

acgtgctaca atggtcggta cagagagacg caagaccgcg aggtggagca aatctcaaaa 1260

accgatccca gttcggattg caggctgaaa ctcgcctgca tgaagccgga gttgctagta 1320

atcgcaaatc agaatgttgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgagag ttggcaacac ccgaagtccg tgaggtaacc gtaaggagcc agcggccgaa 1440

ggtggggtta atgattgggg tgaagtcgta acaaggtagc cgtaggagaa cctgcggctg 1500

gatcacctcc tttct 1515

<210> 655
<211> 1521
<212> DNA
<213> Clostridium thermocellum

<400> 655
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

ggggatatac ggaaggttta ccggaagtat atcctagcgg cggacgggtg agtaacgcgt 120

gggtaaccta cctcatacag ggggataaca cagggaaacc tgtgctaata ccgcataata 180

taacggggcg gcatcgtcct gttatcaaag gagaaatccg gtatgagatg ggcccgcgtc 240

cgattagctg gttggtgagg taacggctca ccaaggcgac gatcggtagc cgaactgaga 300

ggttggtcgg ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc gcaatggggg aaaccctgac gcagcaacgc cgcgtgaagg aagaaggcct 420

tcgggttgta aacttctttg attggggacg aaggaagtga cggtacccaa agaacaagcc 480

acggctaact acgtgccagc agccgcggta atacgtaggt ggcgagcgtt gtccggaatt 540

actgggtgta aagggcgcgt aggcggggat gcaagtcaga tgtgaaattc cggggcttaa 600

ccccggcgct gcatctgaaa ctgtatctct tgagtgctgg agaggaaagc ggaattccta 660

gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc ggctttctgg 720

acagtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 780

gtccacgccg taaacgatgg atactaggtg taggaggtat cgacccttc tgtgccggag 840

ttaacacaat aagtatccca cctggggagt acggccgcaa ggttgaaact caaaggaatt 900

gacgggggcc cgcacaagca gtggagtatg tggtttaatt cgaagcaacg cgaagaacct 960

taccagggct tgacatccct ctgacagctc tagagatagg gcttcccttc ggggcagagg 1020

agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtcgt tagttgccag cacgttaagg tgggcactct agcgagactg 1140

ccggcgacaa gtcggaggaa ggtggggacg acgtcaaatc atcatgcccc ttatgtcctg 1200

ggctacacac gtactacaat ggctgctaca aagggaagcg ataccgcgag gtggagcaaa 1260

tccccaaaag cagtcccagt tcggattgca ggctgaaact cgcctgcatg aagtcggaat 1320

tgctagtaat ggcaggtcag catactgccg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacac catgagagtc tgcaacaccc gaagtcagta gtctaaccgt aaggagggcg 1440

ctgccgaagg tggggcagat gattggggtg aagtcgtaac aaggtagccg tatcggaagg 1500

tgcggctgga tcacctcctt t 1521

<210> 656
<211> 1360
<212> DNA
<213> Clostridium tyrobutyricum

<400> 656
agcgatgaaa ccccttcggg ggtggattag cggcggacgg gtgagtaaca cgtgggtaac 60

ctgcctcaaa gtgggggata gccttccgaa aggaagatta ataccgcata aagccaagtt 120

tcacatggaa tttggatgaa aggagtaatt cgctttgaga tggacccgcg gcgcattagt 180

tagttggtgg ggtaatggcc taccaagaca gcgatgcgta gccgacctga gagggtgatc 240

ggccacattg gaactgagat acggtccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cgaaagcctg atgcagcaac gccgcgtgag tgatgaaggt cttcggattg 360

taaagctctg tcttttggga cgataatgac ggtaccaaag gaggaagcca cggctaacta 420

cgtgccagca gccgcggtaa tacgtaggtg gcgagcgttg tccggattta ctgggcgtaa 480

agggtgcgta ggcggatgtt taagtgagat gtgaaatacc cgggcttaac ttgggtgctg 540

catttcaaac tggatatcta gagtgcagga gaggagaatg gaattcctag tgtagcggtg 600

aaatgcgtag agattaggaa gaacaccagt ggcgaaggcg attctctgga ctgtaactga 660

cgctgaggca cgaaagcgtg ggtagcaaac aggattagat accctggtag tccacgccgt 720

aaacgatgag tactaggtgt aggaggtatc gacccttct gtgccgcagt aaacacatta 780

agtactccgc ctgggaagta cgatcgcaag attaaaactc aaaggaattg acgggggccc 840

gcacaagcag cggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctggactt 900

gacatcccct gaataaccta gagataggcg aagcccttcg gggcagggag acaggtggtg 960

catggttgtc gtcagctcgt gtcgtgagat gttaggttaa gtcctgcaac gagcgcaacc 1020

cttattgtta gttgctaaca ttcagttgag cactctaacg agactgccgc ggttaacgcg 1080

gaggaaggtg gggatgacgt caaatcatca tgccccttat gtccagggca acacacgtgc 1140

tacaatgggc agaacaaaga gaagcaatac cgcgaggtgg agccaaactc aaaaactgct 1200

ctcagttcgg attgcaggct gaaactcgcc tgcatgaagc tggagttgct agtaatcgcg 1260

aatcagcatg tcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg 1320

agagctggca acacccgaag tccgtagtct aacgtaagag 1360

<210> 657
<211> 1482
<212> DNA
<213> Clostridium viride

<220>
<221> modified_base
<222> (746)..(746)
<223> a, c, t, g, unknown or other

<400> 657
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggagccatct ggaacaagtt 60

ttcggacaag ggaaagatgt gcttagtggc ggacgggtga gtaacgcgtg agtaacctgc 120

cttggagtgg ggaataacac atcgaaaggt gtgctaatac cgcatgatgc aacgggatcg 180

catggttctg ttgccaaaga tttatcgctc tgagatggac tcgcgtctga ttagctagtt 240

ggtgaggtaa tggctcacca aggcgacgat cagtagccgg actgagaggt tgaccggcca 300

cattgggact gagacacggc ccagactcct acgggaggca gcagtgggga atattgggca 360

atgggcgcaa gcctgaccca gcaacgccgc gtgaaggaag aaggccctcg ggttgtaaac 420

ttcttttatt cgagacgaaa caaatgacgg taccgaatga ataagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc aagcgttatc cggatttact gggtgtaaag 540

ggcgtgtagg cgggactgca agtcagatgt gaaattccag ggctcaactc tggacctgca 600

tttgaaactg tagttcttga gtgatggaga ggcaggcgga attccgagtg tagcggtgaa 660

atgcgtagat attcggagga acaccagtgg cgaaggcggc ctgctggaca ttaactgacg 720

ctgaggcgcg aaagcgtggg gagcanacag gattagatac cctggtagtc cacgctgtaa 780

acgatggata ctaggtgtgg ggggactgac cccttccgtg ccgcagttaa cacaataagt 840

atcccacctg gggagtacga tcgcaaggtt gaaactcaaa ggaattgacg ggggcccgca 900

caagcggtgg agtatgtggt ttaattcgaa gcaacgcgaa gaaccttacc agggcttgac 960

atccctctga ccggtctaga gataggccct ccctcggggc agaggtgaca ggtggtgcat 1020

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct 1080

attgttagtt gctacgcaag agcactctag cgagactgcc gttgacaaaa cggaggaagg 1140

tggggacgac gtcaaatcat catgcccctt atgtcctggg ctacacacgt actacaatgg 1200

cgcttaacag agggaggcaa taccgcgagg tggagcaaac ccctaaaagg cgtcccagtt 1260

cggattgcag gctgaaaccc gcctgtatga agttggaatc gctagtaatc gcggatcagc 1320

atgccgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc atgagagtcg 1380

ggaacacccg aagtccgtag cctaacagca atgagggcgc ggccgaaggt gggttcgata 1440

attggggtga agtcgtaaca aggtagccgt atcggaaggt gc 1482

<210> 658
<211> 1441

<212> DNA
<213> Clostridium xylanolyticum

<220>
<221> modified_base
<222> (830)..(830)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1001)..(1001)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1386)..(1386)
<223> a, c, t, g, unknown or other

<400> 658
gatcctggct caggatgaac gctggcggcg tgcttaacac atgcaagtcg agcgaagcat 60

tttaaaggaa gttttcggat ggaatttaga atgacttagc ggcggacggg tgagtaacgc 120

gtgggtaacc tgcctcatac agggggataa cagttagaaa tgactgctaa taccgcataa 180

gcgcacagtg ctgcatagta cagtgtgaaa aactccggtg gtatgagatg gacccgcgtc 240

tgattaggta gttggtgagg taacggccca ccaagccgac gatcagtagc cgacctgaga 300

gggtgaccgg ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtgg 360

ggaatattgg acaatggggg aaaccctgat ccagcgacgc cgcgtgagtg aagaagtatt 420

tcggtatgta aagctctatc agcagggaag aaaatgacgg tacctgacta agaagccccg 480

gctaactacg tgccagcagc cgcggtaata cgtaggggcc aagcgttatc cggatttact 540

gggtgtaaag ggagcgtaga cggctctgca agtctggagt gaaagcccgg ggctcaaccc 600

cgggactgct ttggaaactg tggagctaga gtgcaggaga ggtaagtgga attcctagtg 660

tagcggtgaa atgcgtagat attaggagga acaccagtgg cgaaggcggc ttactggact 720

gtaactgacg ttgaggctcg aaagcgtggg gagcaaacag gattagatac cctggtagtc 780

cacgccgtaa acgatgaata ctaggtgttg gggagcaaag ctcttcggtn ccgccgctaa 840

cgcaataagt attccacctg gggagtacgt tcgcaagaat gaaactcaaa ggaattgacg 900

gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 960

aagtcttgac atcggaatga ccgtctcgta acggagacct nccttcgggg cattccagac 1020

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct tatccttagt agccagcatg twatggtggg cactctgggg agactgccag 1140

ggataacctg gaggaaggtg gggatgacgt caaatcatca tgccccttat gatttgggct 1200

acacacgtgc tacaatggcg taaacaaagg gaagcaaagg agcgatctgg agcaaatccc 1260

aaaaataacg tctcagttcg gattgtagtc tgcaactcga ctacatgaag ctggaatcgc 1320

tagtaatcgc agatcagaat gctgcggtga atacgttccc gggtcttgta cacaccgccc 1380

gtcacnccat gggagttggt aacgcccgaa gtcagtgacc caaccgtaag gagggagctg 1440

c 1441

<210> 659
<211> 1357
<212> DNA
<213> Collinsella aerofaciens

<220>
<221> modified_base
<222> (766)..(766)
<223> a, c, t, g, unknown or other

<400> 659
acggcacccc tctccggagg gaagcgagtg gcgaacggct gagtaacacg tggagaacct 60

gccccctccc ccgggatagc cgcccgaaag gacgggtaat accggatacc cccgggcgcc 120

gcatggcgcc cgggctaaag ccccgacggg aggggatggc tccgcggccc atcaggtaga 180

cggcggggtg acggcccacc gtgccgacaa cgggtagccg ggttgagaga ccgaccggcc 240

agattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg aatcttgcgc 300

aatgggggga accctgacgc agcgacgccg cgtgcgggac ggaggccttc gggtcgtaaa 360

ccgctttcag cagggaagag tcaagactgt acctgcagaa gaagccccgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggggcg agcgttatcc ggattcattg ggcgtaaagc 480

gcgcgtaggc ggcccggcag gccgggggtc gaagcggggg gctcaacccc ccgaagcccc 540

cggaacctcc gcggcttggg tccggtaggg gagggtggaa cacccggtgt agcggtggaa 600

tgcgcagata tcgggtggaa caccggtggc gaaggcggcc ctctgggccg agaccgacgc 660

tgaggcgcga aagctggggg agcgaacagg attagatacc ctggtagtcc cagccgtaaa 720

cgatggacgc tgggtgtggg gggacgatcc ccccgtgccg cagccnacgc attaagcgtc 780

ccgcctgggg agtacggccg caaggctaaa actcaaagga attgacgggg gcccgcacaa 840

gcagcggagc atgtggctta attcgaagca acgcgaagaa ccttacggcg catccccccg 900

aggcccacgg ggggtccgcc gcgtgggtca gaggagcgca tacgggaggt gcatggttgt 960

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccccgccgcg 1020

tgttgccatc gggtgatgcc gggaacccac gcgggaccgc cgccgtcaag gcggaggagg 1080

gcggggacga cgtcaagtca tcatgccccc tatgccctgg gctgcacacg tgctacaatg 1140

gccggtacag agggatgcca ccccgcgagg gggagcggat cccggaaagc cggccccagt 1200

tcggattggg ggctgcaacc cgcccccatg aagtcggagt tgctagtaat cgcggatcag 1260

catgccgcgg tgaatgcgtt cccgggcctt gtacacaccg cccgtcacac cacccgagtc 1320

gtctgcaccc gaagtcgccg gcccaaccgc aaggggg 1357

<210> 660
<211> 1340
<212> DNA
<213> Collinsella intestinalis

<400> 660

gaacggcacc caccctcggg tggaagcgag tggcgaacgg ctgagtaaca cgtggagaac 60

ccgccccctc ctccgggata gcctcgggaa accgtgggta taccggatg accccgcagg 120

gccgcatggc cccgcgggca aagcccagac gggaggggat ggctccgcgg cccatcaggt 180

agacggcggg gtgacggccc accgtgccga cgacgggtag ccgggttgag agaccgaccg 240

gccagattgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatcttg 300

cgcaatgggg ggaaccctga cgcagcgacg ccgcgtgcgg gacgaaggcc ctcgggtcgt 360

aaaccgcttt cagcaggatg agacaagacg gtacctgcag aagaagcccc ggctaactac 420

gtgccagcag ccgcggtaat acgtaggggg cgagcgttat ccggattcat tgggcgtaaa 480

gcgcgcgtag gcggcccggc aggcaggggg tcaaatggcg gggctcaacc ccgtcccgcc 540

ccctgaaccg ccgggctcgg gtccggtagg ggagggtgga acacccggtg tagcggtgga 600

atgcgcagat atcgggtgga acaccggtgg cgaaggcggc cctctgggcc gagaccgacg 660

ctgaggcgcg aaagctgggg gagcgaacag gattagatac cctggtagtc ccagccgtaa 720

acgatggacg ctaggtgtgg ggggacgatc cctccgtgcc gcagccaacg cattaagcgt 780

cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca 840

agcagcggag catgtggctt aattcgaagc aacgcgaaga accttaccag ggcttgacat 900

gaccgtgaag ccggggagac ccggtggccg agaggagcgg tcacaggtgg tgcatggctg 960

tcgtcagctc gtgtcgtgag atgtttggat aacggcggcg aaggccgcaa cccccgccgc 1020

atgttgccag cacctcgggt gggcacccat gcgggaccgc cggagtcaat ccggaggagg 1080

gcggggacga cgtcaagtca tcatgccccct tatgccctgg gctgcacacg tgctacaatg 1140

gccggtacag cgggatgcga tggcgcgagc cggagcggat ccctgaaagc cggccccagt 1200

tcggattggg ggctgcaacc cgcccccatg aagtcggagt tgctagtaat cgcggatcag 1260

catgccgcgg tgaatgcgtt cccgggcctt gtacacaccg cccgtcacac cacccgagtc 1320

gtctgcaccc gaagtcgccg 1340

<210> 661
<211> 1264
<212> DNA
<213> Collinsella stercoris

<220>
<221> modified_base
<222> (1223)..(1224)
<223> a, c, t, g, unknown or other

<400> 661
gccccctcct ccgggatagc ctcgggaaac cgtgggtaat accggatgac cccggcaggc 60

cgcatggccg gccgggcaaa gcccagacgg gaggggatgg ctccgcggcc catcaggtag 120

acggcggggt gacggcccac cgtgccgacg acgggtagcc gggttgagag accgaccggc 180

cagattggga ctgagacacg gcccacactc ctacgggagg cagcagtggg gaatcttgcg 240

caatgggggg aaccctgacg cagcgacgcc gcgtgcggga cgaaggccct cgggtcgtaa 300

accgctttca gcggaacaaa cgtgcagaag aagccccggc taactacgtg ccagcagccg 360

cggtatacgt aggggcgag cgttatccgg attcattggg cgtaaagcgc gcgtagcggc 420

ccggcaggca gggggtcaaa tggcggggct caaccccgtc ccgccccctg aaccgccggg 480

ctcggtccgg taggggaggg tggaacaccc ggtgtacggt ggaatgcgca gatatcgggt 540

ggaacaccgg tggcgaagcg gcctctgggc cgaaccgacg ctgagcgcga aagctggggg 600

agcgaacagg attaaatacc ctggtagtcc cagccgtaaa cgatggacgc taggtgtggg 660

aggggaaccc ttccgtgccg cagcccacgc attaggcgtc ccgcctgggg agtacggccg 720

caaggctaaa actccaagga attgactggg ggccctcaaa gcagcggagc atgtggctta 780

attcgaagca acgcgaagaa ccttaccagg gcttgacatg cgcgtgaagc cggggagacc 840

cggtggccga gaggagcgcg cacaggtggt gcatggctgt cgtcagctcg tgtcgtgaga 900

tgtttggtta agtccagcaa cgagcgcaac ccccgccgca tgttgccagc acctcgggtg 960

ggcacccatg cgggaccgcc ggagtcaatc cggaggaggg cggggacgac gtcaagtcat 1020

catgcccctt atgccctggg ctgcacacgt gctacaatgg ccggtacagc gggatgcgat 1080

ggcgcgagcc ggagcggatc cctgaaagcc ggccccagtt cggattgggg gctgcaaccc 1140

gcccccatga agtcggagtt gctagtaatc gcggatcagc atgccgcggt gaatgcgttc 1200

ccgggccttg tacacaccgc ccnncacacc acccgagtcg tctgcacccg aagtcgccgg 1260

ccca 1264

<210> 662
<211> 1356
<212> DNA
<213> Collinsella tanakaei

<400> 662
tcatggctca ggatgaacgc tggcggcgcg cctaacacat gcaagtcgaa cgagtggcga 60

acggctgagt aacacgtgga gaacctgccc cctcctcggg gatagccgcg ggaaaccgcg 120

ggtaacaccc gacgaccaaa tgagggaggg gatggctccg cggcccatca ggtagacggc 180

ggggtaacgg cccaccgtgc cgacaacggg tagccgggtt gagagaccga ccggccagat 240

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaatc ttgcgcaatg 300

ggggcaaccc tgacgcagcg acgccgcgtg cgggacgaag gccttcgggt cgtaaaccgc 360

tttcagcagg gacgaagacg gtacctgcag aagaagcccc ggctaactac gtgccagcag 420

ccgcggtaat acgtaggggg cgagcgttat ccggattcat tgggcgtaaa gcgcgcgtag 480

gcggccgcgt aggcgggggg tcaaatcccg gggctcaacc ccggtccgcc ccccgaaccc 540

cgcggctcgg gtccggtagg ggagggtgga attcccggtg tagcggtgga atgcgcagat 600

atcgggagga acaccggtgg cgaaggcggc cctctgggcc gaccgacgct gaggcgcgaa 660

agctggggga gcgaacagga ttagataccc tggtagtccc agccgtaaac gatggacgct 720

aggtgtgggg gcctccgtgc cgcagccaac gcattaagcg tcccgcctgg ggagtacggc 780

cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcagcgga gcatgtggct 840

taattcgaag caacgcgaag aaccttacca gggcttgaca tgcacaggtg gtgcatggct 900

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccccgccg 960

catgttgcca gcagctgggc acccatgcgg gaccgccggc gtcaagccgg aggagggcgg 1020

ggacgacgtc aagtcatcat gccccttatg ccctgggctg cacacgtgct acaatggccg 1080

gcagcgggat gcgatggcgc gagccggagc ggatccctcc cggccccagt tcggatgggg 1140

gctgcaaccc gcccccagaa gtcggagttg ctagtaatcg cggatcagca tgccgcggtg 1200

aatgcgttcc cgggccttgt acacaccgcc cgtcacacca cccgagtcgt ctgcacccga 1260

agccgccgcc cagggaggcg tcgaaggtgt ggagggtgag gggggtgaag tcgtaacaag 1320

gtagccgtac gggaacgtgc ggctggatca cctcct 1356

<210> 663
<211> 1505
<212> DNA
<213> Comamonadaceae bacterium NML000135

<400> 663
attgaacgct ggcggcatgc tttacacatg caagtcgaac ggtaacatgg gtgcttgcac 60

ctgatgacga gtggcgaacg ggtgagtaat acatcggaac atgcccaatt gtgggggata 120

gctcggcgaa agccggatta ataccgcata agatctacgg atgaaagcag gggaccttcg 180

ggccttgcgc gattggagtg gccgatggca gattaggtag ttggtggggt aaaggcctac 240

caagcctgcg atctgtagct ggtctgagag gacgaccagc cacactggga ctgagacacg 300

gcccagactc ctacgggagg cagcagtggg gaattttgga caatgggcgc aagcctgatc 360

cagcaatgcc gcgtgcagga cgaaggcctt cgggttgtaa actgcttttg tgcagaacga 420

aaaatctctg gttaatacct ggggatcatg acggtactgc aagaataagc accggctaac 480

tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt taatcggaat tactgggcgt 540

aaagcgtgcg caggcggcga tgcaagaccg atgtgaaatc cccgggctca acctgggaac 600

tgcattagtg actgcattgc tggagtgcgg cagaggggga tggaattccg cgtgtagcag 660

tgaaatgcgt agatatgcgg aggaacaccg atggcgaagg caatcccctg ggcctgcact 720

gacgctcatg cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 780

ctaaacgatg tcaactggtt gttggggatt catttcttca gtaacgaagc taacgcgtga 840

agttgaccgc ctggggagta cggtcgcaag actaaaactc aaaggaattg acggggaccc 900

gcacaagcgg tggatgatgt ggtttaattc gatgcaacgc gaaaaacctt acccaccttt 960

gacatgtacg gaacttgcca gagatggctt ggtgctcgaa agagagccgt aacacaggtg 1020

ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccttgtca ttagttgcca tcatttagtt gggcactcta atgagactgc cggtgataaa 1140

ccggaggaag gtggggatga cgtcaagtcc tcatggccct tataggtggg gctacacacg 1200

tcatacaatg gccggtacaa agggcagcca acccgcgagg gggagccaat cccataaagc 1260

cggtcgtagt ccggatcgca gtctgcaact cgactgcgtg aagtcggaat cgctagtaat 1320

cgtggatcag catgtcacgg tgaatacgtt cccgggtctt gtacacaccg cccgtcacac 1380

catgggagcg ggttctgcca gaagtaggta gcttaaccgt aaggagggcg cttaccacgg 1440

cagggctcgt gactggggtg aagtcgtaac aaggtagccg taccggaagg tgcggctgga 1500

tcacc 1505

<210> 664
<211> 1450
<212> DNA
<213> Comamonadaceae bacterium NML790751

<400> 664
tacacatgca agtcgaacgg taacatgggt gcttgcacct gatgacgagt ggcgaacggg 60

tgagtaatac atcggaacat gcccaattgt gggggatagc tcggcgaaag ccggattaat 120

accgcataag atctacggat gaaagcaggg gaccttcggg ccttgcgcga ttggagtggc 180

cgatggcaga ttaggtagtt ggtggggtaa aggcctacca agcctgcgat ctgtagctgg 240

tctgagagga cgaccagcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtgggga attttggaca atgggcgcaa gcctgatcca gcaatgccgc gtgcaggacg 360

aaggccttcg ggttgtaaac tgcttttgta cagaacgaaa agtctctggt taatacctgg 420

ggaacatgac ggtactgtaa gaataagcac cggctaacta cgtgccagca gccgcggtaa 480

tacgtagggt gcgagcgtta atcggaatta ctgggcgtaa agcgtgcgca ggcggcgatg 540

caagaccgat gtgaaatccc cgggctcaac ctgggaactg cattagtgac tgcattgctg 600

gagtgcggca gaggggggatg gaattccgcg tgtagcagtg aaatgcgtag atatgcggag 660

gaacaccgat ggcgaaggca atcccctggg cctgcactga cgctcatgca cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccct aaacgatgtc aactggttgt 780

tggggattca tttcttcagt aacgaagcta acgcgtgaag ttgaccgcct ggggagtacg 840

gtcgcaagac taaaactcaa aggaattgac ggggacccgc acaagcggtg gatgatgtgg 900

tttaattcga tgcaacgcga aaaaccttac ccacctttga catgtacgga acttgccaga 960

gatggcttgg tgctcgaaag agagccgtaa cacaggtgct gcatggctgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtcatt agttgccatc 1080

atttagttgg gcactctaat gagactgccg gtgataaacc ggaggaaggt ggggatgacg 1140

tcaagtcctc atggcccttа taggtggggc tacacacgtc atacaatggc cggtacaaag 1200

ggcagccaac ccgcgagggg gagccaatcc cataaagccg gtcgtagtcc ggatcgcagt 1260

ctgcaactcg actgcgtgaa gtcggaatcg ctagtaatcg tggatcagca tgtcacggtg 1320

aatacgttcc cgggtcttgt acacaccgcc cgtcacacca tgggagcggg ttctgccaga 1380

agtaggtagt cttaaccgta aggagggcgc ttaccacggc agggctcgtg actggggtga 1440

agtcgtaaca 1450

<210> 665
<211> 1485
<212> DNA
<213> Comamonadaceae bacterium NML910035

<400> 665
aacgctggcg gcatgcttta cacatgcaag tcgaacggta acatgggtgc ttgcacctga 60

tgacgagtgg cgaacgggtg agtaatacat cggaacatgc ccaattgtgg gggatagctc 120

ggcgaaagcc ggattaatac cgcataagat ctacggatga aagcagggga ccttcgggcc 180

ttgcgcgatt ggagtggccg atggcagatt aggtagttgg tggggtaaag gcctaccaag 240

cctgcgatct gtagctggtc tgagaggacg accagccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtggggaat tttggacaat gggcgcaagc ctgatccagc 360

aatgccgcgt gcaggacgaa ggccttcggg ttgtaaactg cttttgtaca gaacgaaaag 420

tctctggtta atacctgggg atcatgacgg tactgtaaga ataagcaccg gctaactacg 480

tgccagcagc cgcggtaata cgtagggtgc gagcgttaat cggaattact gggcgtaaag 540

cgtgcgcagg cggcgatgca agaccgatgt gaaatccccg ggctcaacct gggaactgca 600

ttagtgactg cattgctgga gtgcggcaga gggggatgga attccgcgtg tagcagtgaa 660

atgcgtagat atgcggagga acaccgatgg cgaaggcaat cccctgggcc tgcactgacg 720

ctcatgcacg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccctaa 780

acgatgtcaa ctggttgttg gggattcatt tcttcagtaa cgaagctaac gcgtgaagtt 840

gaccgcctgg ggagtacggt cgcaagacta aaactcaaag gaattgacgg ggacccgcac 900

aagcggtgga tgatgtggtt taattcgatg caacgcgaaa aaccttaccc acctttgaca 960

tgtacggaac ttgccagaga tggcttggtg ctcgaaagag agccgtaaca caggtgctgc 1020

atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttgtcattag ttgccatcat taagttgggc actctaatga gactgccggt gataaaccgg 1140

aggaaggtgg ggatgacgtc aagtcctcat ggcccttata ggtggggcta cacacgtcat 1200

acaatggccg gtacaaaggg caggcaaccc gcgaggggga gcaaatccca taaagccggt 1260

cgtagtccgg atcgcagtct gcaactcgac tgcgtgaagt cggaatcgct agtaatcgtg 1320

gatcagcatg tcacggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccatg 1380

ggagcgggtt ctgccagaag taggtagctt aaccgtaagg agggcgctta ccacggcagg 1440

gctcgtgact ggggtgaagt cgtaacaagg tagccgtacc ggaag 1485

<210> 666
<211> 1480
<212> DNA
<213> Comamonadaceae bacterium NML910036

<400> 666
attgaacgct ggcggcatgc tttacacatg caagtcgaac ggtaacatgg gtgcttgcac 60

ctgatgacga gtggcgaacg ggtgagtaat acatcggaac atgcccaatt gtgggggata 120

gctcggcgaa agccggatta ataccgcata agatctacgg atgaaagcag gggaccttcg 180

ggccttgcgc gattggagtg gccgatggca gattaggtag ttggtggggt aaaggcctac 240

caagcctgcg atctgtagct ggtctgagag gacggccagc cacactggga ctgagacacg 300

gcccagactc ctacgggagg cagcagtggg gaattttgga caatgggcgc aagcctgatc 360

cagcaatgcc gcgtgcagga cgaaggcctt cgggttgtaa actgcttttg tacagaacga 420

aaagtctctg gttaatacct ggggatcatg acggtactgt aagaataagc accggctaac 480

tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt taatcggaat tactgggcgt 540

aaagcgtgcg caggcggcga tgcaagaccg atgtgaaatc cccgggctca acctgggaac 600

tgcattagtg actgcattgc tggagtgcgg cagaggggga tggaattccg cgtgtagcag 660

tgaaatgcgt agatatgcgg aggaacaccg atggcgaagg caatcccctg ggcctgcact 720

gacgctcatg cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 780

ctaaacgatg tcaactggtt gttggggatt catttcttca gtaacgaagc taacgcgtga 840

agttgaccgc ctggggagta cggtcgcaag actaaaactc aaaggaattg acggggaccc 900

gcacaagcgg tggatgatgt ggtttaattc gatgcaacgc gaaaaacctt acccaccttt 960

gacatgtacg gaacttgcca gagatggctt ggtgctcgaa agagagccgt aacacaggtg 1020

ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccttgtca ttagttgcca tcattaagtt gggcactcta atgagactgc cggtgataaa 1140

ccggaggaag gtggggatga cgtcaagtcc tcatggccct tataggtggg gctacacacg 1200

tcatacaatg gccggtacaa agggcagcca acccgcgagg gggagcaaat cccataaagc 1260

cggtcgtagt ccggatcgca gtctgcaact cgactgcgtg aagtcggaat cgctagtaat 1320

cgtggatcag catgtcacgg tgaatacgtt cccgggtctt gtacacaccg cccgtcacac 1380

catgggagcg ggttctgcca gaagtaggta gcttaaccgt aaggagggcg cttaccacgg 1440

cagggctcgt gactggggtg aagtcgtaac aaggtagccg 1480

<210> 667
<211> 1499
<212> DNA
<213> Comamonadaceae bacterium oral taxon F47

<400> 667
agagtttgat cctggctcag attgaacgct ggcggcatgc tttacacatg caagtcgaac 60

ggcagcggag aggtgcttgc acttctgccg gcgagtggcg aacgggtgag taatgtatcg 120

gaacgtgccc agtagtgggg gataactact cgaaagagtg gctaataccg catgagatct 180

ctggatgaaa gcgggggacc gtaaggcctc gcgctactgg agcggccgat atcagattag 240

gtagttggtg gggtaaaggc ctaccaagcc tgcgatctgt agctggtttg agaggacgac 300

cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaattt 360

tggacaatgg gcgcaagcct gatccagcaa tgccgcgtgc aggacgaagg ccttcgggtt 420

gtaaactgct tttgtacaga acgaaaagct cttctctaat acagggggt aatgacggta 480

ctgtaagaat aagcgccggc taactacgtg ccagcagccg cggtaatacg tagggtgcga 540

gcgttaatcg gaattactgg gcgtaaagcg tgcgcaggcg gttttgtaag acagaggtga 600

aatccccggg cttaacctgg gaactgcctt tgtgactgca aggcttgagt gcggcagagg 660

gggatggaat tccgcgtgta gcagtgaaat gcgtagatat gcggaggaac accgatggcg 720

aaggcagtcc cctgggcctg cactgacgct catgcacgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccctaaac gatgtcaact ggttgttgga atttattttt 840

tcagtaacgt tgctaacgcg tgaagttgac cgcctgggga gtacggccgc aaggttgaaa 900

ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggtttaa ttcgatgcaa 960

cgcgaaaaac cttacccacc tttgacatgg caggaagttt ccagagatgg attcgtgctc 1020

gcaagagagc ctgcacacag gtgctgcatg gctgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaacccttg ccattagttg ctacgaaagg gcactctaat 1140

gggactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaagtcctc atggcccttа 1200

taggtggggc tacacacgtc atacaatggc cggtacaaag ggtagccaac ccgcgagggg 1260

gagccaatcc cgcaaagccg gtcgtagtcc ggatcgcagt ctgcaactcg actgcgtgaa 1320

gtcggaatcg ctagtaatcg tggatcagca tgtcacggtg aatacgttcc cgggtcttgt 1380

acacaccgcc cgtcacacca tgggagcggg ttctgccaga agtggttagc ctaaccgcaa 1440

ggagggcgat caccacggca gggttcgtga ctggggtgaa gtcgtaacaa ggtagccgt 1499

<210> 668
<211> 1521
<212> DNA
<213> Comamonas sp. NSP5

<400> 668
agagtttgat cctggctcag attgaacgct ggcggcatgc tttacacatg caagtcgaac 60

ggtaacaggc cgcaaggtgc tgacgagtgg cgaacgggtg agtaacacat cggaacgtgc 120

ccagttgtgg gggataacta ctcgaaagag tagctaatac cgcatgagaa cttaggttga 180

aagcagggga ccgcaagacc ttgcgcaaac agagcggccg atggcagatt aggtagttgg 240

tgggataaag gcttaccaag ccgacgatct gtagctggtc tgagaggacg accagccaca 300

ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat ttgggacaat 360

gggcgcaagc ctgatccagc aatgccgcgt gcaggatgaa ggccttcggg ttgtaaactg 420

ctttggtacg gaacgaaaaa gctctggtta atacctgggg cccatgacgg taccgtaaga 480

ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc aagcgttaat 540

cggaattact gggcgtaaag cgtgcgcagg cggttatgta agacagaggt gaaatccccg 600

ggctcaacct gggaactgcc tttgtgactg catagctgga gtgcggcaga gggggatgga 660

attccgcgtg tagcagtgaa atgcgtagat atgcggagga acaccgatgg cgaaggcaat 720

cccctgggcc tgcactgacg ctcatgcacg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgccctaa acgatgtcaa ctggttgttg ggtattcact ttctcagtaa 840

cgaagctaac gcgtgaagtt gacccctgg ggagtacggc cccaaggtta aaactcaaag 900

gaattgacgg ggacccgcac aagcggtgga tgatgtggtt taattcgatg caacgcgaaa 960

aaccttaccc acctttgaca tgtacggaac cctttagaga tagaggggtg ctcgaaagag 1020

aaccgtaaca caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttgccattag ttgctacgaa agggcactct aatgggactg 1140

ccggtgacaa accggaggaa ggtggggatg acgtcaagtc ctcatggccc ttataggtgg 1200

ggctacacac gtcatacaat ggccggtaca aagggtagcc aacccgcgag gtggagctaa 1260

tcccataaag ccggtcgtag tccggatcgc agtctgcaac tcgactgcgt gaagtcggaa 1320

tcgctagtaa tcgtggatca gaatgtcacg gtgaatacgt tcccgggtct tgtacacacc 1380

gaccgtcaca ccatgggagc gggttctgcc agaagtaggt agcctaaccg taaggagggc 1440

gcttaccacg gcggggttcg tgactggggt gaagtcgtaa caaggtagcc gtatcggaag 1500

gtgcggctgg atcacctcct t 1521

<210> 669
<211> 1464
<212> DNA
<213> Conchiformibius kuhniae

<400> 669
attgaacgct ggcggcatgc tttacacatg caagtcggac ggcagcrsgg aggagcttgc 60

ttctykgsyg gcgagtggcg aacgggtgag taacgcattg gaacgtaccg gatagagggg 120

gataacttgc cgaaaggtaa gctaataccg catacgcctt gagagggaaa gcgggggact 180

ctttgagcct cgcgctatcc gagcggccaa tgtctgatta gctagttggt ggggtaaaag 240

cctaccaagg cgacgatcag tagcgggtct gagaggatga tccgccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaatt ttggacaatg ggcgcaagcc 360

tgatccagcc atgccgcgtg tctgaagaag gccttcgggt tgtaaaggac ttttgtacgg 420

gaagaaaagg gtggtgctaa tatcgctgcc tcatgacggt accgtaagaa taagcaccgg 480

ctaactacgt gccagcagcc gcggtaatac gtagggtgcg agcgttaatc ggaattactg 540

ggcgtaaagc gggcgcagac ggttacttaa gcaagatgtg aaatccccga gcttaacttg 600

ggaactgcgt tttgaactgg gtagctagag tgtgtcagag gggggtagaa ttccacgtgt 660

agcagtgaaa tgcgtagaga tgtggaggaa taccgatggc gaaggcagcc ccctgggata 720

acactgacgt tcatgcccga aagcgtgggt agcaaacagg attagatacc ctggtagtcc 780

acgccctaaa cgatgtcgat tagctgttgg ggtacttgat accttagtag cgtagctaac 840

gcgtgaaatc gaccgcctgg ggagtacggt cgcaagatta aaactcaaag gaattgacgg 900

ggacccgcac aagcggtgga tgatgtggat taattcgatg caacgcgaag aaccttacct 960

ggtcttgaca tgtacggaag agcttagaga taggcttgtg ccttcgggaa ccgtaacaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt gtcatcagtt gccatcatta agttgggcac tctgatgaga ctgccggtga 1140

caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg cccttatgac cagggcttca 1200

cacgtcatac aatggtcggt acaaagggta gccaagccgc gaggcggagc caatcccaga 1260

aaaccgatcg tagtccggat tgcactctgc aactcgagtg catgaagtcg gaatcgctag 1320

taatcgcagg tcagcatact gcggtgaata cgttcccggg tcttgtacac accgcccgtc 1380

acaccatggg agtgggggat accagaattg ggtagggtaa ccatttggag cccgcttaac 1440

acggtatgct tcatgactgg ggtg 1464

<210> 670
<211> 1486
<212> DNA
<213> Coprobacillus cateniformis

<400> 670
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gcactgattt tatcagtgag tggcgaacgg gtgagtaata cataagtaac ctgccctcat 120

gagggggata actattagaa atgatagcta agaccgcata ggtgaagggg tcgcatgacc 180

gcttcattaa atacccgtat ggatagcagg aggatggact tatggcgcat tagctggttg 240

gtgaggtaac ggctcaccaa ggcgacgatg cgtagccgac ctgagagggt ggacggccac 300

actgggactg agacacggcc cagactctac gggaggcagc agtagggaat tttcggcaat 360

gggggaaacc ctgaccgagc aacgccccgt gaggcaagaa gtatttcggt atgtaaacct 420

ctgttataaa ggaagaacgg tatgaatagg aaatgattca taagtgacgg tactttatga 480

gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc gaccgttatc 540

cggaatcatt ggccgtaaag agggagcagg cggcaataga ggtctgcggt gaaagcctga 600

agctaaactt cagtaagccg tggaaaccaa atagctagag tgcagtagag gatcgtggaa 660

ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa caccagtggc gaaggcgacg 720

atctgggctg caactgacgc tcagtcccga aaccgtgggg agcaaatagg attagatacc 780

ctagtagtcc aacgccgtaa acgatgagta ctaagtgttg ggggtcaaac ctcagtgctg 840

cagttaacgc aataagtact acgcctgagt agtacgttcg caagaatgaa actcaaagga 900

attgacgggg gcccgcacaa aaggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccagg tcttgacata cctctaaagg ctctagagat agagagatag ctatagggga 1020

tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttgtcgct agttaccatc attaagttgg ggactctagc gagactgcct 1140

ctgcaaggag gaggaaggcg gggatgacgt caaatcatca tgccccttat gacctgggct 1200

acacacgtgc tacaatggac ggatcaaagg gaagcgaagc cgcgaggtgg agcgaaaccc 1260

aaaaacccgt tctcagttcg gactgcagtc tgcaactcga ctgcacgaag ttggaatcgc 1320

tagtaatcgc gaatcagaat gtcgcggtga atacgttctc gggccttgta cacaccgccc 1380

gtcacaccat gagagttggt aacacccgaa gccggtggct taaccgcaag gagagagctg 1440

tctaaggtgg gactgatgat tagggtgaag tcgtaacaag gtaacc 1486

<210> 671
<211> 977
<212> DNA
<213> Coprobacillus sp. 29_1

<220>
<221> modified_base
<222> (30)..(30)
<223> a, c, t, g, unknown or other

<400> 671
attcataagt gacggtactt tatgagaaan ccacggctaa ctacgtgcca gcagccgcgg 60

taatacgtag gtggcgagcg ttatccggaa tcattgggcg taaagaggga gcaggcggca 120

atagaggtct gcggtgaaag cctgaagcta aacttcagta agccgtggaa accaaatagc 180

tagagtgcag tagaggatcg tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg 240

aggaacacca gtggcgaagg cgacgatctg ggctgcaact gacgctcagt cccgaaagcg 300

tggggagcaa ataggattag ataccctagt agtccacgcc gtaaacgatg agtactaagt 360

gttgggggtc aaacctcagt gctgcagtta acgcaataag tactccgcct gagtagtacg 420

ttcgcaagaa tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 480

tttaattcga agcaacgcga agaaccttac caggtcttga catacctcta aaggctctag 540

agatagagag atagctatag gggatacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 600

gagatgttgg gttaagtccc gcaacgagcg caacccttgt cgctagttac catcattaag 660

ttggggactc tagcgagact gcctctgcaa ggaggaggaa ggcggggatg acgtcaaatc 720

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggacggatca aagggaagcg 780

aagccgcgag gtggagcgaa acccaaaaac ccgttctcag ttcggactgc agtctgcaac 840

tcgactgcac gaagttggaa tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt 900

tctcgggcct tgtacacacc gcccgtcaca ccatgagagt tggtaacacc cgaagccggt 960

ggcttaaccg caaggag 977

<210> 672
<211> 1383
<212> DNA
<213> Coprobacillus sp. D7

<220>
<221> modified_base
<222> (7)..(8)
<223> a, c, t, g, unknown or other

<400> 672
cagtcgnncg cgagcacttg tgctcgagtg gcgaacgggt gagtaataca taagtaacct 60

gccctagaca gggggataac tattggaaac gatagctaag accgcatagg tacggacact 120

gcatggtgac cgtattaaaa gtgcctcaaa gcactggtag aggatggact tatggcgcat 180

tagctggttg gcggggtaac ggcccaccaa ggcgacgatg cgtagccgac ctgagagggt 240

gaccggccac actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa 300

ttttcggcaa tgggggaaac cctgaccgag caacgccgcg tgaaggaaga aggttttcgg 360

attgtaaact tctgttataa aggaagaacg gcggctacag gaaatggtag ccgagtgagg 420

tactttatta gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc 480

aagcgttatc cggaattatt gggcgtaaag agggagcagg cggcagcaag ggtctgtggt 540

gaaagcctga agcttaactt cagtaagcca tagaaaccag gcagctagag tgcaggagag 600

gatcgtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa caccagtggc 660

gaaggcgacg atctggcctg caactgacgc tcagtcccga aagcgtgggg agcaaatagg 720

attagatacc ctagtagtcc acgccgtaaa cgatgagtac taagtgttgg atgtcaaagt 780

tcagtgctgc agttaacgca ataagtactc cgcctgagta gtacgttcgc aagaatgaaa 840

ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 900

cgcgaagaac cttaccaggt cttgacatac tcataaaggc tccagagatg gagagatagc 960

tatatgagat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1020

gtcccgcaac gagcgcaacc cttatcgtta gttaccatca ttaagttggg gactctagcg 1080

agactgccag tgacaagctg gaggaaggcg gggatgacgt caaatcatca tgcccccttat 1140

gacctgggct acacacgtgc tacaatggat ggtgcagagg gaagcgaagc cgcgaggtga 1200

agcaaaaccc ataaaaccat tctcagttcg gattgtagtc tgcaactcga ctacatgaag 1260

ttggaatcgc tagtaatcgc gaatcagcat gtcgcggtga atacgttctc gggccttgta 1320

cacaccgccc gtcacaccac gagagttgat aacacccgaa gccggtggcc taaccgcaag 1380

gaa 1383

<210> 673
<211> 989
<212> DNA
<213> Coprococcus catus

<220>
<221> modified_base
<222> (743)..(743)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (947)..(947)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (965)..(965)
<223> a, c, t, g, unknown or other

<400> 673
gatgaagagc ttgcttttca aagttagtgg cggacgggtg agtaacgcgt gggtaacctg 60

cctcatacag gggaatagca gctggaaacg gctgataaaa ccgcataagc gcacagtgcc 120

gcatggcaca gtgtgaaaaa ctccggtggt atgagatgga cccgcgtctg attagcttgt 180

tggcggggta acggcccacc aaggcgacga tcagtagccg gcctgagagg gtgatcggcc 240

acattgggac tgagacacgg cccaaactcc tacgggaggc agcagtgggg aatattgcac 300

aatgggggaa accctgatgc agcgacgccg cgtgaaggaa gaagtatctc ggtatgtaaa 360

cttctatcag cagggaagat aatgacggta cctgactaag aagccccggc taactacgtg 420

ccagcagccg cggtaatacg taggggggcaa gcgttatccg gatttactgg gtgtaaaggg 480

agcgtaggcg gcggagcaag tcagaagtga aagcccgggg ctcaaccccg ggacggcttt 540

tgaaactgcc ctgcttgatt tcaggagagg taagcggaat tcctagtgta gcggtgaaat 600

gcgtagatat taggaggaac accagtggcg aaggcggctt actggactga caatgacgct 660

gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac 720

gatgaatact aggtgtcggg gcntcataag agcttcggtg ccgcagcaaa cgcaataagt 780

attccacctg gggagtacgt tcgcaagaat gaaactcaaa ggaattgacg gggacccgca 840

caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aggccttgac 900

atcccggtga ccgacccgta atggggtctt ctctacggag cactggngac aggtggtgca 960

tggtngtcgt cagctcgtgt cgtgagatg 989

<210> 674
<211> 1370
<212> DNA
<213> Coprococcus comes

<400> 674
gattcttcgg atgaagaggt ttgtgactga gtggcggacg ggtgagtaac gcgtgggtaa 60

cctgcctcat acaggggat aacagttaga aatgactgct aataccgcat aagaccacgg 120

agccgcatgg ctccgtggga aaaactccgg tggtatgaga tggacccgcg tctgattagg 180

tagttggtgg ggtaacggcc taccaagcca acgatcagta gccgacctga gagggtgacc 240

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg ggaaaccctg atgcagcgac gccgcgtgag cgaagaagta tttcggtatg 360

taaagctcta tcagcaggaa gaaaatgacg gtacctgact aagaagcacc ggctaaatac 420

gtgccagcag ccgcggtaat acgtatggtg caagcgttat ccggatttac tgggtgtaaa 480

gggagcgtag acggctgtgt aagtctgaag tgaaagcccg gggctcaacc ccgggactgc 540

tttggaaact atgcagctag agtgtcggag aggtaagtgg aattcccagt gtagcggtga 600

aatgcgtaga tattgggagg aacaccagtg gcgaaggcgg cttactggac gatgactgac 660

gttgaggctc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 720

aacgatgact actaggtgtc ggggagcaaa gctcttcggt gccgcagcaa acgcaataag 780

tagtccacct ggggagtacg ttcgcaagaa tgaaactcaa aggaattgac ggggacccgc 840

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac ctgctcttga 900

catcccggtg accggcgtgt aatgacgcct tttcttcgga acaccggtga caggtggtgc 960

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1020

ttatcttcag tagccagcaa ttcggatggg cactctggag agactgccag ggataacctg 1080

gaggaaggtg gggatgacgt caaatcatca tgccccttat gagcagggct acacacgtgc 1140

tacaatggcg taaacaaagg gaagcgagcc tgcgagggta agcaaatctc aaaaataacg 1200

tctcagttcg gattgtagtc tgcaactcga ctacatgaag ctggaatcgc tagtaatcgc 1260

gaatcagcat gtcgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat 1320

gggagttggt aacgcccgaa gtcagtgacc caaccgtaag gagggagctg 1370

<210> 675
<211> 1440
<212> DNA
<213> Coprococcus eutactus

<400> 675
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac gattgaagct ggagcttgct 60

ccggccgatt tagtggcgga cgggtgagta acgcgtgggt aacctgcctc atacaggggg 120

atagcagttg gaaacgactg gtaaaaccgc ataagcgcac rgtatcgcat gatacagtgt 180

gaaaacactc cggtggtatg agatggaccc gcgtctgatt agctagttgg tgaggtaacg 240

gcccaccaag gcgacgatca gtagccggcc tgagagggtg aacggccaca ttgggactga 300

gacacggccc aaactcctac gggaggcagc agtggggaat attgcacaat gggggaaacc 360

ctgatgcagc gacgccgcgt gagtgaagaa gtatttcggt atgtaaagct ctatcagcag 420

ggaagataat gacggtacct gactaagaag caccggctaa atacgtgcca gcagccgcgg 480

taatacgtat ggtgcaagcg ttatccggat ttactgggtg taaagggtgc gtaggtggca 540

aggcaagtct gaagtgaaaa tccggggctc aaccccggaa ctgctttgga aactgtttag 600

ctagagtaca ggagaggtaa gtggaattcc tagtgtagcg gtgaaatgcg tagatattag 660

gaggaacacc agtggcgaag gcgacttact ggactgctac tgacactgag gcacgaaagc 720

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatactagg 780

tgttgggttc caaagggact cggtgccgtc gcaaacgcat taagtattcc acctggggag 840

tacgttcgca agaatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 900

gtggtttaat tcgaagcaac gcgaaaaacc ttaccaagtc ttgacatcct gatgacggtt 960

ccttaaccgg aacttctctt cggagcatca gagacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctattt ccagtagcca 1080

gcagtaagat gggcactctg gagagactgc cggggataac ccggaggaag gtggggatga 1140

cgtcaaatca tcatgcccct tatgatttgg gctacacacg tgctacaatg gcagttacaa 1200

agagaagcra acctgtgaag gcgagcaaac ctcaaaaagg ctgtctcagt tcggattgta 1260

gtctgcaact cgactacatg aagctggaat cgctagtaat cgcagatcag catgctgcgg 1320

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac catgggagtc ggtaacgccc 1380

gaagtcagtg acccaaccgc aaggagggag ctgccgaagg caggatcgat aactggggtg 1440

<210> 676
<211> 1440
<212> DNA
<213> Coprococcus sp. ART55/1

<400> 676
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac gattgaagct ggagcttgct 60

ccggccgatt tagtggcgga cgggtgagta acgcgtgggt aacctgcctc atacaggggg 120

atagcagttg gaaacgactg gtaaaaccgc ataagcgcac ggtrtcgcat gayacagtgt 180

gaaaacactc cggtggtatg agatggaccc gcgtctgatt agctagttgg tgaggtaacg 240

gcccaccaag gcgacgatca gtagccggcc tgagagggtg aacggccaca ttgggactga 300

gacacggccc aaactcctac gggaggcagc agtggggaat attgcacaat gggggaaacc 360

ctgatgcagc gacgccgcgt gagtgatgaa gtatttcggt atgtaaagct ctatcagcag 420

ggaagataat gacggtacct gactaagaag caccggctaa atacgtgcca gcagccgcgg 480

taatacgtat ggtgcaagcg ttatccggat ttactgggtg taaagggtgc gtaggtggca 540

aggcaagtct gaagtgaaaa tccggggctc aaccccggaa ctgctttgga aactgtttag 600

ctagagtaca ggagaggtaa gtggaattcc tagtgtagcg gtgaaatgcg tagatattag 660

gaggaacacc agtggcgaag gcgacttact ggactgctac tgacactgag gcacgaaagc 720

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatactagg 780

tgttgggttc caaaggaact cggtgccgtc gcaaacgcat taagtattcc acctggggag 840

tacgttcgca agaatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 900

gtggtttaat tcgaagcaac gcgaaaaacc ttaccaagtc ttgacatcct gatgacggtt 960

ccttaaccgg aacttttctt cggaacatca gagacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctattt ccagtagcca 1080

gcagtaagat gggcactctg gagagactgc cggggataac ccggaggaag gtggggatga 1140

cgtcaaatca tcatgcccct tatgatttgg gctacacacg tgctacaatg gcagttacaa 1200

agagaagcaa acctgtgaag gcgagcaaac ctcaaaaagg ctgtctcagt tcggattgta 1260

gtctgcaact cgactacatg aagctggaat cgctagtaat cgcagatcag catgctgcgg 1320

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac catgggagtc ggtaacgccc 1380

gaagtcagtg acccaaccgc aaggagggag ctgccgaagg caggatcgat aactggggtg 1440

<210> 677
<211> 1370
<212> DNA
<213> Coriobacteriaceae bacterium BV3Ac1

<400> 677
acatgcaagt cgaacgatta aagcaccttc gggtgtgtat agagtggcga acggctgagt 60

aacacgtggg caacctgccc ttcagttcgg aatagctacg ggaaaccgtg ggtaataccg 120

gatgatccac ctccctcgca tgaaggaggt ggcaaagatt tatcgctgaa ggatgggccc 180

gcggcctgtt agcttgttgg tgaggtaacg gctcaccaag gcagtaatgg gtagccgggt 240

tgagagaccg accggccaga ttgggactga gacacggccc agactcctac gggaggcagc 300

agtggggaat cttgcgcaat gggcgaaagc ctgacgcagc gatgccgcgt gcgggatgaa 360

ggccttcggg tcgtaaaccg ctttcagcag ggacgaggcc gcaaggtgac ggtacctgca 420

gaagaagccc cggctaacta cgtgccagca gccgcggtaa tacgtagggg gcgagcgtta 480

tccggattca ttgggcgtaa agcgcgcgta ggcggcctgt taggtcaaga gttaaatccg 540

ggggctcaac ccccgtccgc tcctgatacc ggcaggcttg agtctggtag gggaaggcgg 600

aattccaagt gtagcggtgg aatgcgcaga tatttggaag aacaccggtg gcgaaggcgg 660

ccttctgggc cacgactgac gctgaggcgc gaaagctagg ggagcaaaca ggattagata 720

ccctggtagt cctagccgta aacgatggac actaggtgtg gggggaacat ccctccgtgc 780

cgcagctaac gcattaagtg tcccgcctgg ggagtacggc cgcaaggcta aaactcaaag 840

gaattgacgg gggcccgcac aagcagcgga gcatgtggct taattcgaag caacgcgaag 900

aaccttacca gggcttgaca tataggtgaa gcggtggaaa caccgtagcc gaaaggagcc 960

tatacaggtg gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1020

aacgagcgca acccccgtcg tatgttgcca gcggttcggc cgggcaccca tacgagaccg 1080

ccggcgtcaa gccggaggaa ggtggggacg acgtcaagtc atcatgcccc ttatgtcctg 1140

ggctgcacac gtgctacaat ggccggcaca atgggctgcc aagtcgcaag accgagcgaa 1200

tccctaaagc cggccccagt tcggattgga ggctgcaacc cgcctccatg aagtcggagt 1260

tgctagtaat cgcggatcag cacgccgcgg tgaatgcgtt cccgggcctt gtacacaccg 1320

cccgtcacac cacccgagtc gtctgcaccc gaagtcgccg gcccaacctt 1370

<210> 678
<211> 1491
<212> DNA
<213> Coriobacteriaceae bacterium JC110

<400> 678
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

gatgaaaccg cccccgggcg gacatgaagt ggcgaacggg tgagtaacac gtgaccgacc 120

tgccccccgc ccagggacag ccccccgaaa gggggattaa tacctggtac tccgggagcg 180

gcgcatgccg cccccgggaa agctctcgcg gcgggggatg gggtcgcggc ccatcaggta 240

gacggcgggg cagaggccca ccgtgccgac gacgggtagc cgggttgaga gaccgaccgg 300

ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg ggaattttgc 360

gcaatggggg caaccctgac gcagcaacgc cgcgtgcggg acgaaggcgt ccgcgtcgta 420

aaccgctttc agcggggaac acctaacgag ggtacccgca gaagaagccc cggctaaata 480

cgtgccagca gccgcggtaa tacgtatggg gcgagcgtta tccggattca ttgggcgtaa 540

agcgcgcgta ggcggagcgc taagcgggac ctctaacccg agggctcaac ccccggccgg 600

gtcccgaact ggcgctctcg agtgcggtag gggagagcgg aattcccggt gtagcggtgg 660

aatgcgcaga tatcgggaag aacaccgacg gcgaaggcag ctctctgggc cgaaactgac 720

gctgaggcgc gaaagctggg ggagcgaaca ggattagata ccctggtagt cccagccgta 780

aacgatgggc gctaggtgtg ggggatgaga tcccccgtgc cgcagccaac gcattaagcg 840

ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac 900

aagcagcgga gcatgtggct taattcgaag caacgcgaag aaccttacca gggcttgaca 960

tgcaggtgaa gcggcggaga cgccgtggcc gagaggagcc tgcacaggtg gtgcatggct 1020

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctgccc 1080

cgtgttgcca gcattcagtt ggggactcgc gggggactgc cggcgtcaag ccggaggaag 1140

gtggggacga cgtcaagtca tcatgccccc tatgccctgg gccgcacacg tgctacaatg 1200

gccggtacag agggttgcga ccccgcgagg gggagcggat cccgcaaagc cggccccagt 1260

tcggatcgga ggctgcaacc cgcctccgtg aagccggagt tgctagtaat cgcggatcag 1320

cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacccgagtc 1380

gtctgcaccc gaagccgccg gccgaaccct ttcaggggcg gaggcgtcga aggtgtggag 1440

ggtgaggggg gtgaagtcgt aacaaggtag ccgtaccgga aggtgcggct g 1491

<210> 679
<211> 1464
<212> DNA
<213> Coriobacteriaceae bacterium phI

<400> 679
gatcctggct caggatgaac gctggcggcg cgcctaacac atgcaagtcg agcggcaccc 60

tgcttcggca ggaagcgagc ggcgaacggc tgagtaacac gtgaccaacc tgccctgcgc 120

acggggacag ccgcgggaaa ccgcgggtga tacccggtgg ccccgggggg acgcatgtcc 180

ccagcgggca tagctccggc ggcgcgggat ggggtcgcgg cccatcaggt agttggtagg 240

gtgacggcct accaagccga ctacgggtag ccgggttgag agaccgaccg gccagattgg 300

gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatcttg cgcaatgggg 360

ggaaccctga cgcagcgacg ccgcgtgcgg gatggaggcc ttcgggtcgt gaaccgcttt 420

cagcagggac gagactgacg gtacctgcag aagaagcccc ggctaactac gtgccagcag 480

ccgcggtaat acgtaggggg cgagcgttat ccggattcat tgggcgtaaa gcgcgcgtag 540

gcggccgcgc aggcgggggg tcaaatcccg gggctcaacc ccgggccgcc ccccgaaccg 600

cgcggcttgg gtccggcagg ggagggtgga acgcccggtg tagcggtgga atgcgcagat 660

atcgggcgga acaccggtgg cgaaggcggc cctctgggcc ggcaccgacg ctgaggcgcg 720

agagccgggg gagcgaacag gattagatac cctggtagtc ccggccgtaa acgatggacg 780

ctaggtgtgg ggacgttgga gtctccgtgt gccgcagcca acgcattaag cgtcccgcct 840

ggggagtacg gccgcaaggc taaaactcaa aggaattgac gggggcccgc acaagcagcg 900

gagcatgtgg cttaattcga agcaacgcga agaaccttac ccgcgcttga catggcggtg 960

aagcggcgga gacgccgtgg ccgagaggag ccgccacagg tggtgcatgg ctgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccccgc cgcgtgttgc 1080

catcgggtga tgccgggaac ccacgcggga ccgccgccgc caaggcggag gagggcgggg 1140

acgacgtcaa gtcatcatgc cccttatgcg cggggctgca cacgtgctac aatggcaggt 1200

acagagggtt gccaccccgc gaggggggagc ggatcccgaa agcctgcccc agttcggacc 1260

gggggctgca acccgccccc gcgaagtcgg agttgctagt aatcgcggat cagcatgccg 1320

cggtgaatgc gttcccgggc cttgtacaca ccgcccgtca caccacccga gtcgtctgca 1380

cccgaagccg ccggcccaac ctcgtgaggg aggcgtcgaa ggtgtggagg gcgaggggg 1440

tgaagtcgta acaaggtagc cgta 1464

<210> 680
<211> 1497
<212> DNA
<213> Gordonibacter pamelaeae

<400> 680
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

gattaagacg gctccggccg tgaatagagt ggcgaacggg tgagtaacac gtgaccaacc 120

tgccccctac cccgggataa cgcaaggaaa cctgcgctaa taccggatac tccttccct 180

gctcctgcag gggtcgggaa agcccagacg gtaggggatg gggtcgcggc ccattaggta 240

gacggcgggg caacggccca ccgtgcctgc gatgggtagc cgggttgaga gaccgaccgg 300

ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg ggaattttgc 360

gcaatggggg gaaccctgac gcagcaacgc cgcgtgcggg atgaaggcct tcgggttgta 420

aaccgctttc agcagggaag atagtgacgg tacctgcaga agaagccccg gctaactacg 480

tgccagcagc cgcggtaata cgtaggggggc gagcgttatc cggattcatt gggcgtaaag 540

cgcgcgtagg cggcccgtca agcggaacct ctaacccgag ggctcaaccc ccggtcgggt 600

tccgaactgg caggctcgag tttggtagag gaagatggaa ttcccggtgt agcggtggaa 660

tgcgcagata tcgggaagaa caccgatggc gaaggcagtc ttctgggcca tcaactgacg 720

ctgaggcgcg aaagctgggg gagcgaacag gattagatac cctggtagtc ccagccgtaa 780

acgatgggtg ctaggtgtgg ggggatcatc cctccgtgcc gcagccaacg cattaagcac 840

cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca 900

agcagcggag catgtggctt aattcgaagc aacgcgaaga accttaccag ggcttgacat 960

gctagtgaag ccggggaaac ccggtggccg agaggagcta gcgcaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatcgt 1080

atgttgccag cattgagttg gggactcata cgagactgcc ggcgtcaagc cggaggaagg 1140

tggggacgac gtcaagtcat catgcccttt atgccctggg ctgcacacgt gctacaatgg 1200

ccggtacaac gggccgcgac ctggcgacag gaagcgaatc cctcaaagcc ggccccagtt 1260

cggatcggag gctgcaaccc gcctccgtga agtcggagtt gctagtaatc gcggatcagc 1320

atgccgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acccgagtcg 1380

tctgcacccg aagccgccgg ccgaacccgc aaggggcgga ggcgtcgaag gtgtggaggg 1440

taaggggggt gaagtcgtaa caaggtagcc gtaccggaag gtgcggctgg atcacct 1497

<210> 681
<211> 1522
<212> DNA
<213> Corynebacterium accolens

<400> 681
tttttgtgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggccct gcttgcaggg tactcgagtg gcgaacgggt gagtaacacg 120

tgggtgatct gccctgcact tcgggataag cttgggaaac tgggtctaat accggatagg 180

aaccatcttt agtgtggtgg ttggaaagtt ttttcggtgt aggatgagct cgcggcctat 240

cagcttgttg gtggggtaat ggcctaccaa ggcggcgacg ggtagccggc ctgagagggt 300

gtacggccac attgggactg agatacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga aggccttcgg 420

gttgtaaact cctttcgcta gggacgaagc tttttgtgac ggtacctaga taagaagcac 480

cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgttg tccggaatta 540

ctgggcgtaa agggctcgta ggtggtttgt cgcgtcgtct gtgaaattct ggggcttaac 600

tccgggcgtg caggcgatac gggcataact tgagtgctgt aggggtaact ggaattcctg 660

gtgtagcggt gaaatgcgca gatatcagga ggaacaccga tggcgaaggc aggttactgg 720

gcagttactg acgctgagga gcgaaagcat gggtagcgaa caggattaga taccctggta 780

gtccatgccg taaacggtgg gcgctaggtg tgagggtctt tctacgactt tcgtgccgta 840

gctaacgcat taagcgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac gcgaagaacc 960

ttacctgggc ttgacataca ccagatcgct gcagagatgt agtttccctt tgtggttggt 1020

gtacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctt atgttgccag catttggttg gggactcatg agagactgcc 1140

ggggttaact cggaggaagg tggggatgac gtcaaatcat catgcccctt atgtccaggg 1200

cttcacacat gctacaatgg tcggtacaac gcgctgcgac actgtgaggt ggagcgaatc 1260

gctgaaagcc ggccttagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1320

gctagtaatc gcagatcagc aatgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacgt catgaaagtt ggtaacaccc gaagccggtg gcctaaacgt gttagggagc 1440

cgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtacccgt accggaaggt 1500

gcgggtggat cacctccttt ct 1522

<210> 682
<211> 1530
<212> DNA
<213> Corynebacterium ammoniagenes

<400> 682
tttttgtgga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggcctg tacttgtaca ggtactcgag tggcgaacgg gtgagtaaca 120

cgtgggtgat ctgccctgca ctatgggata agcttgggaa actgggtcta ataccatata 180

ggaccacttc ttggatgttg tggtggaaag cttttgcggt gtgggatgag cctgcggcct 240

atcagcttgt tggtggggta atggcctacc aaggcggcga cgggtatccg gcctgagagg 300

gtgtacggac acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 360

aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc 420

gggttgtaaa ctcctttcgc tatcgacgaa gccaccttgg gtggtgacgg taggtagata 480

agaagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc aagcgttgtc 540

cggaattact gggcgtaaag agctcgtagg tggtttgtcg cgtcgtctgt gaaatcccgg 600

ggcttaactt cgggcgtgca ggcgatacgg gcataacttg agtgctgtag gggagactgg 660

aattcctggt gtagcggtga aatgcgcaga tatcaggagg aacaccgatg gcgaaggcag 720

gtctctgggc agtaactgac gctgaggagc gaaagcatgg gtagcgaaca ggattagata 780

ccctggtagt ccatgccgta aacggtgggc gctaggtgta gggggcttcc acgtcttctg 840

tgccgtagct aacgcattaa gcgccccgcc tggggagtac ggccgcaagg ctaaaactca 900

aaggaattga cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg 960

aagaacctta cctgggcttg acatatacag gattgggcta gagatagttc gtcccttgtg 1020

gtctgtatac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tgtcttatgt tgccagcacg tgatggtggg gactcatgag 1140

aaactgccgg ggttaactcg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1200

gtccagggct tcacacatgc tacaatggtc gatacaatgg gcagcgacat cgtgaggtgg 1260

agcgaatccc tgaaagtcgg ccttagttcg gattggggtc tgcaactcga ccccatgaag 1320

tcggagtcgc tagtaatcgc agatcagcaa tgctgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacgtca tgaaagttgg taacacccga agccagtggc ctaaacttgt 1440

tagggagctg tcgaaggtgg gatcggcgat tgggacgaag tcgtaacaag gtagccgtac 1500

cggaaggtgc ggctggatca cctcctttct 1530

<210> 683
<211> 1529
<212> DNA
<213> Corynebacterium amycolatum

<400> 683
ttttgatgga gggtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gtaaggctcc agcttgctgg ggtacacgag tggcgaacgg gtgagtaaca 120

cgtgggtgac ctgccctgca cttcgggata agcctgggaa actgggtcta ataccggata 180

ggaccatggt gtggatactg tggtggaaag ttttttcggt gtgggatggg cccgcggcct 240

atcagcttgt tggtggggta atggcctacc aaggcggcga cgggtagccg gcctgagagg 300

gtggacggcc acattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc 420

gggttgtaaa ctcctttcac catcgacgaa gggtttctga cggtagatgg agaagaagca 480

ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt gtccggaatt 540

actgggcgta aagagctcgt aggtggtttg tcgcgtcgtc tgtgaaattc cggggcttaa 600

ctccgggcgt gcaggcgata cgggcataac ttgagtactg taggggagac tggaattcct 660

ggtgtagcgg tgaaatgcgc agatatcagg aggaacaccg gtggcgaagg cgggtctctg 720

ggcagtaact gacgctgagg agcgaaagca tggggagcga acaggattag ataccctggt 780

agtccatgcc gtaaacggtg ggcgctaggt gtgggtttcc ttccacggga tccgtgccgt 840

agctaacgca ttaagcgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac 960

cttacctggg cttgacatat acaggatcgc gccagagatg gtgtttccct tgtggcttgt 1020

atacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctt atgttgccag cacgtgatgg tggggactcg taagagactg 1140

ccggggttaa ctcggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgtccag 1200

ggcttcacac atgctacaat ggtcggtaca gtgggttgcc agtccgtgag ggcgagctaa 1260

tcccgtaaag ccggtctcag ttcggatcgg ggtctgcaac tcgaccccgt gaagtcggag 1320

tcgctagtaa tcgcagatca gcaacgctgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac gtcatgaaag tcggtaacac ccgaagccag tggcctaaca ctttttgtg 1440

ggggagctgt cgaaggtggg attggcgatt gggacgaagt cgtaacaagg tagccgtacc 1500

ggaaggtgcg gctggatcac ctcctttct 1529

<210> 684
<211> 1469
<212> DNA
<213> Corynebacterium appendicis

<400> 684
cgtgcttaac acatgcaagt cggaacggaa aggcctctgc ttgcaggggt actcgagtgg 60

cgaacgggtg agtaacacgt gggtgatctg ccctgcactt cgggataagc ctgggaaact 120

gggtctaata ccggatagga cgatggtttg gatgccattg tggaaagttt tttcggtgtg 180

ggatgagctc gcggcctatc agcttgttgg tggggtaatg gcctaccaag gcgtcgacgg 240

gtagccggcc tgagagggtg tacggccaca ttgggactga gatacggccc agactcctac 300

gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc gacgccgcgt 360

gggggatgac ggccttcggg ttgtaaactc tttcgtcag ggacgaagcg aaagtgacgg 420

tacctggata agaagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 480

gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg cgtcgtttgt 540

ggaataccgc agcttaactg cggggttgca ggcgatacgg gcataacttg agtgctgtag 600

gggagactgg aattcctggt gtagcggtgg aatgcgcaga tatcaggagg aacaccgatg 660

gcgaaggcag gtctctgggc agtaactgac gctgaggagc gaaagcatgg gtagcgaaca 720

ggattagata ccctggtagt ccatgccgta aacggtgggc gctaggtgtg agtcccttcc 780

acggggttcg tgccgtagct aacgcattaa gcgccccgcc tggggagtac ggccgcaagg 840

ctaaaactca aaggaattga cgggggcccg cacaagcggc ggagcatgtg gattaattcg 900

atgcaacgcg aagaacctta cctgggcttg acatacaccg gaccgggcca gagatggtct 960

ttcccttgtg gctggtgtac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1020

tgggttaagt cccgcaacga gcgcaaccct tgtcttatgt tgccagcatt tggttgggga 1080

ctcatgagag actgccgggg ttaactcgga ggaaggtggg gatgacgtca aatcatcatg 1140

ccccttatgt ccagggcttc acacatgcta caatggtcgg tacaacgcgc agcgatactg 1200

tgaggtggag ctaatcgcct aaagccggcc ttagttcgga ttggggtctg caactcgacc 1260

ccatgaagtc ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcacgtcatg aaagttggta acacccgaag ccagcggccc 1380

aaacgtgtta gggagctgtc gaaggtggga tcggcgattg ggacgaagtc gtaacaaggt 1440

agccgtaccg gaaggtgcgg ctggatcac 1469

<210> 685
<211> 1420
<212> DNA
<213> Corynebacterium argentoratense

<220>
<221> modified_base
<222> (776)..(776)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1061)..(1061)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1365)..(1365)
<223> a, c, t, g, unknown or other

<400> 685
cgaacggaaa ggcctaagac ttgcttgggt actcgagtgg cgaacgggcc cattaacacg 60

tgagtgatct gccctcaact tcgggataag cctgggaaac tgggtctaat actggatagg 120

accatccttt agtgtgtgat ggtggaaagt tttttcggtt ggggatgagc tcgcggccta 180

tcagcttgtt ggtggggtaa tggcctacca aggcgtcgac gggtagccgg cctgacaggg 240

tgtacggcca cattgggact gagacacggc ccagactcct acaggaggca gcagtgggga 300

atattgcaca atgggcggaa gcctgatgca gcgacgccgc gtgagggatg acggccttcg 360

ggttgtaaac ctctttcgac agggacgaag cttttgtgac ggtgacctgt ataagaaagc 420

accggctaac tacgtgccaa gcagccgcgg taatacgtta cgggtgcgag cgttgtccgg 480

aattactggg cgtaaagagc tcgtagcgtg gtttgtcgcg tcgtctgtga aattccgggg 540

cttaactccg ggcgtgcagg cgatacgggc ataacttgag tgctgtaggg gagactggaa 600

ttcctggtgt aacggtgaaa tgcgcatata tcaggaggaa caccgatggc gaaagcaggt 660

ctctgggcag taactgacgc tgaggagcga aagcatgggg agcgaacagg attagatacc 720

ctggtagttc atgccgtaaa cggtgggcgc taggtgtagg ggacttccac gtcttntgtg 780

ccgtagctaa cgcattaagc gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa 840

ggaattgacg ggggcccgca caagcggcgg agcatgtgga ttaattcgat gcaacgcgaa 900

gaaccttacc tgggcttgac atatacagga tcgctgcaga gatgtagttt cccttgtggt 960

ctgtatacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1020

cgcaacgagc gcaacccttg tcttatgttg ccagcacact ntggtgggga ctcatgagag 1080

actgccgggg ttaactcgga ggaaggtggg gatgacgtca aatcatcatg ccccttatgt 1140

ccagggcttc acacatgcta caatggtcgg tacaacgcgc tgcgagcctg tgagggtgag 1200

cgaatcgctg aaagccggcc tcagttcgga ttggggtctg caactcgacc ccatgaagtc 1260

ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac 1320

acaccgcccg tcaagtcacc gaaagttggt aacacccgaa aaccngtggc ctaacccttg 1380

tggagggagc tgtcgaaggt gggattcggc gattggtcta 1420

<210> 686
<211> 1482
<212> DNA
<213> Corynebacterium atypicum

<400> 686
gacgaacgct ggcggcgtgc ttaacacatg caagtcgtac ggaaaggccc tgcttttgtg 60

gggtgctcga gtggcgaacg ggtgagtaac acgtgggtga tctgccctgt acttcgggat 120

aagcttggga aactgggtct aataccggat aggactgcgc tgtgggtggt gtggtggaaa 180

gctttttgcg gtatgggatg agctcgcggc ctatcagttt gttggtgggg taatggccta 240

ccaaggcgtc gacgggtagc cggcctgaga gggtgatcgg ccacattggg actgagatac 300

ggcccagact cctgcgggag gcagcagtgg ggaatattgc acaatgggcg caagcctgat 360

gcagcgacgc cgcgtggggg atgacggcct tcgggttgta aacctctttc gactatgacg 420

aagccttttt ggtgacggta gtggtagaag aagcaccggc taactacgtg ccagcagccg 480

cggtaatacg tagggtgcga gcgttgtccg gatttactgg gcgtaaaggg ctcgtaggtg 540

gtttgtcgcg tcgtctgtga aattccgggg cttaacttcg ggcgtgcagg cgatacgggc 600

ataacttgag tgctgtaggg gtaactggaa ttcctggtgt agcggtggaa tgcgcagata 660

tcaggaggaa caccgatggc gaaggcaggt tactgggcag ttactgacgc tgaggagcga 720

aagcatgggg agcgaacagg attagatacc ctggtagtcc atgctgtcaa cggtgggcgc 780

taggtgtggg gatcttccac ggtccctgtg ccgtagctaa cgttttaagc gccccgcctg 840

gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcggcgg 900

agcatgtgga ttaattcgat gcaacgcgaa gaaccttacc tgggtttgat atacatcaga 960

tcgggccaga gatggtcttt ccctttgtgg ttggtgtaca ggtggtgcat ggttgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtcttgtgtt 1080

gccagcattt ggttggggac tcacgagaga ctgccggggt gaactcggag gaaggtgggg 1140

atgacgtcaa atcatcatgc cccttatgtc cagggcttca cacatgctac aatggtcggt 1200

acagtaggtt gcgataccgt gaggtggagc taatcctcgt gaaagccggt cgtagttcgg 1260

attgaggtct gcaactcgac ctcatgaagt cggagtcgct agtaatcgca gatcagcagt 1320

gctgcggtga atacgttccc gggccttgta cacaccgccc gtcacgtcat gaaagtcggt 1380

aacacccgaa gcccacggcc taaccttgtt gtaaggggg agtggtcgaa ggtgggatcg 1440

gcgattggga cgaagtcgta acaaggtagc cgtaccggaa gg 1482

<210> 687
<211> 1522
<212> DNA
<213> Corynebacterium aurimucosum

<400> 687
tttttgtgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggcctc agcttgctgg ggtactcgag tggcgaacgg gtgagtaaca 120

cgtgggtgat ctgccttgca ctctgggata agcttgggaa actgggtcta ataccggata 180

tgaactgcct ttagtgtggt ggttggaaag ttttttcggt gcaagatgag ctcgcggcct 240

atcagcttgt tggtggggta atggcctacc aaggcgtcga cgggtagccg gcctgagagg 300

gtgtacggcc acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 360

aatattgcac aatgggcgga agcctgatgc agcgacgccg cgtgggggat gacggccttc 420

gggttgtaaa ctcctttcga cagggacgaa gcgttatgtg acggtacctg tataagaagc 480

accggctaac tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat 540

tactgggcgt aaagagctcg taggtggttt gtcgcgtcgt ctgtgaaatt ccggggctta 600

acttcgggcg tgcaggcgat acgggcataa cttgagtgct gtaggggaga ctggaattcc 660

tggtgtagcg gtgaaatgcg cagatatcag gaggaacacc gatggcgaag gcaggtctct 720

gggcagttac tgacgctgag gagcgaaagc atgggtagca aacaggatta gataccctgg 780

tagtccatgc cgtaaacggt gggcgctagg tgtaggggc ttccacgtct tctgtgccgt 840

agctaacgca ttaagcgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac 960

cttacctggg cttgacatac accagattgc tgcagagatg tagtgtccct tgtggttggt 1020

gtacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctt atgttgccag catttggttg gggactcatg agagactgcc 1140

ggggttaact cggaggaagg tggggatgac gtcaaatcat catgcccctt atgtccaggg 1200

cttcacacat gctacaatgg tcggtacaac gcgcagcgac actgtgaggt ggagcgaatc 1260

gctgaaagcc ggccttagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1320

gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacgt catgaaagtt ggtaacaccc gaagccagtg gcctaaactt gttagggagc 1440

tgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtacccgt accggaaggt 1500

gcgggtggat cacctccttt ct 1522

<210> 688
<211> 1327
<212> DNA
<213> Corynebacterium bovis

<400> 688
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgggt gatctgccct gcactctggg ataagcctgg gaaactgggt ctaataccgg 120

atagggaaag cggtgcagga tgagcccgcg gcctatcagc ttgttggtgg ggtaatggcc 180

taccaaggcg gcgacgggta gccggcctga gagggtgtac ggccacattg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgcaagcctg 300

atgcagcgac gccgcgtggg ggatgacggc cttcgggttg taaacccctt tcggcaggga 360

cgatgacggt acctgcataa gaagcaccgg ctaactacgt gccagcagcc gcggtaatac 420

gtagggtgcg agcgttgtcc ggaattactg ggcgtaaaga gctcgtaggt ggtttgtcgc 480

gtcgtctgtg aaatcccggg gcttaactcc gggcgtgcag gcgatacggg caaacttgag 540

tgctgtaggg gagactggaa ttcctggtgt agcggtgaaa tgcgcagata tcaggaggaa 600

caccgatggc gaaggcaggt ctctgggcag actgacgctg aggagcgaaa gcatgggtag 660

cgaacaggat tagataccct ggtagtccat gccgtaaacg gtgggcgcta ggtgtgggga 720

tttccgtgcc gtagctaacg cattaagcgc cccgcctggg gagtacggcc gcaaggctaa 780

aactcaaagg aattgacggg ggcccgcaca agcggcggag catgtggatt aattcgatgc 840

aacgcgaaga accttacctg ggcttgacat gcacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctt gtgttgccag 960

cacgtgggga ctcgcgagag actgccgggg ttaactcgga ggaaggtggg gatgacgtca 1020

aatcatcatg cccttatgt ccagggcttc acacatgcta caatggtcgg cagtgggttg 1080

cgatgccgcg aggctcagct aatcccttcc ggtctcagtt cggatggagt ctgcaactcg 1140

actccagaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc 1200

cgggccttgt acacaccgcc cgtcacgtca tgaaagttgg taacacccga agccggtgcc 1260

cagggagccg tcgaaggtgg gatcggcgat tgggacgaag tcgtaacaag gtagccgtac 1320

cggaagg 1327

<210> 689
<211> 1497
<212> DNA
<213> Corynebacterium canis

<400> 689
gacgaacgct ggcggcgtgc ttaacacatg caagtcgtac ggaaaggccc tggctttggt 60

tggggtgctc gagtggcgaa cgggtgagta acacgtgggt gatctgccct gcactttggg 120

ataagcctgg gaaactgggt ctaatactgg ataggaccat gcttttgtgt gtcatggtgg 180

aaaggcttct gttttggggg ctggtgtggg atgagcttgc ggcctatcag cttgttggtg 240

gggtaatggc ctaccaaggc gtcgacgggt agccggcctg agagggtgta cggccacatt 300

gggactgaga tacggcccag actcctgcgg gaggcagcag tggggaatat tgcacaatgg 360

gcgcaagcct gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt gtaaacctct 420

ttcgctgggg acgaagcttt tttggtgacg gtacctggag aagaagcacc ggctaactac 480

gtgccagcag ccgcggtaat acgtagggtg cgagcgttgt ccggaattac tgggcgtaaa 540

gagctcgtag gtggtttgtc gcgtcgtctg tgaaattccg gggcttaact tcgggcgtgc 600

aggcgatacg ggcataactt gagtgctgta ggggagactg gaattcctgg tgtagcggtg 660

aaatgcgcag atatcaggag gaacaccgat ggcgaaggca ggtctctggg cagtaactga 720

cgctgaggag cgaaagcatg ggtagcgaac aggattagat accctggtag tccatgccgt 780

aaacggtggg cgctaggtgt gggggtcttc cacgacttct gtgccgtagc taacgcttta 840

agcgccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg acgggggccc 900

gcacaagcgg cggagcatgt ggattaattc gatgcaacgc gaagaacctt acctgggctt 960

gacatatgca ggatcgcgcc agagatggtg tttcccttgt ggcttgtata caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttgtcttatg ttgccagcac gtgatggtgg ggactcatga gagactgccg gggtcaactc 1140

ggaggaaggt ggggatgacg tcaaatcatc atgccccctta tgtccagggc ttcacacatg 1200

ctacaatggt cggtacagtg ggttgcgaga ccgtgaggtg gagcgaatcc ctttgaaagc 1260

cggcctcagt tcggattggg gtctgcaact cgaccccatg aagtcggagt cgctagtaat 1320

cgcagatcag caatgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg 1380

tcatgaaagt tggtaacacc cgaagcccat ggcctaacca gcgtttgctg gggggagtgg 1440

tcgaaggtgg gattggcgat tgggacgaag tcgtaacaag gtagccgtac cggaagg 1497

<210> 690
<211> 1343
<212> DNA
<213> Corynebacterium casei

<220>
<221> modified_base
<222> (364)..(364)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (369)..(369)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (409)..(409)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (463)..(463)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (608)..(608)
<223> a, c, t, g, unknown or other

<400> 690
aacgggtgag taacacgtgg gtgatctgcc ctgcactttg ggataagctt gggaaactgg 60

gtctaatacc gaatatgacc acttcttgga tgttgtggtg gaaagctttt gcggtgtggg 120

atgagcctgc ggcctatcag cttgttggtg gggtaatggc ctaccaaggc ggcgacgggt 180

atccggcctg agagggtgta cggacacatt gggactgaga tacggcccag actcctacgg 240

gaggcagcag tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtgg 300

gggatgaagg ccttcgggtt gtaaactcct ttcgctatcg acgaagccac ttgtggtgac 360

ggtnggtana taagaagcac cggctaacta cgtgccagca gccgcggtna tacgtagggt 420

gcaagcgttg tccggaatta ctgggcgtaa agagctcgtg ggnggtttgt cgcgtcgtct 480

gtgaaatccc ggggcttaac ttcgggcgtg caggcgatac gggcataact tgagtgctgt 540

aggggagact ggaattactg gtgttgcggg gaaatgcgca tatatcaaga cgaacaccta 600

tggcgaangc aggtctctgg gcagtaactg actctgagga gcgaaagcat gggtagcgaa 660

caggattaga taccctggta gtccatgccg taaacggtgg gcgctaggtg taggggcctt 720

ccacgtcttc tgtgccgtag ctaacgcatt aagcgccccg cctggggagt acggccgcaa 780

ggctaaaact caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggattaatt 840

cgatgcaacg cgaagaacct tacctgggct tgacatgtac cggattgggc tagagatagt 900

ctttcccttg tggtcggtat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 960

gttgggttaa gtcccgcaac gagcgcaacc cttgtcttat gttgccagca cgttatggtg 1020

ggaactcatg agagactgcc ggggttaact cggaggaagg tggggatgac gtcaaatcat 1080

catgcccctt atgtccaggg cttcacacat gctacaatgg tcgatacaat gggcagcgac 1140

atcgtgaggt gaagcgaatc cctgaaagtc ggccttagtt cggattgggg tctgcaactc 1200

gaccccatga agtcggagtc gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt 1260

cccgggcctt gtacacaccg cccgtcacgt catgaaagtt ggtaacaccc gaagccagtg 1320

gcctaaactt gttagggagc tgt 1343

<210> 691
<211> 1404
<212> DNA
<213> Corynebacterium confusum

<400> 691
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gaaaggcttc agcttgctgg agtactcgag tggcgaacgg gtgagtaaca cgtgggtgat 120

ctgccctgca cttcgggata agcctgggaa actgggtcta taccggata ggaccgcact 180

ttggtgtgtg tggtggaaag ttttttcggt gtaggatgag cccgcggcct atcagcttgt 240

tggtggggta atggcctacc aaggcggcga cgggtagccg gcctgagagg gtggacggcc 300

acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggcgga agcctgatgc agcgacgccg cgtgggggat gacggccttc gggttgtaaa 420

ctcctttcgc cagggacgaa gcgtttttgt gacggtacct ggataagaag caccggctaa 480

ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg ttgtccggaa ttactgggcg 540

taaagagctc gtaggtggtt tgtcgcgtcg tctgtgaaat tccggggctt aactccgggc 600

gtgcaggcga tacgggcagg cttgagtact gtaggggtaa ctggaattcc tggtgtagcg 660

gtgaaatgcg cagatatcag gaggaacacc gatggcgaag gcaggttact gggcagttac 720

tgacgctgag gagcgaaagc atgggtagcg aacaggatta gataccctgg tagtccatgc 780

cgtaaacggt gggcgctagg tgtgagaccc ttccacgggt tttgtgccgt agctaacgca 840

ttaagcgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac cttacctggg 960

cttgacatat ttaggttcgc ggcagagatg tcgtttccct ttgtggcctt tatacaggtg 1020

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccttgtct tatgttgcca gcatttggtt ggggactcat gagagactgc cggggttaac 1140

tcggaggaag gtggggatga cgtcaaatca tcatgcccct tatgtccagg gcttcacaca 1200

tgctacaatg gtcaatacaa tgcgttgcga cactgtgagg tggagctaat cgcttaaagt 1260

tggccttagt tcggattggg gtctgcaact cgaccccatg aagtcggagt cgctagtaat 1320

cgcagatcag caatgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg 1380

tcatgaaagt tggtaacacc cgaa 1404

<210> 692
<211> 1483

<212> DNA
<213> Corynebacterium coyleae

<220>
<221> modified_base
<222> (29)..(29)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (51)..(51)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (59)..(59)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (108)..(108)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (362)..(362)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (959)..(959)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (962)..(962)
<223> a, c, t, g, unknown or other

<400> 692
atgaacgctg gcggcgtgct taacacatnc aagtcgaacg gaaaggcctc ngcttgcang 60

ggtactcgag tggcgaacgg gtgagtaaca cgtgggtgat ctgccccnca cttcgggata 120

agcctgggaa actgggtcta ataccggata ggaccacttc ttggaggttg tggtggaaag 180

ttttttcggt gtgggatgag ctcgcggcct atcagcttgt tggtggggta atggcctacc 240

aaggcgtcga cgggtagccg gcctgagagg gtgtacggcc acattgggac tgagatacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgca agcctgatgc 360

ancgacgccg cgtgggggat gacggccttc gggttgtaaa ctcctttcgc tagggacgaa 420

gcgcaagtga cggtacctag agaagaagca ccggctaact acgtgccagc agccgcggta 480

atacgtaggg tgcgagcgtt gtccggaatt actgggcgta aagagctcgt aggtggtttg 540

tcgcgtcgtt tgtgtaagcc cgcagcttaa ctgcgggact gcaggcgata cgggcataac 600

ttgagtgctg taggggagac tggaattcct ggtgtagcgg tggaatgcgc agatatcagg 660

aggaacaccg atggcgaagg caggtctctg ggcagtaact gacgctgagg agcgaaagca 720

tggggagcga acaggattag ataccctggt agtccatgcc gtaaacggtg ggcgctaggt 780

gtgagtccct tccacggggt tcgtgccgta gctaacgcat taagcgcccc gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat 900

gtggattaat tcgatgcaac gcgaagaacc ttacctgggc ttgacataca ccagatcgnc 960

gnagagatgc gctttccctt tgtggttggt gtacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctt atgttgccag 1080

cacgtgatgg tggggactca tgagagactg ccggggttaa ctcggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgtccag ggcttcacac atgctacaat ggtcggtaca 1200

acgcgtttgc gagcctgtga gggtgtgcta atcgctgaaa gccggcctta gttcggattg 1260

gggtctgcaa ctcgacccca tgaagtcgga gtcgctagta atcgcagatc agcaacgctg 1320

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca cgtcatgaaa gttggtaaca 1380

cccgaagcca gtggcctgtc atgggagctg tcgaaggtgg gatcggcgat tgggacgaag 1440

tcgtaacaag gtagccgtac cggaatgcgg ctggatcacc tcc 1483

<210> 693
<211> 1529
<212> DNA
<213> Corynebacterium diphtheriae

<400> 693
tttttatgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggccta gcttgctagg tactcgagtg gcgaacgggt gagtaacacg 120

tgggtgatct gcctcgtact tcgggataag cctgggaaac tgggtctaat actggatagg 180

accatgcttt agtgtgtgtg gtggaaagtt ttttcggtac gagatgagcc cgcggcctat 240

cagcttgttg gtggggtaat ggcctaccaa ggcgtcgacg ggtagccggc ctgagagggt 300

ggacggccac attgggactg agatacggcc cagactccta ctggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga cggccttcgg 420

gttgtaaacc tctttcgcta gggacgaagc ttttgtgacg gtacctagat aagaagcacc 480

ggctaactac gtgccagcag ccgcggtaat acgtagggtg cgagcgttgt ccggaattac 540

tgggcgtaaa gagctcgtag gtggtttgtc gcgtcgtctg tgaaattccg gggcttaact 600

tcgggcgtgc aggcgatacg ggcataactt gagtgctgta ggggagactg gaattcctgg 660

tgtagcggtg gaatgcgcag atatcaggag gaacaccgat ggcgaaggca ggtctctggg 720

cagtaactga cgctgaggag cgaaagcatg gggagcgaac aggattagat accctggtag 780

tccatgccgt aaacggtggg cgctaggtgt gagggtcttc cacgactttc gtgccgtagc 840

taacgcatta agcgccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg 900

acgggggccc gcacaagcgg cggagcatgt ggattaattc gatgcaacgc gaagaacctt 960

acctgggctt gacatatgca ggatcggcgt agtgatacgt tttcccttgt ggtctgtata 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtcttatg ttgccagcac gtgatggtgg ggactcatga gagactgccg 1140

gggttaactc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtccagggc 1200

ttcacacatg ctacaatggt cggtacaacg cgctgcgagc ctgtgagggt gagcgaatcg 1260

ctgaaagccg gcctcagttc ggattggggt ctgcaactcg accccatgaa gtcggagtcg 1320

ctagtaatcg cagatcagca acgctgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcacgtc atgaaagttg gtaacacccg aagccagtgg cctaaccctt gtgggggggag 1440

ctgtcgaagg tgggatcggc gattgggacg aagtcgtaac aaggtagccg taccggaagg 1500

tgcggctgga tcacctcctt tctaaggag 1529

<210> 694
<211> 1420
<212> DNA
<213> Corynebacterium durum

<400> 694
ctcaggacga acgctggcgg cgtgcttaac acatgcaagt cgaacgaaaa gccctgccac 60

cttggtggtg ggtactcgag tggcgaacgg gtgagtaaca cgtgggtgat ctgccccgca 120

ctgtgggata agcctgggaa actgggtcta ataccacata cgaccatggc gtaggggtca 180

tggtggaaag ccttattgcg gtgtgggatg agcccgcggc ctatcagctt gttggtgggg 240

taatggccta ccaaggcggc gacgggtagc cggcctgaga gggtggacgg ccacattggg 300

actgagacac ggcccagact ctacgggagg cagcagtggg gaatattgca caatgggcgc 360

aagcctgatg cagcgacgcc gcgtggggga tkgaaggctt cgggttgtaa actcctttcg 420

cccgggacga agcccacctg gtgggtgacg gtaccgtgga gaagaagcac cggctaacta 480

cgtgccagca gccgcggtaa tacgtagggt gcaagcgttg tccggattta ctgggcgtaa 540

agagctcgta ggtggtgtgt cgcgtcgtct gtgaaattcc ggggcttaac tccgggcgtg 600

caggcgatac gggcacgact agagtgctgt aggggtaact ggaattcctg gtgtagcggt 660

gaaatgcgca gatatcagga ggaacaccga tggcgaaggc aggttactgg gcagttactg 720

acgctgagga gcgaaagcat ggggagcgaa caggattaga taccctggta gtccatgctg 780

taaacggtgg gcgctaggtg tgggctgtgt gtttgcagtc tgtgccgtag ctaacgcatt 840

aagcgccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc 900

cgcacaagcg gcggagcatg tggattaatt cgatgcaacg cgaagaacct tacctgggtt 960

tgacatgcac cagatcggcg tagagatacg tcctcccttg tggttggtgc acaggtggtg 1020

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cttgtcttat gttgccagca catttttggt ggggactcat gagaaactgc cggggtcaac 1140

tcggaggaag gtggggatga cgtcaaatca tcatgccctt tatacccagg gcttcacaca 1200

tgctacaatg gtcggtacaa cgggttgcga cactgtgaag tgaagctaat ctctgaaagc 1260

cggcctcagt tcggattggg gtctgcaact cgaccccatg aagtcggagt cgctagtaat 1320

cgcagatcag caacgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg 1380

tcatgaaagt tggtaacacc cgaagcccat ggcctaacca 1420

<210> 695
<211> 1524
<212> DNA
<213> Corynebacterium efficiens

<400> 695
ttttgtggag agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca 60

agtcgaacga tgaagccctg cttgcagggt ggattagtgg cgaacgggtg agtaacacgt 120

gggtgatctg ccccgcactt cgggataagc ctgggaaact gggtctaata ccggatacga 180

ccccctggta ggtcaggggg tggaaagatt ttatcggtgt gggatgagcc tgcggcctat 240

cagcttgttg gtggggtaat ggcctaccaa ggcgtcgacg ggtagccggc ctgagagggt 300

gatcggccac attgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga cggccttcgg 420

gttgtaaact cctttcgaca gggacgaagc ttttgtgacg gtacctgtag aagaagcacc 480

ggctaactac gtgccagcag ccgcggtaat acgtagggtg cgagcgttgt ccggaattac 540

tgggcgtaaa gagctcgtag gtggtttgtc gcgtcgtctg tgaaatcccg gggcttaact 600

tcgggcgtgc aggcgatacg ggcataactt gagtgctgta ggggagactg gaattcctgg 660

tgtagcggtg aaatgcgcag atatcaggag gaacaccaat ggcgaaggca ggtctctggg 720

cagtaactga cgctgaggag cgaaagcatg ggtagcgaac aggattagat accctggtag 780

tccatgccgt aaacggtggg cgctaggtgt aggggacttc cacgtcttct gtgccgcagc 840

taacgcatta agcgccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg 900

acgggggccc gcacaagcgg cggagcatgt ggattaattc gatgcaacgc gaagaacctt 960

acctgggctt gacatacact agatcgctgc agagatgtag cttcccttgt ggctggtgta 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtcttatg ttgccatcac gtgatggtgg gcactcatga gagactgccg 1140

gggttaactc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtccagggc 1200

ttcacacatg ctacaatggt cggtacagcg agttgccaca ccgtgaggtg gagctaatct 1260

ctcaaagccg gcctcagttc ggattggggt ctgcaactcg accccatgaa gtcggagtcg 1320

ctagtaatcg cagatcagca acgctgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcacgtc atgaaagttg gtaacacccg aagccagtgg cccaacccgt aaggggggga 1440

gctgtcgaag gtgggatcgg cgattgggac gaagtcgtaa caaggtagcc gtaccggaag 1500

gtgcggctgg atcacctcct ttct 1524

<210> 696
<211> 1475
<212> DNA
<213> Corynebacterium falsenii

<400> 696
cgaacgctgg cggcgtgctt aacacatgca agtcgaacgg aaaggccctt gcttgcaggg 60

gtactcgagt ggcgaacggg tgagtaacac gtgggtgatc tgccttgtac ttcgggataa 120

gcctgggaaa ctgggtctaa taccggatag gaccatgctt tagtgtgtgt ggtggaaagt 180

tttttcggta caagatgagc ccgcggccta tcagcttgtt ggtggggtaa tggcctacca 240

aggcgacgac gggtagccgg cctgagaggg tgtacggcca cattgggact gagacacggc 300

ccagactcct acgggaggca gcagtgggga atattgcaca atgggcgcaa gcctgatgca 360

gcgacgccgc gtgagggatg acggccttcg ggttgtaaac ctctttcgct agggaagaag 420

ccacttgtgg tgacggtacc tggataagaa gcaccggcta actacgtgcc agcagccgcg 480

gtaatacgta gggtgcgagc gttgtccgga ttactgggc gtaaagagct cgtaggtggt 540

ttgtcgcgtc gtctgtgaaa tcccggggct taactccggg cgtgcaggcg atacgggcat 600

aactggagtg ctgtagggga gactggaatt cctggtgtag cggtgaaatg cgcagatatc 660

aggaggaaca ccgatggcga aggcaggtct ctgggcagta actgacgctg aggagcgaaa 720

gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg gtgggcgcta 780

ggtgtgggga tctttctacg atttccgtgc cgtagctaac gcattaagcg ccccgcctgg 840

ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga 900

gcatgtggat taattcgatg caacgcgaag aaccttacct gggcttgaca tatgcaggat 960

cgctgcagag atgtagtttc ccttgtggtc tgtatacagg tggtgcatgg ttgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttgt cttgtgttgc 1080

cagcacgtta tggtggggac tcgcgagaga ctgccggggt taactcggag gaaggtgggg 1140

atgacgtcaa atcatcatgc cccttatgtc cagggcttca cacatgctac aatggtcggt 1200

acagagggtc gcgataccgt gaggtggagc taatccctga aagccggtct cagttcggat 1260

tggagtctgc aactcgactc catgaagtcg gagtcgctag taatcgcaga tcagcaacgc 1320

tgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacgtcatga aagttggtaa 1380

cacccgaagc cagtggccca aactcgttag ggagctgtcg aaggtgggat cggcgattgg 1440

gacgaagtcg taacaaggta gccgtaccgg aaggt 1475

<210> 697
<211> 1489
<212> DNA
<213> Corynebacterium flavescens

<400> 697
atcgtggaga gtttgatcct ggctcaggac gaacactggc ggcgtgctta acacatgcaa 60

gtcgaacgga aagaccccta gcttgctggg ggtactcgag tggcgaacgg gtgagtaaca 120

cgtgggtgat ctgccctgca cttcgggata agcttgggaa actgggtcta ataccggata 180

tgaacggtct ttggtgtgat tgttggaaag atttttcgg tgtgggatga gctcgcggcc 240

tatcagcttg ttggtggggt aatggcctac caaggcgtcg acgggtagcc ggcctgagag 300

ggtgtacggc cacattggga ctgagatacg gcccagactc ctacgggagg cagcagtggg 360

gaatattgca caatgggcgc aagcctgatg cagcgacgcc gcgtggggga tgaaggcctt 420

cgggttgtaa actcctttcg ctagggacga agccttttt aaggtgacgg tacctggata 480

agaagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc aagcgttgtc 540

cggaattact gggcgtaaag agctcgtagg tggtttgtcg cgtcgtctgt gaaattccgg 600

ggcttaactc cgggcgtgca ggcgatacgg gcataacttg agtgctgtag gggagactgg 660

aattcctggt gtagcggtga aatgcgcaga tatcaggagg aacaccgatg gcgaaggcag 720

gtctctgggc agtaactgac gctgaggagc gaaagcatgg gtagcgaaca ggattagata 780

ccctggtagt ccatgccgta aacggtgggc gctaggtgta gggggcttcc acgtcttctg 840

tgccgtagct aacgcattaa gcgccccgcc tggggagtac ggccgcaagg ctaaaactca 900

aaggaattga cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg 960

aagaacctta cctgggcttg acatatgcag gattgggtca gagatggctt gtcccttgtg 1020

gtctgtatac aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tgtcttatgt tgccagcacg ttatggtggg gactcatgag 1140

agactgccgg ggttaactcg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1200

gtccagggct tcacacatgc tacaatggtc ggtacaatgc gttgcgatac tgtgaggtgg 1260

agcgaatcgt gtaaagccgg ccttagttcg gattggggtc tgcaactcga ccccatgaag 1320

tcggagtcgc tagtaatcgc agatcagcaa tgctgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacgtca tgaaagttgg taacacccga agccagtggc ctaaacttgt 1440

tagggagctg tcgaaggtgg gatcggcgat tgggacgaag tcgtaacaa 1489

<210> 698
<211> 1529
<212> DNA
<213> Corynebacterium genitalium

<400> 698
tttttgtgga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggccga agcttgcttc ggtactcgag tggcgaacgg gtgagtaaca 120

cgtgggtgat ctgccctgca ctttgggata agcctgggaa actgggtcta ataccagata 180

ggaccacgtc ttggatggtg tggtggaaag ttttttcggt gtgggatgag ctcgcggcct 240

atcagcttgt tggtggggta atggcctacc aaggcgtcga cgggtagccg gcctgagagg 300

gtgtacggcc acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 360

aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc 420

gggttgtaaa ctcctttcgc cagggacgaa gcgtcagtga cggtacctgg ataagaagca 480

ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt gtccggaatt 540

actgggcgta aagagctcgt aggtggtttg tcgcgtcgtt tgtgtaatac cgcagcttaa 600

ctgcggggtt gcaggcgata cgggcataac ttgagtgctg taggggagac tggaattcct 660

ggtgtagcgg tggaatgcgc agatatcagg aggaacaccg atggcgaagg caggtctctg 720

ggcagtaact gacgctgagg agcgaaagca tgggtagcga acaggattag ataccctggt 780

agtccatgcc gtaaacggtg ggcgctaggt gtgagtccct tccacggggt tcgtgccgta 840

gctaacgcat taagcgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac gcgaagaacc 960

ttacctgggc ttgacataca ccggatcgct gcagagatgt agcttccctt gtggctggtg 1020

tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttgtctta tgttgccagc atttggttgg ggactcatga gagactgccg 1140

gggttaactc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtccagggc 1200

ttcacacatg ctacaatggt cggtacaacg cgcagctact tcgtgaggag gcgctaatcg 1260

ctctaaagcc ggccttagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1320

gctagtaatc gtagatcagc aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacgt catgaaagtt ggtaacaccc gaagccagtg gcccaaactt gttagggagc 1440

tgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtagccgt accggaaggt 1500

gcggctggat cacctccttt ctaaggagc 1529

<210> 699
<211> 1466
<212> DNA
<213> Corynebacterium glaucum

<400> 699
ggcgtgctaa cacatgcaag tcgaacggaa aggccgaagc ttgctttggt actcgagtgg 60

cgaacgggtg agtaacacgt gggtgatctg ccctgcactt tgggataagc ctgggaaact 120

gggtctaata ccagatagga ccacggtgtg gtgatcgtgg tggaaagttt tttcggtgtg 180

ggatgagctc gcggcctatc agcttgttgg tggggtaatg gcctaccaag gcgtcgacgg 240

gtagccggcc tgagagggtg tacggccaca ttgggactga gatacggccc agactcctac 300

gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc gacgccgcgt 360

gggggatgac ggccttcggg ttgtaaactc ctttcgccaa agacgaattt tgacggtatt 420

tggagaagaa gcaccggcta actacgtgcc agcagccgcg gtaatacgta gggtgcgagc 480

gttgtccgga attactgggc gtaaagagct cgtaggtggt ttgtcgcgtc gtttgtggaa 540

taccggggct taacttcggg gttgcatacg atacgggcat aacttgagtg ctgtagggga 600

gactggaatt cctggtgtag cggtgaaatg cgcagatatc aggaggaaca ccgatggcga 660

aggcaggtct ctgggcagta actgacgctg aggagcgaaa gcatggggag cgaacaggat 720

tagataccct ggtagtccat gccgtaaacg gtgggcgcta ggtgtgagtc ccttccacgg 780

ggttcgtgcc gtagctaacg cattaagcgc cccgcctggg gagtacggcc gcaaggctaa 840

aactcaaagg aattgacggg ggcccgcaca agcggcggag catgtggatt aattcgatgc 900

aacgcgaaga accttacctg ggcttgacat acaccagatc gccgcagaga tgtggtttcc 960

cttgtggttg gtgtacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1020

ttaagtcccg caacgagcgc aacccttgtc ttatgttgcc agcatgttgt ggtggggact 1080

catgagagac tgccggggtt aactcggagg aaggtgggga tgacgtcaaa tcatcatgcc 1140

ccttatgtcc agggcttcac acatgctaca atggtcggta caacgcgctt gcgagcctgt 1200

gagggtgagc gaatcgctga aagccggtcg tagttcggat tggggtctgc aactcgaccc 1260

catgaagtcg gagtcgctag taatcgcaga tcagcaacgc tgcggtgaat acgttcccgg 1320

gccttgtaca caccgcccgt cacgtcatga aagttggtaa cacccgaagc cagtggcctg 1380

tcaaaaggag ctgtcgaagg tgggatcggc gattgggacg aagtcgtaac aaggtagccg 1440

taccggaagg tgcggctgga tcacct 1466

<210> 700
<211> 1533
<212> DNA
<213> Corynebacterium glucuronolyticum

<400> 700
ttttgttgga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggctcc agcttgctgg ggtgctcgag tggcgaacgg gtgagtaaca 120

cgtaagtgat ctgccctgca ctgggggata agcttgggaa actgggtcta ataccctata 180

ggaccgcatc gtggttggtg tggtggaaag gtttttctgg tgtgggatga gcttgcggcc 240

tatcagcttg ttggtggggt aatggcctac caaggcggcg acgggtagcc ggcctgagag 300

ggtgtgcggc cacattggga ctgagatacg gcccagactc ctacgggagg cagcagtggg 360

gaattttgca caatgggcgg aagcctgatg cagcgacgcc gtgtggggga tgaaggcctt 420

cgggttgtaa actcctttcg tcagggacga agtttttttg acggtacctg gataagaagc 480

accggctaac tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt tgtccggatt 540

tactgggcgt aaagggctcg taggtggtgt gtcgcgtcgt ctgtgtaatc caggggctta 600

acttttggtt ggcaggcgat acgggcattg cttgagtgct gtaggggaga ctggaattcc 660

tggtgtagcg gtgaaatgcg cagatatcag gaggaacacc gatggcgaag gcaggtctct 720

gggcagttac tgacgctgag gagcgagagc atgggtagcg aacaggatta gataccctgg 780

tagtctatgc tgtaaacggt gggcgctagg tgtgagtccc ttccacgggg tttgtgccgt 840

agctaacgct ttaagcgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac 960

cttacctggg cttgacatat gtgagattgg gctagagata gttcgtccct tgtggctcat 1020

ttacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctt atgttgccag cacgttgtgg tggggactcg tgagagactg 1140

ccggggttaa ctcggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgtccag 1200

ggcttcacac atgctacaat ggctggtaca gtgcgtgtgc gacaccgtga ggtggagcta 1260

atcgcgaaag ccagtctcag ttcggattgg ggtctgcaac tcgaccccat gaagtcggag 1320

tcgctagtaa tcgcagatca gcagtgctgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac gtcatgaaag ttggtaacac ccgaagccca tggcccaacc ggttttccgg 1440

ggggagtggt cgaaggtggg attggcgatt gggacgaagt cgtaacaagg tagccgtacc 1500

ggaaggtgcg gctggatcac ctcctttcta agg 1533

<210> 701
<211> 1525
<212> DNA
<213> Corynebacterium glutamicum

<400> 701
tgtggagagt ttgatcctgg ctcaggacga acgctggcgg cgtgcttaac acatgcaagt 60

cgaacgctga aaccggagct tgctttggtg gatgagtggc gaacgggtga gtaacacgtg 120

ggtgatctgc cctacacttt gggataagcc tgggaaactg ggtctaatac cgaatattca 180

caccaccgta ggggtggtgt ggaaagcctt gtgcggtgtg ggatgagcct gcggcctatc 240

agcttgttgg tggggtaatg gcctaccaag gcgtcgacgg gtagccggcc tgagagggtg 300

tacggccaca ttgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

attgcacaat gggcgcaagc ctgatgcagc gacgccgcgt gggggatgaa ggccttcggg 420

ttgtaaactc ctttcgctag ggacgaagcc ttttaggtga cggtacctgg agaagaagca 480

ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt gtccggaatt 540

actgggcgta aagagctcgt aggtggtttg tcgcgtcgtc tgtgaaatcc cggggcttaa 600

cttcgggcgt gcaggcgata cgggcataac ttgagtgctg taggggagac tggaattcct 660

ggtgtagcgg tgaaatgcgc agatatcagg aggaacacca atggcgaagg caggtctctg 720

ggcagtaact gacgctgagg agcgaaagca tgggtagcga acaggattag ataccctggt 780

agtccatgcc gtaaacggtg ggcgctaggt gtaggggtct tccacgactt ctgtgccgca 840

gctaacgcat taagcgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac gcgaagaacc 960

ttacctgggc ttgacatgga ccggatcggc gtagagatac gttttccctt gtggtcggtt 1020

cacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttgtctta tgttgccagc acattgtggt gggtactcat gagagactgc 1140

cggggttaac tcggaggaag gtggggatga cgtcaaatca tcatgcccct tatgtccagg 1200

gcttcacaca tgctacaatg gtcggtacag cgagttgcca caccgtgagg tggagctaat 1260

ctcttaaagc cggcctcagt tcggattggg gtctgcaact cgaccccatg aagtcggagt 1320

cgctagtaat cgcagatcag caacgctgcg gtgaatacgt tcccgggcct tgtacacacc 1380

gcccgtcacg tcatgaaagt tggtaacacc cgaagccagt ggcccaacct tttaggggg 1440

agctgtcgaa ggtgggatcg gcgattggga cgaagtcgta acaaggtagc cgtaccggaa 1500

ggtgcggctg gatcacctcc tttct 1525

<210> 702
<211> 1489
<212> DNA
<213> Corynebacterium hansenii

<400> 702
gctggcggcg tgcttaacac atgcaagtcg aacggtaagg ccccagcttg ctggggtaca 60

cgagtggcga acgggtgagt aacacgtggg tgacctgccc cgcacttcgg gataagcctg 120

ggaaactggg tctaataccg gataggaccg catcgttggg atgtggtgga aagtttttc 180

ggtgtgggat gggcccgcgg cctatcagct tgttggtggg gtaatggcct accaaggcgg 240

cgacgggtag ccggcctgag agggtggacg gccacattgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg cacaatgggc ggaagcctga tgcagcgacg 360

ccgcgtgggg gatgacggcc ttcgggttgt aaactccttt caccatcgac gaaggttttc 420

tgacggtaga tggagaagaa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 480

gggtgcgagc gttgtccgga attactgggc gtaaagagct cgtaggtggt ttgtcgcgtc 540

gtctgtgaaa ttccggggct caactccggg cgtgcaggcg atacgggcat aacttgagta 600

ctgtagggga gactggaatt cctggtgtag cggtgaaatg cgcagatatc aggaggaaca 660

ccggtggcga aggcgggtct ctgggcagta actgacgctg aggagcgaaa gcatgggtag 720

cgaacaggat tagataccct ggtagtccat gccgtaaacg gtgggcgcta ggtgtagggg 780

tcttccacga cttctgtgcc gtagctaacg cattaagcgc cccgcctggg gagtacggcc 840

gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag catgtggatt 900

aattcgatgc aacgcgaaga accttacctg ggcttgacat gtacgggatc gggccagaga 960

tggtctttcc cttgtggctc gtatacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1020

agatgttggg ttaagtcccg caacgagcgc aacccttgtc ttatgttgcc agcacgttat 1080

ggtggggact cgtgagaaac tgccggggtc aactcggagg aaggtgggga tgacgtcaaa 1140

tcatcatgcc ccttatgtcc agggcttcac acatgctaca atggtcggta cagtgggttg 1200

cgatgccgtg aggcggagct aatcccttaa agccggtctc agttcggatc ggggtctgca 1260

actcgacccc gtgaagtcgg agtcgctagt aatcgcagat cagcaacgct gcggtgaata 1320

cgttcccggg ccttgtacac accgcccgtc acgtcatgaa agtcggtaac acccgaagcc 1380

agtggcccaa cctttttgg ggggagctgt cgaaggtggg atcggcgatt gggacgaagt 1440

cgtaacaagg tagccgtacc ggaaggtgcg gctggatcac ctcctttct 1489

<210> 703
<211> 1460
<212> DNA
<213> Corynebacterium imitans

<400> 703
aacgctggcg gcgtgcttaa cacatgcaag tcgaacggaa aggccgaagc ttgcttcggt 60

actcgagtgg cgaacgggtg agtaacacgt gggtgatctg ccctgtactt cgggataagc 120

ttgggaaact gggtctaata ccggatatga caatctcttg gatggggttg tggaaagctt 180

ttgcggtatg ggatgagctc gcggcctatc agcttgttgg tggggtaatg gcctaccaag 240

gcgtcgacgg gtagccggcc tgagagggtg tacggccaca ttgggactga gatacggccc 300

agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc 360

gacgccgcgt gggggatgac ggccttcggg ttgtaaactc ctttcgcaac cgacgaagct 420

tttgtgacgg taggttgaga agaagcaccg gctaactacg tgccagcagc cgcggtaata 480

cgtagggtgc gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg 540

cgtcgtttgt ggaataccgc agcttaactg cggggttgca ggcgatacgg gcataacttg 600

agtgctgtag gggagactgg aattcctggt gtagcggtgg aatgcgcaga tatcaggagg 660

aacaccgatg gcgaaggcag gtctctgggc agtaactgac gctgaggagc gaaagcatgg 720

ggagcgaaca ggattagata ccctggtagt ccatgccgta aacggtgggc gctaggtgtg 780

agtcccttcc acggggttcg tgccgtagct aacgcattaa gcgccccgcc tggggagtac 840

ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc ggagcatgtg 900

gattaattcg atgcaacgcg aagaacctta cctgggcttg acatacaccg gatcgctgca 960

gagatgtagc ttccctttgt ggctggtgta caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgtcttatg ttgccagcat 1080

ttggttgggg actcatgaga gactgccggg gttaactcgg aggaaggtgg ggatgacgtc 1140

aaatcatcat gcccccttatg tccagggctt cacacatgct acaatggtcg gtacaacgcg 1200

tttgcgagct cgtgagggtg ggctaatcgc tgaaagccgg tcgtagttcg gattggggtc 1260

tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagttgg taacacccga 1380

agcccatggc ccaaacgtgt tagggagtgg tcgaaggtgg gatcggcgat tgggacgaag 1440

tcgtaacaag gtagccgtac 1460

<210> 704
<211> 1532
<212> DNA
<213> Corynebacterium jeikeium

<400> 704
tttttatgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggctcc ttgcttgcaa ggggtactcg agtggcgaac gggtgagtaa 120

cacgtgggtg atctgccttg cacttcggga taagcctggg aaactgggtc taataccgga 180

taggaccatg ctttagtgtg tgtggtggaa agtttttttcg gtgcaagatg agcccgcggc 240

ctatcagctt gttggtgggg taatggccta ccaaggcgac gacgggtagc cggcctgaga 300

gggtgtacgg ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg caagcctgat gcagcgacgc cgcgtggggg atgacggcct 420

tcgggttgta aactcctttc gctagggaag aagccactgt gtggtgacgg tacctggata 480

agaagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc gagcgttgtc 540

cggaattact gggcgtaaag agctcgtagg tggtttgtcg cgtcgtctgt gaaatcccgg 600

ggcttaactt cgggcgtgca ggcgatacgg gcataactag agtgctgtag gggagactgg 660

aattcctggt gtagcggtga aatgcgcaga tatcaggagg aacaccgatg gcgaaggcag 720

gtctctgggc agttactgac gctgaggagc gaaagcatgg gtagcgaaca ggattagata 780

ccctggtagt ccatgccgta aacggtgggc gctaggtgtg ggggttttat ttacgattcc 840

cgtgccgtag ctaacgcatt aagcgccccg cctggggagt acggccgcaa ggctaaaact 900

caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggattaatt cgatgcaacg 960

cgaagaacct tacctgggct tgacatacac cggatcgctg cagagatgta gtttcccttg 1020

tggctggtgt acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttgtcttgt gttgccagca cgttatggtg gggactcgcg 1140

agagactgcc ggggttaact cggaggaagg tggggatgac gtcaaatcat catgcccctt 1200

atgtccaggg cttcacacat gctacaatgg tcggtacagt gggttgcgat accgtgaggt 1260

ggagctaatc ccttaaagcc ggtctcagtt cggattggag tctgcaactc gactccatga 1320

agtcggagtc gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt 1380

gtacacaccg cccgtcgcgt catgaaagtt ggtaacaccc gaagccagtg gcccaaactt 1440

gttagggagc tgtcgaaggt gggattggcg attgggacga agtcgtaaca aggtagccgt 1500

accggaaggt gcggctggat cacctccttt ct 1532

<210> 705
<211> 1400
<212> DNA
<213> Corynebacterium kroppenstedtii

<220>
<221> modified_base
<222> (1077)..(1077)
<223> a, c, t, g, unknown or other

<400> 705
cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggccc 60

tgcttgcagg gtgctcgagt ggcgaacggg tgagtaacac gtgggtgatc tgcccttac 120

tttgggataa gcctgggaaa ctgggtctaa tactggatag gaccatgctg taggtggtgt 180

ggtggaaaga ttttttcggt aagggatgag ctcgcggcct atcagcttgt tggtggggta 240

atggcctacc aaggcgtcga cgggtagccg gcctgagagg gtggacggcc acattgggac 300

tgagatacgg cccagattcc tacgggaggc agcagtgggg aatattgcac aatgggcgca 360

agcctgatgc agcgacgccg cgtgggggat gacggccttc gggttgtaaa ctcctttcag 420

ccatgacgaa gcccttgtgg tgacggtagt ggtagaagaa gcaccggcta actacgtgcc 480

agcagccgcg gtaatacgta gggtgcgagc gttgtccgga attactgggc gtaaagagct 540

cgtaggtggt ctgtcgcgtc atttgtgaaa gcccggggct taactccggg ttggcaggtg 600

atacgggcat gactggagta ctgtagggga gactggaatt cctggtgtag cggtgaaatg 660

cgcagatatc aggaggaaca ccggtggcga aggcgggtct ctgggcagta actgacgctg 720

aggagcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 780

gtgggcgcta ggtgtgggtt tccttccacg ggatccgtgc cgtagctaac gcattaagcg 840

ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac 900

aagcggcgga gcatgtggat taattcgatg caacgcgaag aaccttacct gggcttgaca 960

tgcactggat gcggccagag atggttgttc cctttgtggc tggtgtgcag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccnttg 1080

tctcgtgttg ccagcatttg gttggggact cgcgggagac tgccggggtt aactcggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtcc agggcttcac acatgctaca 1200

atggctggta cagagagttg cgataccgtg aggtggggct aatctcttaa agccagtctc 1260

agttcggatt ggagtctgca actcgactcc atgaagtcgg agtcgctagt aatcgcagat 1320

cagcaatgct gcggtgaata cgttcccggg ccttgtacac accgcccgtc acgtcatgaa 1380

agttggtaac acccgaagcc 1400

<210> 706
<211> 1532
<212> DNA
<213> Corynebacterium lipophiloflavum

<400> 706
tttttgtgga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggccac agcttgctgt ggtactcgag tggcgaacgg gtgagtaaca 120

cgtgggtgat ctgccctgta cttcgggata agcttgggaa actgggtcta ataccggata 180

tgaccacttt ttggatgggg tggtggaaag cttttgcggt atgggatgag ctcgcggcct 240

atcagcttgt tggtggggta atggcctacc aaggcgtcga cgggtagccg gcctgagagg 300

gtgtacggcc acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 360

aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc 420

gggttgtaaa ctcctttcgc cagggacgaa gcgtaagtga cggtacctgg ataagaagca 480

ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt gtccggaatt 540

actgggcgta aagagctcgt aggtggtttg tcgcgtcgtt tgtgtaagtc cacggcttaa 600

ctgtgggatg gcaggcgata cgggcataac ttgagtgctg taggggagac tggaattcct 660

ggtgtagcgg tgaaatgcgc agatatcagg aggaacaccg atggcgaagg caggtctctg 720

ggcagtaact gacgctgagg agcgaaagca tgggtagcga acaggattag ataccctggt 780

agtccatgcc gtaaacggtg ggcgctaggt gtgagtccct tccacggggt tcgtgccgta 840

gctaacgcat taagcgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac gcgaagaacc 960

ttacctgggc ttgacataca ccggatcggg ctagagatag tctttccctt gtggctggtg 1020

tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttgtctta tgttgccagc acgtgatggt ggggactcat gagagactgc 1140

cggggttaac tcggaggaag gtggggatga cgtcaaatca tcatgcccct tatgtccagg 1200

gcttcacaca tgctacaatg gtcggtacaa cgcgtgtgcg acactgtgag gtgaagctaa 1260

tcgctctaaa gccggtcgta gttcggattg gggtctgcaa ctcgacccca tgaagtcgga 1320

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca cgtcatgaaa gttggtaaca cccgaagcca gtggcctaaa cgtgttaggg 1440

agctgtcgaa ggtgggatcg gcgattggga cgaagtcgta acaaggtagc cgtaccggaa 1500

ggtgcggctg gatcacctcc tttctaagga gc 1532

<210> 707
<211> 1334
<212> DNA
<213> Corynebacterium macginleyi

<400> 707
gagtttgatc mtggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgggtg atctgccctg cacttcggga taagcttggg 120

aaactgggtc taataccgga tagggaaagt cggtgtagga tgagctcgcg gcctatcagc 180

ttgttggtgg ggtaatggcc taccaaggcg gcgacgggta gccggcctga gagggtgtac 240

ggccacattg ggactgagat acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cgcaagcctg atgcagcgac gccgcgtggg ggatgaaggc cttcgggttg 360

taaactcctt tcgctaggga cgatgacggt acctagataa gaagcaccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggtgcg agcgttgtcc ggaattactg ggcgtaaagg 480

gctcgtaggt ggtttgtcgc gtcgtctgtg aaattctggg gcttaactcc gggcgtgcag 540

gcgatacggg caaacttgag tgctgtaggg gtaactggaa ttcctggtgt agcggtgaaa 600

tgcgcagata tcaggaggaa caccgatggc gaaggcaggt tactgggcag actgacgctg 660

aggagcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gctgtaaacg 720

gtgggcgcta ggtgtgaggg ttctcgtgcc gtagctaacg cattaagcgc cccgcctggg 780

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 840

catgtggatt aattcgatgc aacgcgaaga accttacctg ggcttgacat atacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtctt atgttgccag catggggact catgagagac tgccggggtt aactcggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtcc agggcttcac acatgctaca 1080

atggtcggca acgcgttgcg acactgtgag gtggagcgaa tcgctgccgg tcttagttcg 1140

gatggggtct gcaactcgac cccagaagtc ggagtcgcta gtaatcgcag atcagcaatg 1200

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacgtcatg aaagttggta 1260

acacccgaag ccggtgccta gggagccgtc gaaggtggga ttggcgattg ggacgaagtc 1320

gtaacaaggt akcc 1334

<210> 708
<211> 1336
<212> DNA
<213> Corynebacterium mastitidis

<400> 708
gagtttgatc mtggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgggtg atctgccctc aacttcggga taagcttggg 120

aaactgggtc taataccgga tagggaaagt cggttgggga tgagctcgcg gcctatcagc 180

ttgttggtgg ggtaatggcc taccaaggcg tcgacgggta gccggcctga gagggtgtac 240

ggccacattg ggactgagat acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cgcaagcctg atgcagcgac gccgcgtggg ggatgaaggc cttcgggttg 360

taaactcctt tcgctaccga cgatgacggt aggtggagaa gaagcaccgg ctaactacgt 420

gccagcagcc gcggtaatac gtagggtgcg agcgttgtcc ggatttactg ggcgtaaaga 480

gctcgtaggt ggtttgtcgc gtcgtctgtg aaattccggg gcttaacttc gggcgtgcag 540

gcgatacggg caaacttgag tgctgtaggg gtaactggaa ttcctggtgt agcggtggaa 600

tgcgcagata tcaggaggaa caccgatggc gaaggcaggt tactgggcag actgacgctg 660

aggagcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gctgtaaacg 720

gtgggcgcta ggtgtgagcc ggtttgtgcc gtagctaacg cattaagcgc cccgcctggg 780

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 840

catgtggatt aattcgatgc aacgcgaaga accttacctg ggcttgacat atacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtctt atgttgccag cacgtgggga ctcatgagag actgccgggg ttaactcgga 1020

ggaaggtggg gatgacgtca aatcatcatg ccccttatgt ccagggcttc acacatgcta 1080

caatggtcgg cagtaggttg cgataccgtg aggtggagct aatcctgttc ggccttagtt 1140

cggatggggt ctgcaactcg accccagaag tcggagtcgc tagtaatcgc agatcagcaa 1200

cgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagttgg 1260

taacacccga aaaccatgcc tagggagtgg ttgaaggtgg gattggcgat tgggacgaag 1320

tcgtaacaag gtakcc 1336

<210> 709
<211> 1559
<212> DNA
<213> Corynebacterium matruchotii

<400> 709
ttttttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggcccc cacttttttg gtgggggtgc tcgagtggcg aacgggtgag 120

taacacgtgg gtgatctgcc ctgcacttcg ggataagctt gggaaactgg gtctaatacc 180

ggataggacc atggtttagt gtctcatggt ggaaagatta ttgttttggt gcaggatgag 240

ctcgcggcct atcagcttgt tggtggggta atggcctacc aaggcgtcga cgggtagccg 300

gcctgagagg gtggacggcc acattgggac tgagatacgg cccagactcc tacgggaggc 360

agcagtgggg aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgggggat 420

gacggccttc gggttgtaaa ctcctttcgt tagggacgaa gccrcacctk ttttgggtgt 480

ggtgacggta cctttgttaa gaagcaccgg ctaactacgt gccagcagcc gcggtaatac 540

gtagggtgcg agcgttgtcc ggaattactg ggcgtaaaga gctcgtaggt ggtttgttgc 600

gtcgtctgtg aaattccggg gcttaacttc ggggtggcag gcgatacggg cataactaga 660

gtgctgtagg ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga 720

acaccgatgg cgaaggcagg tctctgggca gtaactgacg ctgaggagcg aaagcatggg 780

gagcgaacag gattagatac cctggtagtc catgctgtaa acggtgggcg ttaggtgtgg 840

ggaccggttt ggtttctgtg ccgtagctaa cgcattaagc gccccgcctg gggagtacgg 900

ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcggcgg agcatgtgga 960

ttaattcgat gcaacgcgaa gaaccttacc tgggtttgac atgcaccaga cggttgtaga 1020

gatacgtacc tccctttgtg gttggtgtgc aggtggtgca tggttgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcttatgt tgccagcact 1140

ttgggtgggg actcatgaga gactgccggg gttaactcgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gcccctttatg cccagggctt cacacatgct acaatggtta gtacaacgcg 1260

ctgcaaacct gtgagggtga gcgaatcgct gaaagctaat ctcagttcgg attggggtct 1320

gcaactcgac cccatgaagt cggagtcgct agtaatcgca gatcagcaat gctgcggtga 1380

atacgttccc gggccttgta cacaccgccc gtcacgtcat gaaagttggt aacacccgaa 1440

gcccatggcc taaccaccgt tttttggtgg ggggagtggt cgaaggtggg attggcgatt 1500

gggacgaagt cgtaacaagg tagccgtacc ggaaggtgcg gctggatcac ctcctttct 1559

<210> 710
<211> 1400
<212> DNA
<213> Corynebacterium minutissimum

<220>
<221> modified_base
<222> (49)..(52)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (59)..(61)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (188)..(188)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (426)..(427)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (832)..(832)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (884)..(884)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1395)..(1396)
<223> a, c, t, g, unknown or other

<400> 710
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg gaaaggccnn nngcttgcnn 60

ngggtactcg agtggcgaac gggtgagtaa cacgtgggtg atctgccttg cactctggga 120

taagcttggg aaactgggtc taataccgga taggaaccgt ctttagtgtg gtggttggaa 180

agtttttncg gtgcaagatg agctcgcggc ctatcagctt gttggtgggg taatggccta 240

ccaaggcgtc gacgggtagc cggcctgaga gggtgtacgg ccacattggg actgagatac 300

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg gaagcctgat 360

gcagcgacgc cgcgtggggg atgacggcct tcgggttgta aactcctttc gacagggacg 420

aagcgnnagt gacggtacct gtataagaag caccggctaa ctacgtgcca gcagccgcgg 480

taatacgtag ggtgcgagcg ttgtccggaa ttactgggcg taaagagctc gtaggtggtt 540

tgtcgcgtcg tctgtgaaat tccggggctt aactccgggc gtgcaggcga tacgggcata 600

acttgagtgc tgtaggggag actggaattc ctggtgtagc ggtgaaatgc gcagatatca 660

ggaggaacac cgatggcgaa ggcaggtctc tgggcagtta ctgacgctga ggagcgaaag 720

catgggtagc gaacaggatt agataccctg gtagtccatg ccgtaaacgg tgggcgctag 780

gtgtaggggg cttccacgtc ttctgtgccg tagctaacgc attaagcgcc cngcctgggg 840

agtacggccg caaggctaaa actcaaagga attgacgggg gccngcacaa gcggcggagc 900

atgtggatta attcgatgca acgcgaagaa ccttacctgg gcttgacata caccagatcg 960

ctgcagagat gtagtttccc ttgtggttgg tgtacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtct tatgttgcca 1080

gcatttggtt ggggactcat gagagactgc cggggttaac tcggaggaag gtggggatga 1140

cgtcaaatca tcatgcccct tatgtccagg gcttcacaca tgctacaatg gtcggtacaa 1200

cgcgcagcga cactgtgagg tggagcgaat cgctgaaagc cggtcttagt tcggattggg 1260

gtctgcaact cgaccccatg aagtcggagt cgctagtaat cgtagatcag caatgctgcg 1320

gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg tcatgaaagt tggtaacacc 1380

cgaacgcagt ggctnnaact 1400

<210> 711
<211> 1459
<212> DNA
<213> Corynebacterium mucifaciens

<220>
<221> modified_base
<222> (354)..(354)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (385)..(385)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1092)..(1092)
<223> a, c, t, g, unknown or other

<400> 711
ggcggcgtgc ttaacacatg caagtcgaac ggaaaggccc aagcttgctt gggtactcga 60

gtggcgaacg ggtgagtaac acgtgggtga tctgccctgc acttcgggat aagcctggga 120

aactgggtct aataccggat aggacgatgg tttggatgcc attgtggaaa gtttttcgg 180

tgtgggatga gctcgcggcc tatcagcttg ttggtggggt aatggcctac caaggcgtcg 240

acgggtagcc ggcctgagag ggtgtacggc cacattggga ctgagatacg gcccagactc 300

ctacgggagg cagcagtggg gaatattgca caatgggcgc aagcctgatg cagngacgcc 360

gcgtggggga tgacggcctt cgggntgtaa actcctttcg ctagggacga agcgttttgt 420

gacggtacct ggagaagaag caccggctaa ctacgtgcca gcagccgcgg taatacgtag 480

ggtgcgagcg ttgtccggaa ttactgggcg taaagagctc gtaggtggtt tgtcgcgtcg 540

tttgtgtaag cccgcagctt aactgcggga ctgcaggcga tacgggcata acttgagtgc 600

tgtaggggag actggaattc ctggtgtagc ggtggaatgc gcagatatca ggaggaacac 660

cgatggcgaa ggcaggtctc tgggcagtaa ctgacgctga ggagcgaaag catgggtagc 720

gaacaggatt agataccctg gtagtccatg ccgtaaacgg tgggcgctag gtgtgagtcc 780

cttccacggg gttcgtgccg tagctaacgc attaagcgcc ccgcctgggg agtacggccg 840

caaggctaaa actcaaagga attgacgggg gcccgcacaa gcggcggagc atgtggatta 900

attcgatgca acgcgaagaa ccttacctgg gcttgacata caccagatcg ccgtagagat 960

acggtttccc tttgtggttg gtgtacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1020

agatgttggg ttaagtcccg caacgagcgc aacccttgtc ttatgttgcc agcagctgat 1080

ggtggggact cntgagagac tgccggggtt aactcggagg aaggtgggga tgacgtcaaa 1140

tcatcatgcc ccttatgtcc agggcttcac acatgctaca atggtcggta caacgcgcat 1200

gcgagcctgt gaggtggagc gaatcgctga aagccggtcg tagttcggat tggggtctgc 1260

aactcgaccc catgaagtcg gagtcgctag taatcgcaga tcagcaacgc tgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacagtcatg aaagttggta acacccgaag 1380

ccagtggcct gttacaggga gctgtgtcga aggtgggatc ggcgattggg acgaagtcgt 1440

aacaaggtag ccgtaccgg 1459

<210> 712
<211> 1443
<212> DNA
<213> Corynebacterium propinquum

<220>
<221> modified_base
<222> (16)..(16)
<223> a, c, t, g, unknown or other

<400> 712
ctgctcagga cgaacnctgg cggcgtgctt aacacatgca agtcgaacgg aaaggccttt 60

tcggaggtac tcgagtggcg aacgggtgag taacacgtgg gtgatctgcc ctgcactctg 120

ggataagcct gggaaactgg gtctaatacc ggataggact gcactttagt gtgtgtggtg 180

gaaagttttt tcggtgtagg atgagcccgc ggcctatcag cttgttggtg gggtaatggc 240

ctaccaaggc ggcgacgggt agccggactg agaggttggt cggccacatt gggactgaga 300

tacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcagcga cgccgcgtgg gggatgacgg ccttcgggtt gtaaactcct ttcgccaggg 420

acgaagcgtt ttgtgacggt acctggagaa gaagcaccgg ctaactacgt gccagcagcc 480

gcggtaatac gtagggtgca agcgttgtcc ggaattactg ggcgtaaaga gctcgtaggt 540

ggtttgtcgc gtcgtctgtg aaattccaca gcttaactgt gggcgtgcag gcgatacggg 600

ctgacttgag tactgtaggg gtaactggaa ttcctggtgt agcggtgaaa tgcgcagata 660

tcaggaggaa caccgatggc gaaggcaggt tactgggcag ttactgacgc tgaggagcga 720

aagcatgggt agcaaacagg attagatacc ctggtagtcc atgccgtaaa cggtgggcgc 780

taggtgtagg ggccttttgg ggtttctgtg ccgtagctaa cgcattaagc gccccgcctg 840

gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcggcgg 900

agcatgtgga ttaattcgat gcaacgcgaa gaaccttacc tgggcttgac atacaccaga 960

tcgctgcaga gatgtagttt cccttgtggc tggtgtacag gtggtgcatg gctgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tcttatgttg 1080

ccagcacgtt atggtgggga ctcatgagag actgccgggg ttaactcgga ggaaggtggg 1140

gacgacgtca agtcatcatg ccccttatgt ccagggcttc acacatgcta caatggccgg 1200

tacaatgcgc agcgagcctg tgagggtgag ctaatcgctt aaagccggtc ttagttcgga 1260

ttggggtctg caactcgacc ccatgaagtc ggagtcgcta gtaatcgcag atcagcaatg 1320

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacgtcatg aaagttggta 1380

acacccgaag ccggtggctc aaactcggtt tagggagccg tcgaaggtgg gatcggcgat 1440

tgg 1443

<210> 713
<211> 1483
<212> DNA
<213> Corynebacterium pseudodiphtheriticum

<400> 713
cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggcct 60

cttcggaggt actcgagtgg cgaacgggtg agtaacacgt gggtgatctg ccctgcactc 120

tgggataagc ctgggaaact gggtctaata ccggatagga ccatgcttta gtgtgtgtgg 180

tggaaagttt tttcggtgta ggatgagccc gcggcctatc agcttgttgg tggggtaatg 240

gcctaccaag gcggcgacgg gtagccggac tgagaggttg gtcggccaca ttgggactga 300

gatacggccc agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc 360

ctgatgcagc gacgccgcgt gggggatgac ggccttcggg ttgtaaactc ctttcggcag 420

ggacgaagcg ttttgtgacg gtacctggag aagaagcacc ggctaactac gtgccagcag 480

ccgcggtaat acgtagggtg caagcgttgt ccggaattac tgggcgtaaa gagctcgtag 540

gtggtttgtc acgtcgtctg tgaaattcca cagcttaact gtgggcgtgc aggcgatacg 600

ggctgacttg agtactgtag gggtaactgg aattcctggt gtagcggtga aatgcgcaga 660

tatcaggagg aacaccgatg gcgaaggcag gttactgggc agttactgac gctgaggagc 720

gaaagcatgg gtagcaaaca ggattagata ccctggtagt ccatgccgta aacggtgggc 780

gctaggtgta gggacctttt ggggtttctg tgccgtagct aacgcattaa gcgccccgcc 840

tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc 900

ggagcatgtg gattaattcg atgcaacgcg aagaacctta cctgggcttg acatacactg 960

gatcgctgca gagatgtagt ttcccttgtg gctagtgtac aggtggtgca tggctgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcttatgt 1080

tgccagcacg ttatggtggg gactcatgag agactgccgg ggttaactcg gaggaaggtg 1140

gggacgacgt caagtcatca tgcccccttat gtccagggct tcacacatgc tacaatggcc 1200

ggtacaatgc gcagcgagcc tgtgagggtg agctaatcgc ttaaagctgg tcttagttcg 1260

gattggggtc tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc agatcagcaa 1320

tgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagttgg 1380

taacacccga agccggtggc tcaaactcgt ttagggagcc gtcgaaggtg ggatcggcga 1440

ttgggacgaa gtcgtaacaa ggtagccgta ccggaaggtg cgg 1483

<210> 714
<211> 1529
<212> DNA
<213> Corynebacterium pseudogenitalium

<400> 714

ttttgtgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggccct gcttgcaggg tactcgagtg gcgaacgggt gagtaacacg 120

tgggtgatct gccctgcact tcgggataag cctgggaaac tgggtctaat accggatagg 180

agccattttt agtgtgatgg ttggaaagtt ttttcggtgt aggatgagct cgcggcctat 240

cagcttgttg gtggggtaat ggcctaccaa ggcggcgacg ggtagccggc ctgagagggt 300

ggacggccac attgggactg agatacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga cggccttcgg 420

gttgtaaact cctttcgcta gggacgaagc tttttgtgac ggtacctaga taagaagcac 480

cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgttg tccggaatta 540

ctgggcgtaa agggctcgta ggtggtttgt cgcgtcgtct gtgaaattcc ggggcttaac 600

tccgggcgtg caggcgatac gggcataact tgagtactgt aggggtaact ggaattcctg 660

gtgtagcggt gaaatgcgca gatatcagga ggaacaccga tggcgaaggc aggttactgg 720

gcagttactg acgctgagga gcgaaagcat gggtagcgaa caggattaga taccctggta 780

gtccatgccg taaacggtgg gcgctaggtg tgagggtctt ttcacgactt tcgtgccgta 840

gctaacgcat taagcgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac gcgaagaacc 960

ttacctgggc ttgacataca ctggatcggg ctagagatag tctttccctt tgtggctggt 1020

gtacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctt atgttgccag catttggttg gggactcatg agagactgcc 1140

ggggtcaact cggaggaagg tggggatgac gtcaaatcat catgcccctt atgtccaggg 1200

cttcacacat gctacaatgg tcggtacaac gcgcagcgac actgtgaggt ggagcgaatc 1260

gctgaaagcc ggccttagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1320

gctagtaatc gcagatcagc aatgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacgt catgaaagtt ggtaacaccc gaagccggtg gcccaaactt gttagggagc 1440

cgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtacccgt accggaaggt 1500

gcgggtggat cacctccttt ctaaggagc 1529

<210> 715
<211> 1396
<212> DNA
<213> Corynebacterium pseudotuberculosis

<220>
<221> modified_base
<222> (827)..(827)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (879)..(879)
<223> a, c, t, g, unknown or other

<400> 715
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg gaaaggcccc ttcgggggtg 60

ctcgagtggc gaacgggtga gtaacacgtg ggtgatctgc ctcgtactct gggataagcc 120

tgggaaactg ggtctaatac tggataggac cgcactttag tgtgtgtggt ggaaagtttt 180

ttcggtacga gatgagcccg cggcctatca gcttgttggt ggggtaatgg cctaccaagg 240

cgtcgacggg tagccggcct gagagggtgg acggccacat tgggactgag atacggccca 300

gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc tgatgcagcg 360

acgccgcgtg agggatgacg gccttcgggt tgtaaacctc tttcgacagg gacgaagctt 420

tttgtgacgg tacctgtata agaagcaccg gctaactacg tgccagcagc cgcggtaata 480

cgtagggtgc gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg 540

cgtcgtctgt gaaattccgg ggcttaactc cgggcgtgca ggcgatacgg gcataacttg 600

agtgctgtag gggagactgg aattcctggt gtagcggtgg aatgcgcaga tatcaggagg 660

aacaccgatg gcgaaggcag gtctctgggc agtaactgac gctgaggagc gaaagcatgg 720

ggagcgaaca ggattagata ccctggtagt ccatgccgta aacggtgggc gctaggtgtg 780

agggtcttcc acgactttcg tgccgtagct aacgcattaa gcgcccngcc tggggagtac 840

ggccgcaagg ctaaaactca aaggaattga cgggggccng cacaagcggc ggagcatgtg 900

gattaattcg atgcaacgcg aagaacctta cctgggcttg acatatacaa gatcggcgta 960

gagatacgtt ttcccttgtg gtttgtatac aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcttatgt tgccagcacg 1080

tgatggtggg gactcatgag agactgccgg ggttaactcg gaggaaggtg gggatgacgt 1140

caaatcatca tgcccttat gtccagggct tcacacatgc tacaatggtc ggtacaacgc 1200

gttgcgagcc tgtgagggtg agcgaatcgc tgaaagccgg cctcagttcg gattggggtc 1260

tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagttgg taacacccga 1380

acgccatggc ccaacc 1396

<210> 716
<211> 1409
<212> DNA
<213> Corynebacterium pyruviciproducens

<400> 716
acgctggcgg cgtgcttaac acatgcaagt cgaacggaaa ggcctcagct tgctggggtg 60

ctcgagtggc gaacgggtga gtaacacgta ggtgatctgc ctttcacttc gggataagct 120

tgggaaactg ggtctaatac cggatattca ctatgccgtg gttggtgtgg tggaaagctt 180

ttgcggtggg agatgagctt gcggcctatc agcttgttgg tggggtaatg gcctaccaag 240

gcggcgacgg gtagccggcc tgagagggtg tgcggccaca ttgggactga gatacggccc 300

agactcctac gggaggcagc agtggggaat tttgcacaat gggcggaagc ctgatgcagc 360

gacgccgtgt gggggatgaa ggccttcggg ttgtaaactc ctttcgtcag ggacgaagtt 420

tgtttgacgg tacctggata agaagcaccg gctaactacg tgccagcagc cgcggtaata 480

cgtagggtgc gagcgttgtc cggatttact gggcgtaaag ggctcgtagg tggtgtgttg 540

cgtcgtctgt gtaatccagg ggcttaactt ttggttggca ggcgatacgg gcattgcttg 600

agtgctgtag gggagactgg aattcctggt gtagcggtga aatgcgcaga tatcaggagg 660

aacaccgatg gcgaaggcag gtctctgggc agttactgac gctgaggagc gagagcatgg 720

gtagcgaaca ggattagata ccctggtagt ctatgctgta aacggtgggc gctaggtgtg 780

agcctcttcc acggggtttg tgccgtagct aacgctttaa gcgccccgcc tggggagtac 840

ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc ggagcatgtg 900

gattaattcg atgcaacgcg aagaacctta cctgggcttg acataggcag gatgggcgca 960

gagatgtgtc gtccctttgt ggtctgttta caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgtcttatg ttgccagcac 1080

gttgtggtgg ggactcgtga gagactgccg gggttaactc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgtccagggc ttcacacatg ctacaatggt tggtacagtg 1200

cgtgagcaac atcgtgaggt ggagctaatc gctaaagcca gtctcagttc ggattggggt 1260

ctgcaactcg acctcatgaa gtcggagtcg ctagtaatcg cagatcagca gtgctgcggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacgtc atgaaagttg gtaacacccg 1380

aagcccatgg cctaaccggt tttgccggg 1409

<210> 717
<211> 1395
<212> DNA
<213> Corynebacterium renale

<220>
<221> modified_base
<222> (830)..(830)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (882)..(882)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1391)..(1391)
<223> a, c, t, g, unknown or other

<400> 717
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg gaaaggccac tgcttgcagt 60

ggtactcgag tggcgaacgg gtgagtaaca cgtgggtgat ctgccctgta ctttgggata 120

agcctgggaa actgggtcta ataccggata ggaccatcgt ttagtgtcgg tggtggaaag 180

cttttgcggt acgggatgag ctcgcggcct atcagcttgt tggtggggta atggcctacc 240

aaggcgtcga cgggtagccg gcctgagagg gtggacggcc acattgggac tgagatacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgca agcctgatgc 360

agcgacgccg cgtgagggat gacggccttc gggttgtaaa cctctttcgc tagggacgaa 420

gcttttgtga cggtacctag agaagaagca ccggctaact acgtgccagc agccgcggta 480

atacgtaggg tgcgagcgtt gtccggattt actgggcgta aagagctcgt aggtggtttg 540

tcgcgtcgtc tgtgaaattc cggggcttaa ctccgggcgt gcaggcgata cgggcataac 600

ttgagtactg taggggagac tggaattcct ggtgtagcgg tggaatgcgc agatatcagg 660

aggaacaccg atggcgaagg caggtctctg ggcagttact gacactgagg agcgaaagca 720

tgggtagcga acaggattag ataccctggt agtccatgcc gtaaacggtg ggcgctaggt 780

gtgagaccct tccacgggtt ttgtgccgta gctaacgcat taagcgcccn gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggc cngcacaagc ggcggagcat 900

gtggattaat tcgatgcaac gcgaagaacc ttacctgggt ttgacataca ccagaccggg 960

ccagagatgg tctttccctt tgtggttggt gtacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgta acgagcgcaa cccttgtctt atgttgccag 1080

cacgttgtgg tggggactca tgagagactg ccggggttaa ctcggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgtccag ggcttcacac atgctacaat ggtcggtaca 1200

acgcgtgtgc tacttcgtga ggagatgcta atcgctgaaa gccggcctta gttcggattg 1260

gggtctgcaa ctcgacccca tgaagtcgga gtcgctagta atcgcagatc agcaacgctg 1320

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca cgtcatgaaa gttggtaaca 1380

cccgaacgcc ntggc 1395

<210> 718
<211> 1320
<212> DNA
<213> Corynebacterium resistens

<400> 718
aaagtttttt cggtacgaga tgagcccgcg gcctatcagc ttgttggtgg ggtaatggcc 60

taccaaggcg acgacgggta gccggcctga gagggtgtac ggccacattg ggactgagac 120

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg cggaagcctg 180

atgcagcgac gccgcgtgag ggatgacggc cttcgggttg taaacctctt tcgctaggga 240

agaagccttt ttggtgacgg tacctggata agaagcaccg gctaactacg tgccagcagc 300

cgcggtaata cgtagggtgc aagcgttgtc cggaattact gggcgtaaag agctcgtagg 360

tggtttgtcg cgtcgttagt gaaagcccgg ggcttaactc cgggtctgct ggcgatacgg 420

gcataacttg agtgctgtag gggagactgg aattcctggt gtagcggtgg aatgcgcaga 480

tatcaggagg aacaccgatg gcgaaggcag gtctctgggc agtaactgac gctgaggagc 540

gaaagcatgg gtagcgaaca ggattagata ccctggtagt ccatgccgta aacggtgggc 600

gctaggtgtg ggggtttttc acgacttccg tgccgtagct aacgcattaa gcgccccgcc 660

tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc 720

ggagcatgtg gattaattcg atgcaacgcg aagaacctta cctgggcttg acatatacgg 780

gatcggcgta gagatacgtt ttcccttgtg gctcgtatac aggtggtgca tggttgtcgt 840

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcttgtgt 900

tgccagcacg ttatggtggg gactcgcgag agactgccgg ggttaactcg gaggaaggtg 960

gggatgacgt caaatcatca tgccccttat gtccagggct tcacacatgc tacaatggtc 1020

ggtacagtgg gttgcgatgc cgtgaggtgg agctaatccc ttaaagccgg tctcagttcg 1080

gattggagtc tgcaactcga ctccatgaag tcggagtcgc tagtaatcgc agatcagcaa 1140

cgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagttgg 1200

taacacccga agccagtggc ccaaactcgt tagggagctg tcgaaggtgg gatcggcgat 1260

tgggacgaag tcgtaacaag gtagccgtac cggaaggtgc ggctggatca cctcctttct 1320

<210> 719
<211> 1457
<212> DNA
<213> Corynebacterium riegelii

<400> 719
atgaacgctg gcggcgtgct taacacatgc aagtcgaacg gaaaggccca agcttgcttg 60

ggtactcgag tggcgaacgg gtgagtaaca cgtgggtgat ctgccctgca cttcgggata 120

agcctgggaa actgggtcta ataccggata ggaccacttc gtagktgttg tggtggaaag 180

ttttttcggt gtgggatgag ctcgcggcct atcagcttgt tggtggggta atggcctacc 240

aaggcgtcga cgggtagccg gcctgagagg gtgtacggcc acattgggac tgagatacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgga agcctgatgc 360

agcgacgccg cgtgggggat gacggccttc gggttgtaaa ctcctttcgc caaagacgaa 420

ttttgacggt atttggagaa gaagcaccgg ctaactacgt gccagcagcc gcggtaatac 480

gtagggtgcg agcgttgtcc ggaattactg ggcgtaaaga gctcgtaggt ggtttgtcgc 540

gtcgtttgtg gaagtccacg gcttaactgt gggactgcag gcgatacggg cataacttga 600

gtgctgtagg ggagactgga attcctggtg tagcggtgaa atgcgcagat atcaggagga 660

acaccgatgg cgaaggcagg tctctgggca gtaactgacg ctgaggagcg aaagcatggg 720

gagcgaacag gattagatac cctggtagtc catgccgtaa acggtgggcg ctaggtgtga 780

gtcccttcca cggggttcgt gccgtagcta acgcattaag cgccccgcct ggggagtacg 840

gccgcaaggc taaaactcaa aggaattgac gggggcccgc acaagcggcg gagcatgtgg 900

attaattcga tgcaacgcga agaaccttac ctgggcttga catacaccgg atcgctgcag 960

agatgtagtt tcccttgtgg ctggtgtaca ggtggtgcat ggttgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtcttatgtt gccagcacgt 1080

gatggtgggg acttatgaga aactgccggg gttaactcgg aggaaggtgg ggatgacgtc 1140

aaatcatcat gcccttatg tccagggctt cacacatgct acaatggtcg gtacaacgcg 1200

cagctacctc gtgaggggac gcgaatcgct gaaagccggc cttagttcgg attggggtct 1260

gcaactcgac cccatgaagt cggagtcgct agtaatcgca gatcagcaac gctgcggtga 1320

atacgttccc gggccttgta cacaccgccc gtcacgtcat gaaagttggt aacacccgaa 1380

gccagtggcc tgtcaaaagg agctgtcgaa ggtgggatcg gcgattggga caagtcgtaa 1440

caaggtagcc gtaccgg 1457

<210> 720
<211> 1469
<212> DNA
<213> Corynebacterium simulans

<400> 720
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggcct cagcttgctg 60

gggtactcga gtggcgaacg ggtgagtaac acgtgggtga tctgccttgc acttcgggat 120

aagcttggga aactgggtct aataccggat aggacagctg tttagtgtca gttgtggaaa 180

gtttttttcgg tgcaagatga gctcgcggcc tatcagcttg ttggtggggt aatggcctac 240

caaggcgtcg acgggtagcc ggcctgagag ggtggacggc cacattggga ctgagatacg 300

gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcgg aagcctgatg 360

cagcgacgcc gcgtggggga tgaaggcctt cgggttgtaa actcctttcg acagggacga 420

agcttttgtg acggtacctg tataagaagc accggctaac tacgtgccag cagccgcggt 480

aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt aaagagctcg taggtggttt 540

gtcgcgtcgt ctgtgaaatt ccggggctta actccgggcg tgcaggcgat acgggctgac 600

ttgagtgctg taggggagac tggaattcct ggtgtagcgg tgaaatgcgc agatatcagg 660

aggaacaccg atggcgaagg caggtctctg ggcagtaact gacgctgagg agcgaaagca 720

tgggtagcga acaggattag ataccctggt agtccatgcc gtaaacggtg ggcgctaggt 780

gtaggggget tccacgtctt ctgtgccgta gctaacgcat taagcgcccc gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat 900

gtggattaat tcgatgcaac gcgaagaacc ttacctgggc ttgacatata gcggatcgct 960

gcagagatgt agtttccctt tgtggtcgtt atacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctt atgttgccag 1080

catttggttg gggactcatg agagactgcc ggggtcaact cggaggaagg tggggatgac 1140

gtcaaatcat catgcccctt atgtccaggg cttcacacat gctacaatgg tcggtacaac 1200

gcgcagcgac actgtgaggt ggagcgaatc gctgaaagcc ggccttagtt cggattgggg 1260

tctgcaactc gaccccatga agtcggagtc gctagtaatc gcagatcagc aacgctgcgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcacgt catgaaagtt ggtaacaccc 1380

gaagccagtg gctcaaactc gttagggagc tgtcgaaggt gggatcggcg attgggacga 1440

agtcgtaaca aggtagccgt accggaagg 1469

<210> 721
<211> 1323
<212> DNA
<213> Corynebacterium singulare

<220>
<221> modified_base
<222> (922)..(922)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1086)..(1086)
<223> a, c, t, g, unknown or other

<400> 721
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg gaaaggccct agcttgctga 60

ggtgctcgag tggcgaacgg gtgagtaaca cgtgggtgat ctgccttgta ctctgggata 120

agcttgggaa actgggtcta ataccggata ggaactgcct ttagtgtggt ggttggaaag 180

ttttttcggt gcaagatgag ctcgcggcct atcagcttgt tggtggggta atggcctacc 240

aaggcgtcga cgggtagccg gcctgagagg gtgtacggcc acattgggac tgagatacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgga agcctgatgc 360

agcgacgccg cgtgggggat gacggccttc gggttgtaaa ctcctttcga cagggacgaa 420

gctttttgtg acggtacctg tataagaagc accggctaac tacgtgccag cagccgcggt 480

aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt aaagagctcg taggtggttt 540

gtcgcgtcgt ctgtgaaatt ccggggctta actccgggcg tgcaggcgat acgggcataa 600

cttgagtgct gtaggggaga ctggaattcc tggtgtagcg gtgaaatgcg cagatatcag 660

gaggaacacc gatggcgaag gcaggtctct gggcagttac tgacgctgag gagcgaaagc 720

atgggtagcg aacaggatta gataccctgg tagtccatgc cgtaaacggt gggcgctagg 780

tgtagggggc ttccacgtct tctgtgccgt agctaacgca ttaagcgccc cgcctgggga 840

gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg cccgcacaag cggcggagca 900

tgtggattaa ttcgatgcaa cncgaagaac cttacctggg cttgacatac accagatcgc 960

tgcagagatg tagtttccct tgtggttggt gtacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctt atgttgccag 1080

catttngttg gggactcatg agagactgcc ggggttaact cggaggaagg tggggatgac 1140

gtcaaatcat catgcccctt atgtccaggg cttcacacat gctacaatgg tcggtacaac 1200

gcgcagcgac actgtgaggt ggagcgaatc gctgaaagcc ggtcttagtt cggattgggg 1260

tctgcaactc gaccccatga agtcggagtc gctagtaatc gtagatcagc aatgctgcgg 1320

tga 1323

<210> 722
<211> 1475

<212> DNA
<213> Corynebacterium sp. 1 ex sheep

<400> 722
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggccc ctagcttgct 60

gggggtactc gagtggcgaa cgggtgagta acacgtgggt gatctgccct gcacttcggg 120

ataagcctgg gaaactgggt ctaataccgg ataggagcca tctttggtgt gatggttgga 180

aagttttttc ggtgtaggat gagcctgcgg cctatcagct tgttggtggg gtaatggcct 240

accaaggcgt cgacgggtag ccggcctgag agggtgtacg gccacattgg gactgagata 300

cggcccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc gcaagcctga 360

tgcagcgacg ccgcgtgggg gatgacggcc ttcgggttgt aaactccttt cgccagggac 420

gaagcgtttt gtgacggtac ctggataaga agcaccggct aactacgtgc cagcagccgc 480

ggtaatacgt agggtgcgag cgttgtccgg aattactggg cgtaaagagc tcgtaggtgg 540

tttgtcgcgt cgtctgtgaa atcccggggc ttaacttcgg gcgtgcaggc gatacgggca 600

taacttgagt gctgtagggg agactggaat tcctggtgta gcggtgaaat gcgcagatat 660

caggaggaac accgatggcg aaggcaggtc tctgggcagt aactgacgct gaggagcgaa 720

agcatgggta gcgaacagga ttagataccc tggtagtcca tgccgtaaac ggtgggcgct 780

aggtgtgagt cccttccacg gggttcgtgc cgtagctaac gcattaagcg ccccgcctgg 840

ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga 900

gcatgtggat taattcgatg caacgcgaag aaccttacct gggcttgaca tgtaccagat 960

cgccatagag atatggtttc ccttgtggct ggttcacagg tggtgcatgg ttgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat cttatgttgc 1080

cagcacgtag tggtggggac tcatgagaga ctgccggggt caactcggag gaaggtgggg 1140

atgacgtcaa atcatcatgc cccttatgtc cagggcttca cacatgctac aatggtcggt 1200

acaacgcgca gcgagactgt gaggttaagc gaatcgctga aagccggcct tagttcggat 1260

tggggtctgc aactcgaccc catgaagtcg gagtcgctag taatcgcaga tcagcaatgc 1320

tgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacgtcatga aagttggtaa 1380

cacccgaagc cagtggccca aactcgttta gggagctgtc gaaggtggga tcggcgattg 1440

ggacgaagtc gtaacaaggt agccgtaccg gaagg 1475

<210> 723
<211> 1491
<212> DNA
<213> Corynebacterium sp. L-2012475

<400> 723
gaacgctggc ggcgtgctta acacatgcaa gtcgaacgga aaggctcaag cttgcttggg 60

tactcgagtg gcgaacgggt gagtaacacg tgggtgatct gccctgcact ttgggataag 120

cctgggaaac tgggtctaat accggatagg accatcgttt agtgtcggtg gtggaaagtt 180

tttcggtgtg ggatgagctc gcggcctatc agcttgttgg tggggtaatg gcctaccaag 240

gcgtcgacgg gtagccggcc tgagagggtg tacggccaca ttgggactga gatacggccc 300

agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc 360

gacgccgcgt gggggatgac ggccttcggg ttgtaaactc ctttcgccaa ggacgaagag 420

gaattgacgg tacttggata agaagcaccg gctaactacg tgccagcagc cgcggtaata 480

cgtagggtgc gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg 540

cgtcgtttgt ggaataccgc agcttaactg tggggttgca ggcgatacgg gcataacttg 600

agtgctgtag gggagactgg aattcctggt gtagcggtga aatgcgcaga tatcaggagg 660

aacaccgatg gcgaaggcag gtctctgggc agtaactgac gctgaggagc gaaagcatgg 720

gtagcgaaca ggattagata ccctggtagt ccatgccgta aacggtgggc gctaggtgtg 780

agtcccttcc acggggttcg tgccgtagct aacgcattaa gcgccccgcc tggggagtac 840

ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc ggagcatgtg 900

gattaattcg atgcaacgcg aagaacctta cctgggcttg acatacaccg gatcgggcta 960

gagatagtct ttcccttgtg gctggtgtac aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcttatgt tgccagcacg 1080

tgatggtggg gactcatgag agactgccgg ggttaactcg gaggaaggtg gggatgacgt 1140

caaatcatca tgcccccttat gtccagggct tcacacatgc tacaatggtc ggtacaacgc 1200

gcagcttccc tgtgaggggg tgcgaatcgc tgaaagccgg tcgtagttcg gattggggtc 1260

tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagttgg taacacccga 1380

agccagtggc ccaaacgtgt tagggagctg tcgaaggtgg gatcggcgat tgggacgaag 1440

tcgtaacaag gtagccgtac cggaaggtgc ggctggatca ccttctttct a 1491

<210> 724
<211> 1445
<212> DNA
<213> Corynebacterium sp. NML 93-0481

<400> 724
catgcaagtc gaacggaaag gctccagctt gctggggtac tcgagtggcg aacgggtgag 60

taacacgtgg gtgatctgcc ctgcacttcg ggataagcct gggaaactgg gtctaatacc 120

ggataggacc acttctttga ggttgtggtg gaaagttttt tcggtgtggg atgagctcgc 180

ggcctatcag cttgttggtg gggtaatggc ctaccaaggc gtcgacgggt agccggcctg 240

agagggtgta cggccacatt gggactgaga tacggcccag actcctacgg gaggcagcag 300

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtgg gggatgacgg 360

ccttcgggtt gtaaactcct ttcgtcaggg acgaagcgaa agtgacggta cctggataag 420

aagcaccggc taactacgtg ccagcagccg cggtaatacg tagggtgcga gcgttgtccg 480

gaattactgg gcgtaaagag ctcgtaggtg gtttgtcgcg tcgtttgtgg aataccgcag 540

cttaactgtg gggttgcagg cgatacgggc ataacttgag tgctgtaggg gagactggaa 600

ttcctggtgt agcggtggaa tgcgcagata tcaggaggaa caccgatggc gaaggcaggt 660

ctctgggcag taactgacgc tgaggagcga aagcatgggt agcgaacagg attagatacc 720

ctggtagtcc atgccgtaaa cggtgggcgc taggtgtgag tcccttccac ggggttcgtg 780

ccgtagctaa cgcattaagc gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa 840

ggaattgacg ggggcccgca caagcggcgg agcatgtgga ttaattcgat gcaacgcgaa 900

gaaccttacc tgggcttgac atacaccgga ccgggccaga gatggtcttt cccttgtggc 960

tggtgtacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1020

cgcaacgagc gcaacccttg tcttatgttg ccagcatttg gttggggact catgagagac 1080

tgccggggtt aactcggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtcc 1140

agggcttcac acatgctaca atggtcggta caacgcgttg ctacttcgtg aggagatgct 1200

aatcgctaaa agccggcctt agttcggatt ggggtctgca actcgacccc atgaagtcgg 1260

agtcgctagt aatcgcagat cagcaacgct gcggtgaata cgttcccggg ccttgtacac 1320

accgcccgtc acgtcatgaa agttggtaac acccgaagcc agtggcctaa actcgttagg 1380

gagctgtcga aggtgggatc ggcgattggg acgaagtcgt aacaaggtag ccgtaccgga 1440

aggtg 1445

<210> 725
<211> 1457
<212> DNA
<213> Corynebacterium sp. NML 97-0186

<400> 725
catgcaagtc gaacggaaag gccagtgctt gcactggtac tcgagtggcg aacgggtgag 60

taacacgtgg gtgatctgcc ctcaactccg ggataagcct gggaaactgg gtctaatact 120

ggataggacc acatcgtagg tggtgtggtg gaaagcgttt gtagcggttg gggatgagct 180

cgcggcctat cagcttgttg gtggggtaat ggcctaccaa ggcggcgacg ggtagccggc 240

ctgagagggt gtacggtcac attgggactg agatacggcc cagactccta cgggaggcag 300

cagtggggaa tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga 360

cggccttcgg gttgtaaacc tctttcgacc gtgacgaagc ctttggtgac ggtagcggta 420

gaagaagcac cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgttg 480

tccggattta ctgggcgtaa agggctcgta ggtggtttgt cgcgtcgtct gtgaaattcc 540

ggggctcaac tccgggcgtg caggcgatac gggcataact tgagtactgc aggggtaact 600

ggaattcctg gtgtagcggt ggaatgcgca gatatcagga ggaacaccga tggcgaaggc 660

aggttactgg gcagttactg acgctgagga gcgaaagcat gggtagcgaa caggattaga 720

taccctggta gtccatgctg tcaacggtgg gcgctaggtg tgagaccctt ccacgggttt 780

tgtgccgtag ctaacgtttt aagcgccccg cctggggagt acggccgcaa ggctaaaact 840

caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggattaatt cgatgcaacg 900

cgaagaacct tacctgggtt tgacatacac tggatcgcct cggagacggg gtttcccttt 960

gtggtcggtg tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttgtcctg tgttgccagc acgttgtggt ggggactcac 1080

gggagactgc cggggtgaac tcggaggaag gtggggatga cgtcaaatca tcatgcccct 1140

tatgtccagg gcttcacaca tgctacaatg gtcggtacaa caggttgcga taccgtgagg 1200

tggagctaat ccttttaaag ccggcctcag ttcggattgg ggtctgcaac tcgaccccat 1260

gaagtcggag tcgctagtaa tcgcagatca gcagtgctgc ggtgaatacg ttcccgggcc 1320

ttgtacacac cgcccgtcac gtcatgaaag tcggtaacac ccgaagccca cggcccaacc 1380

cttgtggggg gagtggtcga aggtgggatc ggcgattggg acgaagtcgt aacaaggtag 1440

ccgtaccgga aggtgcg 1457

<210> 726
<211> 1453
<212> DNA
<213> Corynebacterium sp. NML 99-0018

<400> 726
catgcaagtc gaacggaaag gcctctagct tgctaggggt actcgagtgg cgaacgggtg 60

agtaacacgt gggtgatctg ccctgcactt tgggataagc ttgggaaact gggtctaata 120

ccgaatatga ccattgtttg gatgcgatgg tggaaagctt ttgcggtgtg ggatgagcct 180

gcggcctatc agcttgttgg tggggtaatg gcctaccaag gcggcgacgg gtatccggcc 240

tgagagggtg tacggacaca ttgggactga gatacggccc agactcctac gggaggcagc 300

agtggggaat attgcacaat gggcgcaagc ctgatgcagc gacgccgcgt gggggatgac 360

ggccttcggg ttgtaaactc ctttcgccag ggacgaagcg tttttgtgac ggtacctgga 420

taaraagcac cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgttg 480

tccggaatta ctgggcgtaa agagctcgta ggtggtttgt cgcgtcgtct gtgaaatccc 540

ggggcttaac ttcgggcgtg caggcgatac gggcataact tgagtgctgt aggggagact 600

ggaattcctg gtgtagcggt gaaatgcgca ratatcagga ggaacaccga tggcgaaggc 660

aggtctctgg gcagtaactg acgctgagga gcgaaagcat gggtagcgaa caggattaga 720

taccctggta gtccatgccg taaacggtgg gcgctaggtg taggggggctt ccacgtcttc 780

tgtgccgtag ctaacgcatt aagcgccccg cctggggagt acggccgcaa ggctaaaact 840

caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggattaatt cgatgcaacg 900

cgaagaacct tacctgggct tgacatgtac aggatcgggc tagagatagt ctttcccttg 960

tggtctgtat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1020

gtcccgcaac gagcgcaayc cttgtcttat gttgccagca cgttatggtg gggactcatg 1080

agagactgcc ggggttaact cggaggaagg tggggatgac gtcaaatcat catgcccctt 1140

atgtccaggg cttcacacat gctacaatgg tcgatacagt gggcagcgac atcgtgaggt 1200

ggagcgaatc cctgaaagtc ggccttagtt cggattgggg tctgcaactc gaccccatga 1260

agtcggagtc gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacgt catgaaagtt ggtaacaccc gaagccagtg gcctaaactt 1380

gttagggagc tgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtagccgt 1440

accggaaggt gcg 1453

<210> 727
<211> 1522
<212> DNA
<213> Corynebacterium striatum

<400> 727
tttttgtgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggcctg cagcttgctg cgggtactcg agtggcgaac gggtgagtaa 120

cacgtgggtg atctgccttg cacttcggga taagcttggg aaactgggtc taataccgga 180

taggacagct gtttagtgtc agttgtggaa agtttttttcg gtgcaagatg agctcgcggc 240

ctatcagctt gttggtgggg taatggccta ccaaggcgtc gacgggtagc cggcctgaga 300

gggtgtacgg ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg gaagcctgat gcagcgacgc cgcgtggggg atgaaggcct 420

tcgggttgta aactcctttc gacagggacg aagcgtaagt gacggtacct gtataagaag 480

caccggctaa ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg ttgtccggaa 540

ttactgggcg taaagagctc gtaggtggtt tgtcgcgtcg tctgtgaaat tccggggctt 600

aactccgggc gtgcaggcga tacgggctga cttgagtgct gtaggggaga ctggaattcc 660

tggtgtagcg gtgaaatgcg cagatatcag gaggaacacc gatggcgaag gcaggtctct 720

gggcagtaac tgacgctgag gagcgaaagc atgggtagcg aacaggatta gataccctgg 780

tagtccatgc cgtaaacggt gggcgctagg tgtaggggggc ttccacgtct tctgtgccgt 840

agctaacgca ttaagcgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac 960

cttacctggg cttgacatat acaagacagg cgtagagata cgtcctccct tgtggtttgt 1020

atacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctt atgttgccag catttggttg gggactcatg agagactgcc 1140

ggggtcaact cggaggaagg tggggatgac gtcaaatcat catgcccctt atgtccaggg 1200

cttcacacat gctacaatgg tcggtacaac gcgcagcgac actgtgaggt ggagcgaatc 1260

gctgaaagcc ggccttagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1320

gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacgt catgaaagtt ggtaacaccc gaagccagtg gctcaaactc gttagggagc 1440

tgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtagccgt accggaaggt 1500

gcggctggat cacctccttt ct 1522

<210> 728
<211> 1468
<212> DNA
<213> Corynebacterium sundsvallense

<400> 728
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggcca gtgcttgcac 60

tggtgctcga gtggcgaacg ggtgagtaac acgtgagtga tctgccctgc actttgggat 120

aagcctggga aactgggtct aataccggat aggaccatgc tttagatggt gtggtggaaa 180

gtttttttcgg tgtgggatga gcttgcggcc tatcagcttg ttggtggggt aatggcctac 240

caaggcgtcg acgggtagcc ggcctgagag ggtgtacggc cacattggga ctgagatacg 300

gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcgc aagcctgatg 360

cagcgacgcc gcgtggggga tgacggcctt cgggttgtaa actcctttcg caactgacga 420

agctttgtgt gacggtaggt tgagaagaag caccggctaa ctacgtgcca gcagccgcgg 480

taatacgtag ggtgcgagcg ttgtccggaa ttactgggcg taaagagctc gtaggtggtt 540

tgtcgcgtcg tgtgtgaaat tccggggctt aacttcgggg ttgcatacga tacgggcata 600

acttgagtgc tgtaggggag actggaattc ctggtgtagc ggtgaaatgc gcagatatca 660

ggaggaacac cgatggcgaa ggcaggtctc tgggcagtaa ctgacgctga ggagcgaaag 720

catggggagc gaacaggatt agataccctg gtagtccatg ccgtaaacgg tgggcgctag 780

gtgtgaggcc cttccacggg tttcgtgccg tagctaacgc attaagcgcc ccgcctgggg 840

agtacggccg caaggctaaa actcaaagga attgacgggg gcccgcacaa gcggcggagc 900

atgtggatta attcgatgca acgcgaagaa ccttacctgg gcttgacata caccgaatcg 960

ctgcagagat gtggtttccc ttgtggttgg tgtacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtct tatgttgcca 1080

gcatgttgtg gtgggcactt atgagagact gccggggtta actcggagga aggtggggat 1140

gacgtcaaat catcatgccc cttatgtcca gggcttcaca catgctacaa tggtcggtac 1200

aacgcgcagc tacctcgtga ggggacgcga atcgctgaaa gccggtcgta gttcggattg 1260

gggtctgcaa ctcgacccca tgaagtcgga gtcgctagta atcgcagatc agcaacgctg 1320

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca cgtcatgaaa gttggtaaca 1380

cccgaagcca gtggcctgtg aaaaggagct gtcgaaggtg ggatcggcga ttgggacgaa 1440

gtcgtaacaa ggtagccgta ccggaagg 1468

<210> 729
<211> 1522
<212> DNA
<213> Corynebacterium tuberculostearicum

<400> 729
tttttgtgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggccct gcttgcaggg tactcgagtg gcgaacgggt gagtaacacg 120

tgggtgatct gccctgcact tcgggataag cctgggaaac tgggtctaat accggatagg 180

agccattttt agtgtgatgg ttggaaagtt ttttcggtgt aggatgagct cgcggcctat 240

cagcttgttg gtggggtaat ggcctaccaa ggcggcgacg ggtagccggc ctgagagggt 300

ggacggccac attgggactg agatacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga cggccttcgg 420

gttgtaaact cctttcgcta gggacgaagc tttttgtgac ggtacctaga taagaagcac 480

cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgttg tccggaatta 540

ctgggcgtaa agggctcgta ggtggtttgt cgcgtcgtct gtgaaattcc ggggcttaac 600

tccgggcgtg caggcgatac gggcataact tgagtactgt aggggtaact ggaattcctg 660

gtgtagcggt gaaatgcgca gatatcagga ggaacaccga tggcgaaggc aggttactgg 720

gcagttactg acgctgagga gcgaaagcat gggtagcgaa caggattaga taccctggta 780

gtccatgccg taaacggtgg gcgctaggtg tgagggtctt ttcacgactt tcgtgccgta 840

gctaacgcat taagcgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac gcgaagaacc 960

ttacctgggc ttgacataca ccggatcggg ctagagatag tctttccctt tgtggctggt 1020

gtacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctt atgttgccag catttggttg gggactcatg agagactgcc 1140

ggggtcaact cggaggaagg tggggatgac gtcaaatcat catgcccctt atgtccaggg 1200

cttcacacat gctacaatgg tcggtacaac gcgcagcgac actgtgaggt ggagcgaatc 1260

gctgaaagcc ggccttagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1320

gctagtaatc gcagatcagc aatgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacgt catgaaagtt ggtaacaccc gaagccggtg gcccaaactt gttagggagc 1440

cgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtacccgt accggaaggt 1500

gcgggtggat cacctccttt ct 1522

<210> 730
<211> 1502
<212> DNA
<213> Corynebacterium tuscaniae

<220>
<221> modified_base
<222> (674)..(674)
<223> a, c, t, g, unknown or other

<400> 730
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggaaaggccc aagcttgctt gggtgctcga gtggcgaacg ggtgagtaac acgtgggtga 120

tctgccctgc acttcgggat aagcctggga aactgggtct aataccggat aggaccatcg 180

tgttgtggcg gtggtggaaa gttttttcgg tgtgggatga gctcgcggcc tatcagcttg 240

ttggtggggt aatggcctac caaggcgtcg acgggtagcc ggcctgagag ggtgtacggc 300

cacattggga ctgagatacg gcccagactc ctacgggagg cagcagtggg gaatattgca 360

caatgggcgc aagcctgatg cagcgacgcc gcgtggggga tgacggcctt cgggttgtaa 420

actcctttcg ccagggacga agcgttatgt gacggtacct ggataagaag caccggctaa 480

ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg ttgtccggaa ttactgggcg 540

taaagagctc gtaggtggtt tgtcgcgtcg tttgtgtaat accgcagctt aactgtgggg 600

ttgcaggcga tacgggcata acttgagtgc tgtaggggag actggaattc ctggtgtagc 660

ggtggaatgc gcanatatca ggaggaacac cgatggcgaa ggcaggtctc tgggcagtaa 720

ctgacgctga ggagcgaaag catgggtagc gaacaggatt agataccctg gtagtccatg 780

ccgtaaacgg tgggcgctag gtgtgagtcc cttccacggg gttcgtgccg tagctaacgc 840

attaagcgcc ccgcctgggg agtacggccg caaggctaaa actcaaagga attgacgggg 900

gcccgcacaa gcggcggagc atgtggatta attcgatgca acgcgaagaa ccttacctgg 960

gcttgacata caccggatcg ctgcagagat gtagtttccc ttgtggctgg tgtacaggtg 1020

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccttgtct tatgttgcca gcatttggtt ggggactcat gagagactgc cggggttaac 1140

tcggaggaag gtggggatga cgtcaaatca tcatgcccct tatgtccagg gcttcacaca 1200

tgctacaatg gtcggtacaa cgcgcagcta ctctgtgagg ggatgcgaat cgctgaaagc 1260

cggccttagt tcggattggg gtctgcaact cgaccccatg aagtcggagt cgctagtaat 1320

cgcagatcag caacgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg 1380

tcatgaaagt tggtaacacc cgaagccagt ggcctaaacg tgttagggag ctgtcgaagg 1440

tgggatcggc gattgggacg aagtcgtaac aaggtagccg taccggaagg tgcggctgga 1500

tc 1502

<210> 731
<211> 1508
<212> DNA
<213> Corynebacterium ulcerans

<400> 731
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggaaaggccc cttcgggggt actcgagtgg cgaacgggtg agtaacacgt gggtgatctg 120

cctcgtactc tgggataagc ctgggaaact gggtctaata ctggatagga ccgcacttta 180

gtgtgtgtgg tggaaagttt tttcggtacg agatgagccc gcggcctatc agcttgttgg 240

tggggtaatg gcctaccaag gcgtcgacgg gtagccggcc tgagagggtg gacggccaca 300

ttgggactga gatacggccc agactcctac gggaggcagc agtggggaat attgcacaat 360

gggcgcaagc ctgatgcagc gacgccgcgt gagggatgac ggcctcgggt tgtaaacctc 420

tttcgacagg gacgaagctt ttgtgacggt acctgtataa gaagcaccgg ctaactacgt 480

gccagcagcc gcggtaatac gtagggtgcg agcgttgtcc ggaattactg ggcgtaaaga 540

gctcgtaggt ggtttgtcgc gtcgtctgtg aaattccggg gcttaactcc gggcgtgcag 600

gcgatacggg cataacttga gtgctgtagg ggagactgga attcctggtg tagcggtgga 660

atgcgcagat atcaggagga acaccgatgg cgaaggcagg tctctgggca gtaactgacg 720

ctgaggagcg aaagcatggg gagcgaacag gattagatac cctggtagtc catgccgtaa 780

acggtgggcg ctaggtgtga gggtcttcca cgactttcgt gccgtagcta acgcattaag 840

cgccccgcct ggggagtacg gccgcaaggc taaaactcaa aggaattgac gggggcccgc 900

acaagcggcg gagcatgtgg attaattcga tgcaacgcga agaaccttac ctgggcttga 960

catatacaag atcggcgtag agatacgttt tcccttgtgg tttgtataca ggtggtgcat 1020

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt 1080

gtcttatgtt gccagcacgt tatggtgggg actcatgaga gactgccggg gttaactcgg 1140

aggaaggtgg ggatgacgtc aaatcatcat gccccttatg tccagggctt cacacatgct 1200

acaatggtcg gtacaacgcg ttgcgagcct gtgagggtga gcgaatcgct gaaagccggc 1260

ctcagttcgg attggggtct gcaactcgac cccatgaagt cggagtcgct agtaatcgca 1320

gatcagcaac gctgcggtga atacgttccc gggccttgta cacaccgccc gtcacgtcat 1380

gaaagttggt aacacccgaa gcccatggcc caaccagttt gtctgggggg agtggtcgaa 1440

ggtgggatcg gcgattggga cgaagtcgta acaaggtagc cgtaccggaa ggtgcggctg 1500

gatcacct 1508

<210> 732
<211> 1401
<212> DNA
<213> Corynebacterium urealyticum

<220>
<221> modified_base
<222> (830)..(830)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (882)..(882)
<223> a, c, t, g, unknown or other

<400> 732
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg gaaaggcccc tgcttgcagg 60

gtactcgagt ggcgaacggg tgagtaacac gtgggtgatc tgcccttcac ttcgggataa 120

gcctgggaaa ctgggtctaa taccggatag gaccaatctt tagtgtggtt ggtggaaagt 180

tttttcggtg gaggatgagc ccgcggccta tcagcttgtt ggtggggtaa tggcctacca 240

aggcgacgac gggtagccgg cctgagaggg tggacggcca cattgggact gagacacggc 300

ccagactcct acgggaggca gcagtgggga atattgcaca atgggcggaa gcctgatgca 360

gcgacgccgc gtgagggatg acggccttcg ggttgtaaac ctctttcgct agggaagaag 420

ccttcgggtg acggtacctg gataagaagc accggctaac tacgtgccag cagccgcggt 480

aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt aaagagctcg taggtggttt 540

gtcgcgtcgt ctgtgaaatt ccggggctta actccgggcg tgcaggcgat acgggcaaac 600

tggagtgctg taggggagac tggaattcct ggtgtagcgg tggaatgcgc agatatcagg 660

aggaacaccg atggcgaagg caggtctctg ggcagttact gacactgagg agcgaaagca 720

tgggtagcga acaggattag ataccctggt agtccatgcc gtaaacggtg ggcgctaggt 780

gtggggattt ttcacgattt ccgtgccgta gctaacgcat taagcgcccn gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggc cngcacaagc ggcggagcat 900

gtggattaat tcgatgcaac gcgaagaacc ttacctgggc ttgacataca ccggatcgct 960

gcagagatgt agtttccctt cggggctggt gtacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgta acgagcgcaa cccttgtctt gtgttgccag 1080

cacgttgtgg tggggactca caagagactg ccggggttaa ctcggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgtccag ggcttcacac atgctacaat ggtcgataca 1200

gtgggttgcg atgccgtgag gtggagctaa tccctgaaag tcggcctcag ttcggattgg 1260

agtctgcaac tcgactccat gaagtcggag tcgctagtaa tcgcagatca gcaacgctgc 1320

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcgc gtcatgaaag ttggtaacac 1380

ccgaacgcag tggcctaaac t 1401

<210> 733
<211> 1480
<212> DNA
<213> Corynebacterium ureicelerivorans

<400> 733
ggcgtgctta acacatgcaa gtcgaacgga aaggcccaag cttgcttggg tactcgagtg 60

gcgaacgggt gagtaacacg tgggtgatct gccctgcact tcgggataag cctgggaaac 120

tgggtctaat actggatagg accacttctt ggatgttgtg gtggaaagtt ttttcggtgt 180

gggatgagct cgcggcctat cagcttgttg gtggggtaat ggcctaccaa ggcgtcgacg 240

ggtagccggc ctgagagggt gtacggccac attgggactg agatacggcc cagactccta 300

cgggaggcag cagtggggaa tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg 360

tgggggatga cggccttcgg gttgtaaact cctttcgcta gggacgaagc gtttttgtga 420

cggtacctgg agaagaagca ccggctaact acgtgccagc agccgcggta atacgtaggg 480

tgcagcgttg tccggaatta ctgggcgtaa agagctcgta ggtggtttgt cgcgtcgttt 540

gtgtaagccc gcagcttaac tgcgggactg caggcgatac gggcataact tgagtgctgt 600

aggggagact ggaattcctg gtgtagcggt ggaatgcgca gatatcagga ggaacaccga 660

tggcgaaggc aggtctctgg gcagtaactg acgctgagga gcgaaagcat gggtagcgaa 720

caggattaga taccctggta gtccatgccg taaacggtgg gcgctaggtg tgagtccctt 780

ccacggggtt cgtgccgtag ctaacgcatt aagcgccccg cctggggagt acggccgcaa 840

ggctaaaact caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggattaatt 900

cgatgcaacg cgaagaacct tacctgggct tgacatacac cagatcgtcg tagagatacg 960

gtttcccttt gtggttggtg tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac ccttgtctta tgttgccagc acgttatggt 1080

ggggactcgt gagagactgc cggggttaac tcggaggaag gtggggatga cgtcaaatca 1140

tcatgcccct tatgtccagg gcttcacaca tgctacaatg gtcggtacaa cgcgcatgcg 1200

agcctgtgag ggtgagcgaa tcgctgtaaa gccggtcgta gttcggattg gggtctgcaa 1260

ctcgacccca tgaagtcgga gtcgctagta atcgcagatc agcaacgctg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca cgtcatgaaa gttggtaaca cccgaagcca 1380

gtggcctgtc atgggagctg tcgaaggtgg gatcggcgat tgggacgaag tcgtaacaag 1440

gtagccgtac cggaaggtgc ggctggatca cctcctttct 1480

<210> 734
<211> 1436
<212> DNA
<213> Corynebacterium variabile

<400> 734
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggccc tgcttgcagg 60

gtactcgagt ggcgaacggg tgagtaacac gtgggtgatc tgccctgcac ttcgggataa 120

gcctgggaaa ctgggtctaa taccggatag gaccatcgtt tagtgtcggt ggtggaaagt 180

ttttcggtgc aggatgagct cgcggcctat cagcttgttg gtggggtaat ggcctaccaa 240

ggcgtcgacg ggtagccggc ctgagagggt ggacggccac attgggactg agacacggcc 300

cagactccta cgggaggcag cagtggggaa tattgcacaa ttgggcgcaa gcctgatgca 360

gcgacgccgc gtgggggatg aaggccttcg ggttgtaaac tcctttcaac catgacgaag 420

cattatgtga cggtagtggt agaagaagca ccggctaact acgtgccagc agccgcggta 480

atacgtaggg tgcgagcgtt gtccggaatt actgggcgta aagagctcgt aggtggtttg 540

tcgcgtcgtc tgtgaaattc cggggcttaa ctccgggcgt gcaggcgata cgggcataac 600

ttgagtgctg taggggagac tggaattcct ggtgtagcgg tgaaatgcgc agatatcagg 660

aggaacaccg atggcgaagg caggtctctg ggcagtaact gacgctgagg agcgaaagca 720

tgggtagcga acaggattag ataccctggt agtccatgcc gtaaacggtg ggcgctaggt 780

gtgggggtct tccacgactt ctgtgccgta gctaacgcat taagcgcccc gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat 900

gtggattaat tcgatgcaac gcgaagaacc ttacctgggc ttgacatatg ccggatcgrc 960

gcagagatgc gttttccctt gtggtcggta tacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtcttg tgttgccagc 1080

acgttatggt ggggactcgc gagagactgc cggggttaac tcggaggaag gtggggatga 1140

cgtcaaatca tcatgcccct tatgtccagg gcttcacaca tgctacaatg gtcggtacag 1200

tgggttgcta caccgtgagg tggtgctaat cccttaaagc cggtctcagt tcggattgga 1260

gtctgcaact cgactccatg aagtcggagt cgctagtaat cgcagatcag caacgctgcg 1320

gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg tcatgaaagt tggtaacacc 1380

cgaagccagt ggcccaaact cgttagggag ctgtcgaagg tgggatcggc gattgg 1436

<210> 735
<211> 1362
<212> DNA
<213> Corynebacterium xerosis

<220>
<221> modified_base
<222> (185)..(185)
<223> a, c, t, g, unknown or other

<400> 735
agtcgaacgg taaggcccca gcttgctggg gtacacgagt ggcgaacggg tgagtaacac 60

gtgggtgacc tgccccgcac ttcgggataa gcctgggaaa ctgggtctaa taccggatag 120

gaccgcaccg tgagggtgtg gtggaaagtt tttcggtgtg ggatgggccc gcggcctatc 180

agctngttgg tggggtaatg gcctaccaag gcggcgacgg gtagccggcc tgagagggtg 240

gacggccaca ttgggactga gacacggccc agactcctac gggaggcagc agtggggaat 300

attgcacaat gggcggaagc ctgatgcagc gacgccgcgt gggggatgac ggccttcggg 360

ttgtaaactc ctttcaccat cgacgaaggt tttctgacgg tagatggaga agaagcaccg 420

gctaactacg tgccagcagc cgcggtaata cgtagggtgc gagcgttgtc cggaattact 480

gggcgtaaag agctcgtagg tggtttgtcg cgtcgtctgt gaaattccgg ggcttaactc 540

cgggcgtgca ggcgatacgg gcataacttg agtactgtag gggagactgg aattcctggt 600

gtagcggtga aatgcgcaga tatcaggagg aacaccggtg gcgaaggcgg gtctctgggc 660

agtaactgac gctgaggagc gaaagcatgg gtagcgaaca ggattagata ccctggtagt 720

ccatgccgta aacggtgggc gctaggtgta ggggtcttcc acgacttctg tgccgtagct 780

aacgcattaa gcgccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga 840

cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg aagaacctta 900

cctgggcttg acatatacgg gaccgggcca gagatggtcc ttcccttgtg gctcgtatac 960

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1020

gcgcaaccct tgtcttatgt tgccagcacg taatggtggg gactcgtgag aaactgccgg 1080

ggtcaactcg gaggaaggtg gggatgacgt caaatcatca tgccccttat gtccagggct 1140

tcacacatgc tacaatggtc ggtacagtgg gttgcgatgc cgtgaggtgg agctaatccc 1200

tgaaagccgg tctcagttcg gatcggggtc tgcaactcga ccccgtgaag tcggagtcgc 1260

tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc 1320

cgtcacgtca tgaaagtcgg taacacccga agccagtggc cc 1362

<210> 736
<211> 1544
<212> DNA
<213> Coxiella burnetii

<400> 736
tttaattgaa gagtttgatt ctggctcaga ttgaacgcta gcggcatgct taacacatgc 60

aagtcgaacg gcagcgcggg gagcttgctc cctggcggcg agtggcggac gggtgagtaa 120

tgcgtaggaa tctaccttgt agtgggggat aacctgggga aactcgggct aataccgcat 180

aatctctttg gagcaaagcg ggggatcttc ggacctcgtg ctataagatg agcctacgtc 240

ggattagctt gttggtgggg taatggccta ccaaggcgac gatccgtagc tggtctgaga 300

ggacgatcag ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgg acaatggggg aaaccctgat ccagcaatgc cgcgtgtgtg aagaaggcct 420

tcgggttgta aagcactttc ggtggggaag aaattctcaa gggtaatatc cttgggcgtt 480

gacgttaccc acagaagaag cactggctaa ctctgtgcca gcagccgcgg taatacagag 540

agtgcaagcg ttaatcggaa tcactgggcg taaagcgcgc gtaggtggat atttaagtcg 600

gatgtgaaag ccctgggctt aacctgggaa ttgcatccga tactgggtat cttgagtatg 660

gtagagggaa gtggaatttc cggtgtagcg gtgaaatgcg tagatatcgg aaagaacacc 720

agtggcgaag gcgacttcct ggaccaatac tgacactgag gcgcgaaagc gtggggagca 780

aacaggatta gagaccctgg tagtccacgc cgtcaacgat gagaactagc tgttgggaag 840

ttcacttctt agtagcgaag ctaacgcgtt aagttctccg cctggggagt acggccgcaa 900

ggttaaaact caaagaaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgatgcaacg cgaaaaacct tacctaccct tgacatcctc ggaacttgtc agagatgatt 1020

tggtgccttc gggaaccgag tgacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgta acgagcgcaa ccctcgtcct tagttgccag cgagtcaagt 1140

cgggaactct aaggagactg ccggtgataa accggaggaa ggtggggatg atgtcaagtc 1200

atcatggccc ttacgggtag ggctacacac gtgctacaat gggcagtaca aagggttgcc 1260

aagccgcgag gtggagctaa tcccagaaaa ctgctcgtag tccggattgg agtctgcaac 1320

tcgactccat gaagttggaa tcgctagtaa tcgcgaatca gcatgtcgcg gtgaatacgt 1380

tctcgggcct tgtacacacc gcccgtcaca ccatgggagt gaattgtacc agaagcgggt 1440

aggctaacct tcgggaggcc gctcaccacg gtatgatcca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct tact 1544

<210> 737
<211> 1507
<212> DNA
<213> Cronobacter malonaticus

<400> 737

agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgaac 60

ggtaacagag agcagcttgc tgctctgctg acgagtggcg gacgggtgag taatgtctgg 120

gaaactgcct gatggagggg gataactact ggaaacggta gctaataccg cataacgtct 180

tcggaccaaa gtgggggacc ttcgggcctc atgccatcag atgtgcccag atgggattag 240

ctagtaggtg gggtaaaggc tcacctaggc gacgatccct agctggtctg agaggatgac 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt atgaagaagg ccttcgggtt 420

gtaaagtact ttcagcgagg aggaagggat tgtggttaat aaccgcagtc attgacgtta 480

ctcgcagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga 600

aatccccggg ctcaacctgg gaactgcatt tgaaactggc aagcttgagt ctcgtagagg 660

ggggtagaat tccaggtgta gcggtgaaat gcgtagagat ctggaggaat accggtggcg 720

aaggcggccc cctggacgaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgtcgact tggaggttgt gcccttgagg 840

cgtggcttcc ggagctaacg cgttaagtcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttacctg gtcttgacat ccagagaatc ctgcagagat gcgggagtgc 1020

cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcacgta atggtgggaa 1140

cccaaaggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacga ccagggctac acacgtgcta caatggcgca tacaaagaga agcgaactcg 1260

cgagagcaag cggacctcat aaagtgcgtc gtagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgtgg atcagaatgc cacggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt aggtagctta 1440

accttcggga gggcgcttac cactttgtga ttcatgactg gggtgaagtc gtaacaaggt 1500

agccgta 1507

<210> 738
<211> 1542
<212> DNA
<213> Cronobacter sakazakii

<400> 738
aattgaagag tttgatcatg gctcagattg aacgctggcg gcaggcctaa cacatgcaag 60

tcgaacggta acagggagta gcttgctgct ctgctgacga gtggcggacg ggtgagtaat 120

gtctgggaaa ctgcctgatg gaggggggata actactggaa acggtagcta ataccgcata 180

acgtctacgg accaaagtgg gggaccttcg ggcctcatgc catcagatgt gcccagatgg 240

gattagctag taggtggggt aacggctcac ctaggcgacg atccctagct ggtctgagag 300

gatgaccagc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 360

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 420

cgggttgtaa agtactttca gcggggagga aggcgttgtg gttaataacc acagcgattg 480

acgttacccg cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 540

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggtct gttaagtcag 600

atgtgaaatc cccgggctca acctgggaac tgcatttgaa actggcaggc ttgagtctcg 660

tagaggggg tagaattcca ggtgtagcgg tgaaatgcgt agagatctgg aggaataccg 720

gtggcgaagg cggccccctg gacgaagact gacgctcagg tgcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgcc gtaaacgatg tcgacttgga ggttgtgccc 840

ttgaggcgtg gcttccggag ctaacgcgtt aagtcgaccg cctggggagt acggccgcaa 900

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgatgcaacg cgaagaacct tacctggtct tgacatccag agaatcctgc agagatgcgg 1020

gagtgccttc gggaactctg agacaggtgc tgcatggctg tcgtcagctc gtgttgtgaa 1080

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cggttcggcc 1140

gggaactcaa aggagactgc cggtgataaa ccggaggaag gtggggatga cgtcaagtca 1200

tcatggccct tacgaccagg gctacacacg tgctacaatg gcgcatacaa agagaagcga 1260

cctcgcgaga gcaagcggac ctcataaagt gcgtcgtagt ccggattgga gtctgcaact 1320

cgactccatg aagtcggaat cgctagtaat cgtggatcag aatgccacgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcacac catgggagtg ggttgcaaaa gaagtaggta 1440

gcttaacctt cgggagggcg cttaccactt tgtgattcat gactggggtg aagtcgtaac 1500

aaggtaaccg taggggaacc tgcggttgga tcacctcctt ac 1542

<210> 739
<211> 312
<212> DNA
<213> Cronobacter turicensis

<220>
<221> modified_base
<222> (293)..(294)
<223> a, c, t, g, unknown or other

<400> 739
ctcaaaggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca agtcatcatg 60

gcccttacga ccagggctac acacgtgcta caatggcaga tacaaagaga agcgacctcg 120

cgagagcaag cggaactcat aaagtgtgtc gtagtccgga ttggagtctg caactcgact 180

ccatgaagtc ggaatcgcta gtaatcgtag atcagaatgc cacggtgaat acgttcccgg 240

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt agnnagctta 300

accttcggga gg 312

<210> 740
<211> 1448
<212> DNA
<213> Cryptobacterium curtum

<400> 740
gagtttgatc ctggctcagg atgaacgctg gcggcgcgcc taacacatgc aagtcgaacg 60

attaaaccgc ccttgggcgg atatacagtg gcgaacgggt gagtaacgcg tgaccaacct 120

tccccccgca tcgggacaac ccggggaaac ccgggctaat accggatatg ccgggtatgg 180

cgcatgtcat acccaggaaa gcttttgcgg cgggggatgg ggtcgcgtcc catcaggtag 240

acggcggggt agtagcccac cgtgccaacg acgggtagcc gggttgagag accgaccggc 300

cacattggga ctgagatacg gcccagactc ctacgggagg cagcagtggg gaatcttgcg 360

caatggggga aaccctgacg cagcgacgcc gcgtgcggga tggaggcctt cgggccgtga 420

accgctttca gcagggaaga cattaaggac ggtacctgca gaagaagccc cggctaacta 480

cgtgccagca gccgcggtaa tacgtagggg gcgagcgtta tccggattca ttgggcgtaa 540

agcgcgcgca ggcggcgcac caggcgggat ctcgaaaccg ggggctcaac ctccgggcgg 600

atcccgaacc ggtgtgctcg agtgcggtag aggaagtcgg aattcccggt gtagcggtga 660

aatgcgcaga tatcgggaag aacaccgatg gcgaaggcag acttctgggc cgacactgac 720

gctcaggcgc gaaagctggg ggagcgaaca ggattagata ccctggtagt cccagccgta 780

aacgatgggc actaggtgtg gggggcattt gccttccgtg ccgcagctaa cgcattaagt 840

gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg gggcccgca 900

caagcagcgg agcatgtggc ttaattcgaa gcaacgcgaa gaaccttacc agggcttgac 960

atgtaggtga agcgacagag atgtcgcagc cgaaaggagc ctacacaggt ggtgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctgcc 1080

gcatgttgcc agcatttagt tggggactca tgcgggaccg ccggcggcaa gccggaggaa 1140

ggcggggacg acgtcaagtc atcatgcccc ttatgccctg ggctgcacac gtgctacaat 1200

ggccggcaca acgggatgca aaggcgcgag cccaagcgga tcccccaaag ccggtcccag 1260

ttcggatcgg aggctgcaac ccgcctccgt gaagccggag ttgctagtaa tcgcggatca 1320

gcatgccgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacccgagt 1380

cgtctgcacc cgaagtcgcc ggccgaaccc ttttgggacg gaggcgccga aggcgcgggg 1440

gataaggg 1448

<210> 741
<211> 1400
<212> DNA
<213> Cupriavidus metallidurans

<400> 741
catgcaagtc gaacggcagc gcggacttcg gtctggcggc gagtggcgaa cgggtgagta 60

atacatcgga acgtaccctg ttgtggggga taactagtcg aaagattagc taataccgca 120

tacgacctga gggtgaaagt gggggaccgc aaggcctcac gcagcaggag cggccgatgt 180

ctgattagct agttggtggg gtaaaggccc accaaggcga cgatcagtag ctggtctgag 240

aggacgatca gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 300

gggaattttg gacaatgggg gcaaccctga tccagcaatg ccgcgtgtgt gaagaaggcc 360

ttcgggttgt aaagcacttt tgtccggaaa gaaatcgcgc tggttaatac ctggcgtgga 420

tgacggtacc ggaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 480

gggtgcgagc gttaatcgga attactgggc gtaaagcgtg cgcaggcggt tttgtaagac 540

aggcgtgaaa tccccgggct taacctggga attgcgcttg tgactgcaag gctagagtgc 600

gtcagagggg ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 660

cgatggcgaa ggcagccccc tgggacgtga ctgacgctca tgcacgaaag cgtggggagc 720

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcaactag ttgttgggga 780

ttcattttct cagtaacgta gctaacgcgt gaagttgacc gcctggggag tacggtcgca 840

agattaaaac tcaaaggaat tgacggggac ccgcacaagc ggtggatgat gtggattaat 900

tcgatgcaac gcgaaaaacc ttacctaccc ttgacatgcc actaacgaag cagagatgca 960

ttaggtgccc gaaagggaaa gtggacacag gtgctgcatg gctgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tctctagttg ctacgcaaga 1080

gcactctaga gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaagtcctc 1140

atggcccttа tgggtagggc ttcacacgtc atacaatggt gcgtacagag ggttgccaac 1200

ccgcgagggg gagctaatcc cagaaaacgc atcgtagtcc ggatcgtagt ctgcaactcg 1260

actacgtgaa gctggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc 1320

cgggtcttgt acacaccgcc cgtcacacca tgggagtggg ttttgccaga agtagttagc 1380

ctaaccgcaa ggagggcgat 1400

<210> 742
<211> 1507
<212> DNA
<213> Cytophaga xylanolytica

<400> 742
gtttgatcct ggctcaggat gaacgctagc gacaggccta acacatgcaa gtcgaggggc 60

agcacgtctt cggatggtgg cgaccggcgc acgggtgagt aacgcgtatg taacctgcct 120

acaacagggg gatagctcgc tgaaaagcga attaagaccg cataagacca cgctttcgca 180

tgttagcgtg gtaaaatatt tataggttgt agatgggcat gcgtgacatt agctagttgg 240

taaggtaacg gcttaccaag gcaacgatgt ctaggggttc tgagaggaag gtcccccaca 300

ctggtactga gacacggacc agactcctac gggaggcagc agtgaggaat attggtcaat 360

gggcgagagc ctgaaccagc catgtcgcgt gcaggatgac ggccctacgg gttgtaaact 420

gcttttgtac gggaagaaaa aacgccacgt gtggtgtctt gccggtaccg tacgaataag 480

gatcggctaa ctccgtgcca gcagccgcgg taatacggag gatccgagcg ttatccggat 540

ttattgggtt taaagggtgc gtaggcggga gattaagtca gtggtgaaag tttgcggctc 600

aaccgtaaaa ttgccattga tactggtttt cttgagtaca gttgaggtag gcggaatgtg 660

gtgtgtagcg gtgaaatgct tagatatacc acagaacacc gattgcgaag gcagcttact 720

aaagtgtaac tgacgctgat gcacgaaagc gtggggatca aacaggatta gataccctgg 780

tagtccacgc agtaaacgat gatcactcgt tgtttgcgat acattgcaag tgaccaagag 840

aaatcgataa gtgatccacc tggggagtac ggccgcaagg ctgaaactca aaggaattga 900

cgggggcccg cacaagcgga ggaacatgtg gtttaattcg atgatacgcg aggaacctta 960

cctgggttta aatggggagt gacagctgcc gaaaggtggt cttcttcgga cactcttcaa 1020

ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc gggttaagtc ccataacgag 1080

cgcaacccac gtcgttagtt gccatcaggt satgctgggc actctaacga gactgccggt 1140

gtaaaccgcg aggaaggtgt ggatgacgtc aaatcagcac ggcccttaca tccagggcta 1200

cacacgtgtt acaatggccg gtacagaggg ctgctaccat gcgaatggat gctaatccta 1260

aaaaccggtc ccagttcgga ttggagtctg caacccgact ccatgaagct ggattcgcta 1320

gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcaagccatg gaagctgagg gtacctaaag tctgtcaccg taaggagcgg cctagggtaa 1440

aattggtaac tggggctaag tcgtaacaag gtagccgtac cggaaggtgc ggctggatca 1500

cctcctt 1507

<210> 743
<211> 1325
<212> DNA
<213> Deferribacteres sp. oral clone JV001

<400> 743
ggagtttgat cctggctcag gatgaacgct ggcggcgtgc gtaacacatg caagttgaac 60

gagtagcgga cgggtgagta caacatgaga agctgtcctt cagcgggggg caacgtctgg 120

aagcggacgc taatacccca tagtaaaggc gcgacgggag gtactcgtgt cctatcagct 180

agttggtgag gtaacggctc accaaggcga cgacgggtag ccggcctgag agggtgaccg 240

gccacactgg aactgagata cggtccagac tcctacggga ggcagcagtg gggaatattg 300

ggcaatggga ggaatcctga cccagcgacg ccgcgtgaac gaagacggcc ttcgggttgt 360

aaagttcttt tatgtgggaa gatgacggta ccacatgaat aagccccggc taactacgtg 420

ccagcagccg cggtaatacg taggggcga gcgttgtccg gaattactgg gcgtaaaggg 480

cacgcaggct gtgcttcaag tcagctgtaa aaggatgcgg cttaaccgtg ttatgcagtt 540

gagactgagg tgctggagta ccggagaggc aagtggaatt cccagtgtag cggtgaaatg 600

cgtagatatt gggaagaaca tcggtggcga aggcgacttg ctggacggac tgacgctgag 660

gtgcgaaagc cagggtagcg aacgggatta gataccccgg tagtcctggc tgtaaacgat 720

gaatgctagg tgtgcgagtt ggtgtgccgc agttaacgcg ataagcattc cgcctgggga 780

gtacggtcgc aagattgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 840

cgtggtttaa ttcgatgcaa accgaagaac cttacctggg tttgacatgc acaggtgctg 900

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cctgcgatta gttgccagcg gccgggcact ctaatgggac tgccatcgac aagatggagg 1020

aaggtgggga tgacgtcaag tcatcatggc ccttatgtcc agggcgacac acgtgctaca 1080

atggccggca gagggaagcg aggctgtgag gttgagcgga tcccctccgg tctcagttcg 1140

gatgaagtct gcaattcgac ttcagaagct ggaatcgcta gtaatcgcag atcagccaag 1200

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacc cgagccgggt 1260

gtacccgaag ccggtgccta aggagccgtc gaaggtgtgt ctggtgaggg gggtgaagtc 1320

gtaac 1325

<210> 744
<211> 1325
<212> DNA
<213> Deferribacteres sp. oral clone JV006

<400> 744
ggagtttgat catggctcag gatgaacgct ggcggcgtgc gtaacacatg caagttgaac 60

gagtagcgga cgggtgagta aagcatgaga atctgtcctg tcgaggggga taacgttcgg 120

aaacggaccc taatacccca tagtaaaggc gcggcaggag gagctcgtgt cctatcagct 180

agttggtgag gtaacggctc accaaggctt cgacgggtag ccggcctgag agggtgaccg 240

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 300

ggcaatggga gaaatcctga cccagcgacg ccgcgtgaac gaagacggcc ttcgggttgt 360

aaagttcttt tatgtgggaa gatgacggta ccacatgaat aagccccggc taactacgtg 420

ccagcagccg cggtaatacg taggggcga gcgttgtccg gaattactgg gcgtaaaggg 480

cacgcaggct gtgcttcaag tcagctgtaa aaggatgcgg cttaaccgtg ttatgcagtt 540

gagactgagg tgctggagta ccggagaggc aagtggaatt cccagtgtag cggtgaaatg 600

cgtagatatt gggaagaaca tcggtggcga aggcgacttg ctggacggac tgacgctgag 660

gtgcgaaagc cagggtagcg aacgggatta gataccccgg tagtcctggc cgtaaacgat 720

gaatgctagg tgtgcgagtt ggtgtgccgc agttaacgcg ataagcattc cgcctgggga 780

gtacggtcgc aagattgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 840

cgtggtttaa ttcgatgcaa accgaagaac cttacctggg tttgacatgc acaggtgctg 900

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cctgcgatta gttgccagcg atcgggcact ctaatgggac tgccatcgac aagatggagg 1020

aaggtgggga tgacgtcaag tcatcatggc ccttatgtcc agggcgacac acgtgctaca 1080

atggccggca gagggaagcg acactgcgag gtgaagcgga tcccatccgc tctcagttcg 1140

gatgaagtct gcaattcgac ttcagaagtt ggaatcgcta gtaatcgcag atcaaccaag 1200

ctgcggtgaa tccgtccccg ggccttgtac acaccgcccg tcacaccacc cgagccgggt 1260

gtacccgagg ccggtgccta aggagccgtc gaaggtgtgt ctggtgaggg gggtgaagtc 1320

gtaac 1325

<210> 745
<211> 1325
<212> DNA
<213> Deferribacteres sp. oral clone JV023

<400> 745
ggagtttgat cctggctcag gatgaacgct ggcggcgtgc gtaacacatg caagttgaac 60

gagtagcgga cgggtgagta aagcatgaga atctgtcctg ccgaggggga taacgttcgg 120

aaacggaccc taatacccca tagtaaaggc gcggcaggag gagctcgtgt cctatcagct 180

ggttggtgag gtaagggctc accaaggctt cgacgggtag ccggcctgag agggtgaccg 240

gccacactgg aactgagaga cggtccagac tcctacggga ggcagcagtg gggaatattg 300

ggcaatggga ggaatcctga cccagcgacg ccgcgtgaac gaagacggcc ttcgggttgt 360

aaagttcttt tatgtgggaa gatgacggta ccacatgaat aagccccggc taactacgtg 420

ccagcagccg cggtaatacg taggggggcga gcgttgtccg gaattactgg gcgtaaaggg 480

cacgcaggct gtgcttcaag tcagctgtaa aaggatgcgg cttaaccgtg ttatgcagtt 540

gagactgagg tgctggagta ccggagaggc aagtggaatt cccagtgtag cggtgaaatg 600

cgtagatatt gggaagaaca tcggtggcga aggcgacttg ctggacggac tgacgctgag 660

gtgcgaaagc cagggtagcg aacgggatta gataccccgg tagtcctggc ggtaaacgat 720

gaatgctagg tgtgcgagtt ggtgtgccgc agttaacgcg ataagcattc cgcctgggga 780

gtacggtcgc aagattgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 840

cgtggtttaa ttcgatgcaa accgaagaac cttacctggg tttgacatgc acaggtgctg 900

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cctgcgatta gttgctaacg gccgagcact ctaatgggac tgccatcgac aagatggagg 1020

aaggtgggga tgacgtcaag tcatcatggc ccttatgtcc agggcgacac acgtgctaca 1080

atggccggca gagggaagcg aggctgtgag gttgagcgga tcccctccgg tcacagttcg 1140

gatgaagtct gcaattcgac ttcagaagct ggaatcgcta gtaatcgcag atcagccaag 1200

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacc cgagccgggt 1260

gtacccgaag ccggtgccta aggagccgtc gaaggtgtgt ctggtgaggg gggtgaagtc 1320

gtaac 1325

<210> 746
<211> 1502
<212> DNA
<213> Deinococcus radiodurans

<400> 746
tttatggaga gtttgatcct ggctcagggt gaacgctggc ggcgtgctta agacatgcaa 60

gtcgaacgcg gtcttcggac cgagtggcgc acgggtgagt aacacgtaac tgacctaccc 120

agaagtcacg aataactggc cgaaaggtcc gctaatacgt gatgtggtga tgcaccgtgg 180

tgcatcacta aagatttatc gcttctggat ggggttgcgt tccatcagct ggttggtggg 240

gtaaaggcct accaaggcga cgacggatag ccggcctgag agggtggccg gccacagggg 300

cactgagaca cgggtcccac tcctacggga ggcagcagtt aggaatcttc cacaatgggc 360

gcaagcctga tggagcgacg ccgcgtgagg gatgaaggtt ttcggatcgt aaacctctga 420

atctgggacg aaagagcctt agggcagatg acggtaccag agtaatagca ccggctaact 480

ccgtgccagc agccgcggta atacggaggg tgcaagcgtt acccggaatc actgggcgta 540

aagggcgtgt aggcggaaat ttaagtctgg ttttaaagac cggggctcaa cctcggggat 600

ggactggata ctggatttct tgacctctgg agaggtaact ggaattcctg gtgtagcggt 660

ggaatgcgta gataccagga ggaacaccaa tggcgaaggc aagttactgg acagaaggtg 720

acgctgaggc gcgaaagtgt ggggagcaaa ccggattaga tacccgggta gtccacaccc 780

taaacgatgt acgttggcta agcgcaggat gctgtgcttg gcgaagctaa cgcgataaac 840

gtaccgcctg ggaagtacgg ccgcaaggtt gaaactcaaa ggaattgacg ggggcccgca 900

caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac 960

atgctaggaa ctttgcagag atgcagaggt gcccttcggg gaacctagac acaggtgctg 1020

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cttgccttta gttgtcagca ttcagttgga cactctagag ggactgccta tgaaagtagg 1140

aggaaggcgg ggatgacgtc tagtcagcat ggtccttacg tcctgggcga cacacgtgct 1200

acaatgggta ggacaacgcg cagcaaaccc gcgagggtaa gcgaatcgct aaaacctatc 1260

cccagttcag atcggagtct gcaactcgac tccgtgaagt tggaatcgct agtaatcgcg 1320

ggtcagcata ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg 1380

ggagtagatt gcagttgaaa ccgccgggag cttaacggca ggcgtctaga ctgtggttta 1440

tgactggggt gaagtcgtaa caaggtaact gtaccggaag gtgcggttgg atcacctcct 1500

tt 1502

<210> 747
<211> 1333
<212> DNA
<213> Deinococcus sp. R-43890

<400> 747
ggtgaacgct ggcggcgtgc ttaagacatg caagtcgaac gagatcttcg gatctagtgg 60

cgcacgggtg agtatcgcgt gactgacctg ccccaaagtt ccgaataact ggctgaaagg 120

tcagctaata cggaatgtgc agcatcctcg tgtggatgtt gtaaaggcta tgaccgcttt 180

gggatggggt tgcgttccat cagctagttg gtggggtaaa ggcccaccaa ggcgacgacg 240

gataaccggc ctgagagggt ggccggtcac aggggcactg agacacgggt cccactccta 300

cgggaggcag cagttaggaa tcttccccaa tggacgaaag tctgagggag cgacgccgcg 360

tgagggatga aggttttcgg atcgtaaacc tctgaatctg ggacgaaaga ccgggacaac 420

cggagatgac ggtaccagag taatagcacc ggctaactcc gtgccagcag ccgcggtaat 480

acggagggtg caagcgttac ccggaatcac tgggcgtaaa gggcgtgtag gcggcatcac 540

aagtctggtt ttaaagcctg cggctcaacc gcagagatgg actggagact gtgaagctag 600

acctctggag agagaactgg aattcctggt gtagcggtgg aatgcgtaga taccaggagg 660

aacaccgatg gcgaaggcag gttcttggac agaaggtgac gctgaggcgc gaaagtgtgg 720

ggagcaaacc ggattagata cccgggtagt ccacacccta aacgatgtac gttggcctac 780

agcaggatgc tgttgtgggc gaagctaacg cgataaacgt accgcctggg aagtacggcc 840

gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 900

aattcgaagc aacgcgaaga accttaccag gtcttgacat ccatagaagc tcccggagac 960

gggagcgtgc ccttcgggga gctatgagac aggtgctgca tggctgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc taccttcagt tgccagcatt 1080

cagttgggca ctctgacggg actgcctatg aaagtaggag gaaggcgggg atgacgtcta 1140

gtcagcatgg tccttacgac ctgggctaca cacgtgctac aatggatggt acaacgcgca 1200

gccaactcgc gagagtgagc gaatcgccaa aagccatccc cagttcagat cggagtctgc 1260

aactcgactc cgtgaagttg gaatcgctag taatcrcggg tcagcatacc gsgrtgaata 1320

cgttcccggg cct 1333

<210> 748
<211> 1526
<212> DNA
<213> Delftia acidovorans

<400> 748
agagtttgat cctggctcag attgaacgct ggcggcatgc cttacacatg caagtcgaac 60

ggtaacaggt cttcggacgc tgacgagtgg cgaacgggtg agtaatacat cggaacgtgc 120

ccagtcgtgg gggataacta ctcgaaagag tagctaatac cgcatacgat ctgaggatga 180

aagcggggga ccttcgggcc tcgcgcgatt ggagcggccg atggcagatt aggtagttgg 240

tgggataaaa gcttaccaag ccgacgatct gtagctggtc tgagaggacg accagccaca 300

ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat tttggacaat 360

gggcgaaagc ctgatccagc aatgccgcgt gcaggatgaa ggccttcggg ttgtaaactg 420

cttttgtacg gaacgaaaaa gcttctccta atacgagagg cccatgacgg taccgtaaga 480

ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc gagcgttaat 540

cggaattact gggcgtaaag cgtgcgcagg cggttatgta agacagatgt gaaatccccg 600

ggctcaacct gggaactgca tttgtgactg catggctaga gtacggtaga gggggatgga 660

attccgcgtg tagcagtgaa atgcgtagat atgcggagga acaccgatgg cgaaggcaat 720

cccctggacc tgtactgacg ctcatgcacg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgccctaa acgatgtcaa ctggttgttg ggaattagtt ttctcagtaa 840

cgaagctaac gcgtgaagtt gaccgcctgg ggagtacggc cgcaaggttg aaactcaaag 900

gaattgacgg ggacccgcac aagcggtgga tgatgtggtt taattcgatg caacgcgaaa 960

aaccttaccc acctttgaca tggcaggaag tttccagaga tggattcgtg ctcgaaagag 1020

aacctgcaca caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttgtcattag ttgctacatt cagttgggca ctctaatgag 1140

actgccggtg acaaaccgga ggaaggtggg gatgacgtca agtcctcatg gcccttatag 1200

gtggggctac acacgtcata caatggctgg tacagagggt tgccaacccg cgaggggag 1260

ctaatcccat aaaaccagtc gtagtccgga tcgcagtctg caactcgact gcgtgaagtc 1320

ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat acgttcccgg gtcttgtaca 1380

caccgcccgt cacaccatgg gagcgggtct cgccagaagt aggtagccta accgcaagga 1440

gggcgcttac cacggcgggg ttcgtgactg gggtgaagtc gtaacaaggt agccgtatcg 1500

gaaggtgcgg ctggatcacc tccttt 1526

<210> 749
<211> 1394
<212> DNA
<213> Dermabacter hominis

<400> 749
catgcaagtc gaacgatgaa gctgtgcttg cacagtggat tagtggcgaa cgggtgagta 60

acacgtgagt aacctgccct tcactttggg ataactccga gaaatcgggg ctaataccgg 120

atatgactac tggccgcatg gttggtggtg gaaagttttt cggtgaggga tgggctcgcg 180

gcctatcagt ttgttggtga ggtagtggct caccaaggcg atgacgggta gccggcctga 240

gagggcgacc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

ggggaatatt gcacaatggg cgaaagcctg atgcagcgac gccgcgtggg ggatgacggc 360

cttcgggttg taaacctctt tcagcaagga agaagcgaaa gtgacggtac ttgcagaaga 420

agcgccggct aactacgtgc cagcagccgc ggtaatacgt agggcgcaag cgttgtccgg 480

aattattggg cgtaaagagc ttgtaggtgg cttgtcgcgt ctgccgtgaa aacccgaggc 540

ttaaccttgg gcgtgcggtg ggtacgggca ggctagagtg cggtagggga gactggaatt 600

cctggtgtag cggtgaaatg cgcagatatc aggaggaaca ccgatggcga aggcaggtct 660

ctgggccgtt actgacactg agaagcgaaa gcatggggag cgaacaggat tagataccct 720

ggtagtccat gccgtaaacg ttgggcacta ggtgtgggga gcattccacg ttttccgcgc 780

cgtagctaac gcattaagtg ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag 840

gaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg caacgcgaag 900

aaccttacca aggcttgaca tgcactggat cgctgcagag atgtggtttt ctttggactg 960

gtgcacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1020

caacgagcgc aaccctcgtt ccatgttgcc agcacttcgg gtggggactc atgggagact 1080

gccggggtca actcggagga aggtggggac gacgtcaaat catcatgccc cttatgtctt 1140

gggcttcacg cgtgctacaa tggtcggtac aatgggttgc gatactgtga ggtggagcta 1200

atcccaaaaa gccggtctca gttcggattg gggtctgcaa ctcgacccta tgaagtcgga 1260

gtcgctagta atcgcagatc agcaatgctg cggtgaatac gttcccgggc cttgtacaca 1320

ccgcccgtca agtcacgaaa gtcggtaaca cccgaagccg atggcccaag cttttgcggg 1380

gagtcgtcga aggt 1394

<210> 750
<211> 1520
<212> DNA
<213> Dermacoccus sp. Ellin185

<220>
<221> modified_base
<222> (434)..(435)
<223> a, c, t, g, unknown or other

<400> 750
tttctacgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg atgaagcacc agcttgctgg tgtggattag tggcgaacgg gtgagtaaca 120

cgtgagtaac ctgcccctca ctctgggata agcctgggaa actgggtcta atactggata 180

cgaccgatct ccgcatggag tgttggtgga aagtttttgt ggtgggggat ggactcgcgg 240

cctatcagct tgttggtggg gtaatggcct accaaggcga cgacgggtag ccggcctgag 300

agggcgaccg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggc gaaagcctga tgcagcgacg ccgcgtgagg gatgacggcc 420

ttcgggttgt aaannttcac cagggacgaa gctaacgtga cggtacctgg agaagaagca 480

ccggctaact acgtgccagc agccgcggta atacgtaggg tgcggcgttg tccggaatta 540

ttgggcgtaa agagcttgta ggcggtctgt cgcgtctgct gtgaaagacc ggggcttaac 600

tccggttctg cagtgggtac gggcagacta gagtgtggta ggggagactg gaattcctgg 660

tgtagcggtg aaatgcgcag atatcaggag gaacaccgat ggcgaaggca ggtctctggg 720

ccattactga cgctgagaag cgaaagcatg gggagcgaac aggattagat accctggtag 780

tccatgccgt aaacgttggg cgctaggtgt gggactcatt ccacgagttc cgtgccgcag 840

ctaacgcatt aagcgccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt 900

gacgggggcc cgcacaagcg gcggagcatg cggattaatt cgatgcaacg cgaagaacct 960

taccaaggct tgacatacac cggaatcatg cagagatgtg tgcgtcttcg gactggtgta 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc tcgttccatg ttgccagcac ttcgggtggg gactcatggg agactgccgg 1140

ggtcaactcg gaggaaggtg gggatgacgt caaatcatca tgccccttat gtcttgggct 1200

tcacgcatgc tacaatggcc ggtacagagg gttgcgaaac cgtgaggtgg agctaatccc 1260

aaaaaaccgg tctcagttcg gattggggtc tgcaactcga ccccatgaag tcggagtcgc 1320

tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcaagtca cgaaagtcgg taacacccga agccggtggc ctaacccttg tgggggggagc 1440

cgtcgaaggt gggactggcg attgggacta agtcgtaaca aggtagccgt accggaaggt 1500

gcggctggat cacctccttt 1520

<210> 751
<211> 1522
<212> DNA
<213> Desmospora activa

<400> 751
gctggcggcg tgcctaatac atgcaagtcg agcggaccga tggagagctt gctctcttga 60

agtcagcggc gaacgggtga gtaacacgtg ggcaacctgc ccgcaagact gggataactc 120

cgggaaaccg gggctaatac cggatacgat cttccctcgc atgagagaag atggaaaggc 180

ggcatcacgc tgtcacttgc ggatgggccc gcggcgcatt agctagttgg tgaggtagtg 240

gctcaccaag gcgacgatgc gtagccgacc tgagagggtg accggccaca ctgggactga 300

gacacggccc agactcctac gggaggcagc agtagggaat ttcgtcaat gggcgcaagc 360

ctgaacgagc aacgccgcgt gagtgaggac ggctttcggg ttgtaaagct ctgttcttcg 420

ggaagaacga cagaagggtg aataatcctt ttgtgtgacg gtaccggaga agaaagcccc 480

ggctaactac gtgccagcag ccgcggtaat acgtaggggg caagcgttgt ccggaattat 540

tgggcgtaaa gcgcgcgcag gcggcctgtt aagtcggatg tgaaagacca cggctcaacc 600

gtgggggtgc atccgaaact ggcgggcttg agtgcaggag aggggagtgg aattcccggt 660

gtagcggtgg aatgcgtaga gatcgggagg aacaccagtg gcgaaggcgg ctctctggcc 720

tgtaactgac gctgaggcgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 780

ccacgccgta aacgatgagt gctaggtgtt gggggtttca cgccctctgt gccgaaggta 840

acccaataag cactccgcct ggggagtacg gccgcaaggc tgaaactcaa aggaattgac 900

gggggcccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac 960

cagggcttga catcccgctg acccccttcag agatgaaggt tcccttcggg gcagcggaga 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttcag tcccgcaacg 1080

agcgcaaccc ttatcgttag ttgccagcac ctcgggtggg cactctagcg agacagccgg 1140

tgaaagccgg aggaaggtgg ggatgaggtc aaatcatcat gccccttatg tcctgggcaa 1200

cacacgtgct acaatggctg gtacaacggg tcgcgaagcc gcgaggtgga gccaatccca 1260

aaaaaccagt ctcagttcgg atcgcaggct gcaactcgcc tgcgtgaagc tggaatcgct 1320

agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcacaccacg agagtttgca acacccgaag tcggtgaggg aacccttttg ggacccagcc 1440

gccgaaggtg gggcagatga ttggggtgaa gtcgtaacaa ggtatcccta ccggaaggtg 1500

gggctggatc acctcctttc ta 1522

<210> 752
<211> 1455
<212> DNA
<213> Desmospora sp. 8437

<400> 752
agcggcggac gggtgagtaa cacgtgggca acctgcccgc aagaccggga taactccggg 60

aaaccggggc taataccgga tgatgcctct tcctgcatgg gaggatgctg aaaggcggcc 120

tttggctgtc acttgcggat gggcccgcgg cgcattagct ggttggtgag gtaacggctc 180

accaaggcga cgatgcgtag ccgacctgag agggtgatcg gccacactgg gactgagaca 240

cggcccagac tcctacggga ggcagcagta gggaattttc cgcaatgggc gcaagcctga 300

cggagcaacg ccgcgtgagt gaggacggct ttcgggttgt aaaactctgt tcttcgggaa 360

gaacggtcga agggtgaaca atcctttggc gtgacggtac cggaggagaa agccccggct 420

aactacgtgc cagcagccgc ggtaatacgt aggggcaag cgttgtccgg aattattggg 480

cgtaaagcgc gcgcaggcgg cctgttaagt ctggtgtgaa agaccacggc tcaaccgtgg 540

ggtggcatca gaaactggcg ggcttgagtg caggagagga gagtggaatt cccggtgtag 600

cggtggaatg cgtagagatc gggaggaaca ccagtggcga aggcgactct ctggcctgta 660

actgacgctg aggcgcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac 720

gccgtaaacg atgagtgcta ggtgttgggg gtttccgccc tctgtgccga aggtaaccca 780

ataagcactc cgcctgggga gtacggccgc aaggctgaaa ctcaaaggaa ttgacggggg 840

cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggg 900

cttgacatcc cgctgaccgg tgtagagata caccttccct tcggggcagc ggtgacaggt 960

ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttcagtcccg caacgagcgc 1020

aacccttgtc gtcagttgcc agcacatgat ggtgggcact ctggcgagac agccggtgaa 1080

agccggagga aggtggggat gacgtcaaat catcatgccc cttatgtcct gggctacaca 1140

cgtgctacaa tggccggtac aacgggcagc gaacccgtga gggggagcca atcccaaaaa 1200

accggtctca gttcggatcg caggctgcaa ctcgcctgcg tgaagctgga atcgctagta 1260

atcgcggatc agcatgccgc ggtgaatccg ttcccgggcc ttgtacacac cgcccgtcac 1320

accacgagag tctgcaacac ccgaagtcgg tgaggtaacc ttcgggaacc agccgccgaa 1380

ggtggggcag atgattgggg tgaagtcgta acaaggtatc cctaccggaa ggtggggatg 1440

gatcacctcc tttct 1455

<210> 753
<211> 1456
<212> DNA
<213> Desulfitobacterium frappieri

<220>
<221> modified_base
<222> (968)..(968)
<223> a, c, t, g, unknown or other

<400> 753
cactgagtgc taaacgttag ttagtggcgg acgggtgagt aacgcgtgga taacctacct 60

agtagaccgg gacaaccctt ggaaacgagg gctaataccg gatgagctta attagtggca 120

tcactgatta aggaaagatg gcctctgaag atgctatcgt tagtagatgg atccgcgtct 180

gattagctag ttggtggggt aaaggcctac caaggcgacg atcagtagcc ggcctgagag 240

ggtgaacggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatcttccg caatggacga aagtctgacg gagcaacgcc gcgtgtacga cgaaggcctt 360

cgggttgtaa agtactgtct tcagggacga acggtaagta tgtaaataat gtacttacat 420

gacggtacct gaggaggaag ccccggctaa ctacgtgcca gcagccgcgg taatacgtag 480

ggggcaagcg ttgtccggaa tcattgggcg taaagggcgc gtaggcggat acttaagtct 540

ggtgtgaaaa cctagggctc aaccctggga ctgcatcgga aactgggtat cttgaggaca 600

ggagaggaaa gtggaattcc acgtgtagcg gtgaaatgcg tagatatgtg gaggaacacc 660

agtggcgaag gcgactttct ggactgtaac tgacgctgag gcgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgtagagggt 780

atcgacccct tctgtgccgc agttaacaca ctaagcactc cgcctgggga gtacggccgc 840

aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 900

ttcgacgcaa cgcgaagaac cttaccaagg cttgacatcc atagaatcct gtggaaacat 960

gggagtgncc ttcggggagc tatgagacag gtggtgcatg gttgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta tgtttagttg ctaacgcgta 1080

atggtgagca ctctagacag actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1140

aatcatcatg ccccttatgt cttgggctac acacgtgcta caatggccag tacagacgga 1200

agcgaagccg tgaggtgaag ccaatccgag aaagctggtc tcagttcgga ttgttctctg 1260

caactcgaga acatgaagtc ggaatcgcta gtaatcgcag gtcagcatac tgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacaccacga aagtctgcaa cacccgaagc 1380

cggtgaggta acccgaaagg gagctagccg tcgaaggtgg ggccgatgat tggggtgaag 1440

tcgtaacaag gtatcc 1456

<210> 754
<211> 1554
<212> DNA
<213> Desulfitobacterium hafniense

<400> 754
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

ggagagctca ataagcttgc ttagagagtt cttagtggcg gacgggtgag taacgcgtgg 120

ataacctacc tagtagaccg ggacaaccct tggaaacgag ggctaatacc ggataagctt 180

aattagtggc atcactgatt aaggaaagat ggcctctgaa gatgctatcg ttagtagatg 240

gatccgcgtc tgattagcta gttggtgggg taaaggccta ccaaggcgac gatcagtagc 300

cggcctgaga gggtgaacgg ccacactggg actgagacac ggcccagact cctacgggag 360

gcagcagtgg ggaatcttcc gcaatggacg aaagtctgac ggagcaacgc cgcgtgtacg 420

acgaaggcct tcgggttgta aagtactgtc ttcagggacg aacggtaagt atgtaaagaa 480

tgtacttaca tgacggtacc tgaggaggaa gccccggcta actacgtgcc agcagccgcg 540

gtaatacgta gggggcaagc gttgtccgga atcattgggc gtaaagggcg cgtaggcgga 600

tacttaagtc tggtgtgaaa acctagggct caaccctggg actgcatcgg aaactgggta 660

tcttgaggac aggagaggaa agtggaattc cacgtgtagc ggtgaaatgc gtagatatgt 720

ggaggaacac cagtggcgaa ggcgactttc tggactgtaa ctgacgctga ggcgcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag 840

gtgtagaggg tatcgacccc ttctgtgccg cagttaacac actaagcact ccgcctgggg 900

agtacggccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 960

atgtggttta attcgacgca acgcgaagaa ccttaccaag gcttgacatc catagaatcc 1020

tgtggaaaca tgggagtgcc cttcggggag ctatgagaca ggtggtgcat ggttgtcgtc 1080

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct atgtttagtt 1140

gctaacgcgt aatggtgagc actctagaca gactgccggt gacaaaccgg aggaaggtgg 1200

ggatgacgtc aaatcatcat gccccttatg tcttgggcta cacacgtgct acaatggcca 1260

gtacagacgg aagcgaagcc gtgaggtgaa gccaatccga gaaagctggt ctcagttcgg 1320

attgttctct gcaactcgag aacatgaagt cggaatcgct agtaatcgca ggtcagcata 1380

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg aaagtctgca 1440

acacccgaag ccggtgaggt aacccgaaag ggagctagcc gtcgaaggtg gggccgatga 1500

ttggggtgaa gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acct 1554

<210> 755
<211> 1557
<212> DNA
<213> Desulfobulbus sp. oral clone CH031

<400> 755
gagagtttga tyctggctca gaacgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cgcgaacggg acttcggttc ctagtagagt ggcgcacggg tgagtaacgc gtagataacc 120

tgtcttcata tccggaataa cacgccgaaa ggggtactaa taccggatgt tcttgcattt 180

cacaggtaag gcaaggaaag gtggcctctg attcaagcta ctgtatgaag aggggtctgc 240

gtaccattag ctagtaggtg gggtaatggc ctacctaggc gacgatggtt agcgggtctg 300

agaggatgat ccgccacact ggcactggaa tacgggccag actcctacgg gaggcagcag 360

tgaggaatat tgcgcaatgg gggcaaccct gacgcagcga cgccgcgtga gtgaggaagg 420

tcttcggatc gtaaagctct gtcaagaggg aagaagtgca aggcagcgaa taactgtttt 480

gtttgacggt acctctaaag gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 540

ggagggtgcg agcgttgttc ggaatcactg ggcgtagagg gcgcgcaggc gggctgtcaa 600

gtcagatgtg aaatcccacg gcttaactgt ggacgtgcat ttgaaactgg cagtcttgag 660

taccagaggg gaatgtggaa ttcccggtgt agaggtgaaa ttcgtagata tcgggaggaa 720

taccggtggc gaaggcgaca ttctggctgg atactgacgc tgaggcgcga aagcgtgggg 780

agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgtgaac tagatgcagg 840

gggtgttgat cccctctgtg tcgcggctaa cgcattaagt tcaccgcctg gggagtacgg 900

tcgcaagatt aaaactcaaa ggaattgacg ggggcccgca caagcggtgg ggtatgtggt 960

ttaattcgat gcaacgcgaa gaaccttacc tggtcttgac atcccggaga cgcccatgaa 1020

agtgggtggt gccttctttg aaggaatccg gagacaggtg ctgcatggct gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgcct tcagttgcca 1140

gcggttcggc cgggcactct gaagggactg ccggtgtcaa accggaggaa ggtggggatg 1200

acgtcaagtc ctcatggccc ttatgaccag ggctacacac gtactacaat ggccggtaca 1260

aaggggagcg acattgcgaa atggagccaa tcccgcaaag ccggtctcag tccggattgg 1320

agtctgcaac tcgactccat gaagttggaa tcgctagtaa tcgtggatca gcatgccacg 1380

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacgggagt cggttgtacc 1440

agaagcagtt gagctaaccg caaggggga ggctgccaag gtacggctgg taactggggt 1500

gaagtcgtaa cagggtagcc ctaggggaac ctggggctgg atcacctcct taagggc 1557

<210> 756
<211> 1431
<212> DNA
<213> Desulfotomaculum nigrificans

<220>
<221> modified_base
<222> (1)..(1)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (43)..(46)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (66)..(66)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (186)..(186)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (415)..(415)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (419)..(419)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (615)..(615)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (619)..(619)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (891)..(891)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (897)..(897)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (906)..(906)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1420)..(1420)
<223> a, c, t, g, unknown or other

<400> 756
natagtttga tcctggctca ggacgaacgc tggcggcgtg ccnnnnacat gcaagtcgaa 60

cggggntgaa tgaagcttgg cgatttctaa acctagtggc ggacgggtga gtaacgcgtg 120

gataacctgc ctggtagacc gggataacag ctggaaacgg ctgctaatac cggatacgct 180

cttggngccg catggtgccg agaggaaagg ggagccgcta tcagatggat ccgcgtccca 240

ttagctggtt ggtggtgtag cggaccacca aggcgacgat gggtagccgg cctgagaggg 300

cgaccggcca cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga 360

atcttccgca atgggcgaaa gctgacggag caacgccgcg tgagggaaga aggcntcgng 420

ttgtaaacct ctgtcctaaa ggaagaaaga aatgacggta ctttaggaag aatgacggta 480

ctttaggagg aagccccggc taactacgtg ccagcagccg cggtaaaacg taggggcga 540

gcgttgtccg gaattactgg gcgtaaaggg cgcgtaggtg gtccattaag ttagaggtga 600

aagtgcgggg cttancccng tgattgcctc tgatactggt ggacttgagt gcaggagagg 660

ggagcggaat tcccagtgta gcggtgaaat gcgtagatat tgggaggaac accagtggcg 720

aaggcggctc tctggactgc aactgacact gaggcgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgttgcg ggtatcgacc 840

cctgcagtgc cgcagtaaac acaataagca ctccgcctgg ggagtacggt ngcaagnctg 900

aaactnaaag gaattgacgg ggccccgcac aagcggtgga gtatgtggtt taattcgacg 960

caacgcgaag aaccttacca gggcttgaca tcccgcgcac cactctagag atagagggtt 1020

ctgccttagg gtagacgcgc agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgcgcgcaa cccctaacat tagttgccag cgatagagac 1140

ggggactcta atgtgactgc cgttgacaaa acggaggaag gtggggatga cgtcaaatca 1200

tcatgcccct tatgtcctgg gctacacacg tactacaatg gccggtacta acggatgcga 1260

atggcgtgag ccggagcaaa actgagaaag ccggtctcag ttcggattgt agtctgcaac 1320

tcgactacat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccacgaaagn tgacaacacc c 1431

<210> 757
<211> 1548
<212> DNA
<213> Desulfovibrio desulfuricans

<400> 757
attagagttt gatcctggct cagattgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgcgaaag ggacttcggt cctgagtaaa gtggcgcacg ggtgagtaac gcgtggataa 120

tctgccctta tgatcgggat aacagttgga aacggctgct aataccggat acgctcaaaa 180

tgaacttttt gaggaaagat ggcctctgct tgtatgctat cacgtaagga tgagtccgcg 240

tcccattagc ttgttggcgg ggtaacggcc caccaaggca tcgatgggta gccgatttga 300

gaggatgatc ggccacactg gaactgaaac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcgcaatggg cgaaagcctg acgcagcgac gccgcgtgag ggatgaaggt 420

tttcggatcg taaacctctg tcagaaggga agaaactacg ttgtgctaat cagcagcgta 480

ctgacggtac cttcaaagga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgtaggctg tagtgtaagt 600

caggggtgaa atcccacggc tcaaccgtgg aactgccttt gatactgcac aacttgaatc 660

cgggagaggg tggcggaatt ccaggtgtag gagtgaaatc cgtagatatc tggaggaaca 720

tcagtggcga aggcggccac ctggaccggt attgacgctg aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atggatgcta gatgtcgggg 840

agtattcttc ggtgtcgtag ttaacgcgtt aagcatcccg cctggggagt acggtcgcaa 900

ggctgaaact caaagaaatt gacgggggcc cgcacaagcg gtggagtatg tggtttaatt 960

cgatgcaacg cgaagaacct tacctaggtt tgacatccac ggaaccctcc cgaaaaggag 1020

gggtgccctt cggggagccg tgagacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aaccccctatg gatagttgcc agcaagtaat 1140

gttgggcact ctattcagac tgcccgggtt aaccgggagg aaggtgggga cgacgtcaag 1200

tcatcatggc ccttacgcct agggctacac acgtactaca atggcgcgca caaaggggag 1260

cgagaccgcg aggtggagcc aatcccaaaa aacgcgtccc agtccggatt gcagtctgca 1320

actcgactgc atgaagttgg aatcgctagt aattcgagat cagcatgctc gggtgaatgc 1380

gttcccgggc cttgtacaca ccgcccgtca caccacgaaa gtcggtttta cccgaagccg 1440

gtgagccaac cagcaatgga ggcagccgtc tacggtaggg ccgatgattg gggtgaagtc 1500

gtaacaaggt agccgtaggg gaacctgcgg ctggatcacc tccttaat 1548

<210> 758
<211> 1394
<212> DNA
<213> Desulfovibrio fairfieldensis

<400> 758
tcgaacgcga aagagacttc ggtctcgagt agagtggcgc acgggtgagt aacgcgtgga 60

taatctgccc tcatgaccgg gataacagtt ggaaacggct gctaataccg gatacgctct 120

gaatgaactt ttaggggaaa gacggcctct gcttgcaagc tgtcgtatga ggatgagtcc 180

gcgtcccatt agctagttgg cggggtaacg gcccaccaag gcaacgatgg gtagccgatc 240

tgagaggatg atcggccaca ctggaactga aacacggtcc agactcctac gggaggcagc 300

agtggggaat attgcgcaat gggcgaaagc ctgacgcagc gacgccgcgt gagggatgaa 360

ggttttcgga tcgtaaacct ctgtcagaag ggaagaaagt gcgtggtgct aatcagccgc 420

gcattgacgg taccttcaaa ggaagcaccg gctaactccg tgccagcagc cgcggtaata 480

cggagggtgc aagcgttaat cggaattact gggcgtaaag cgcacgtagg ctgttgtgta 540

agtcaggggt gaaatcccac ggctcaaccg tggaactgcc cttgatactg catgacttga 600

atccgggaga gggtggcgga attccaggtg taggagtgaa atccgtagat atctggagga 660

acatcagtgg cgaaggcggc cacctggacc ggtattgacg ctgaggtgcg aaagcgtggg 720

gagcaaacag gattagatac cctggtagtc cacgctgtaa acgatggatg ctagatgtcg 780

gggagtattc ttcggtgtcg tagttaacgc gttaagcatc ccgcctgggg agtacggtcg 840

caaggctgaa actcaaagaa attgacgggg gcccgcacaa gcggtggagt atgtggttta 900

attcgatgca acgcgaagaa ccttacctag gtttgacatc tggggaaccc tcccgaaaag 960

gaggggtgcc cttcggggag ccccaagaca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct atgcatagtt gccagcaagt 1080

gaagttgggc actctatgca gactgcccgg gttaaccggg aggaaggtgg ggacgacgtc 1140

aagtcatcat ggcccttaca cctagggcta cacacgtact acaatggcgc gcacaaaggg 1200

gagcgagacc gcgaggtgga gccaatccca aaaaacgcgt cccagtccgg attgcagtct 1260

gcaactcgac tgcatgaagt cggaatcgct agtaattcga gatcagcatg ctcgggtgaa 1320

tgcgttcccg ggccttgtac acaccgcccg tcacaccacg aaagtcggtt ttacccgaag 1380

ccggtgagcc aacc 1394

<210> 759
<211> 1053
<212> DNA
<213> Desulfovibrio piger

<220>

<221> modified_base
<222> (44)..(44)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (49)..(50)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (699)..(699)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (713)..(713)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (861)..(861)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (893)..(894)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (941)..(942)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (959)..(960)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (965)..(965)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (974)..(974)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (979)..(980)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1009)..(1010)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1018)..(1019)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1023)..(1023)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1030)..(1030)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1042)..(1042)
<223> a, c, t, g, unknown or other

<400> 759
cgcgaaggga cttcggtccc gagtaaagtg gcgcacgggt gagnaacann tggataatct 60

gcctctatga tggggataac agttggaaac gactgctaat accgaatacg ctcatgatga 120

actttgtgag gaaaggtggc ctctgcttgc aagctatcgc atagagatga gtccgcgtcc 180

cattagctag ttggtggggt aacggcctac caaggcaacg atgggtagcc gatctgagag 240

gatgatcggc cacactggaa ctgaaacacg gtccagactc ctacgggagg cagcagtggg 300

gaatattgcg caatgggcga aagcctgacg cagcgacgcc gcgtgaggga tgaaggtctt 360

cggatcgtaa acctctgtca gaagggaaga aactagggtg ctctaatcat catcctactg 420

acggtacctt caaaggaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat cactgggcgt aaagcgcacg taggctgtta tgtaagtcag 540

gggtgaaatc ccacggctca accgtggaac tgcccttgat actgcacgac ttgaatccgg 600

gagagggtgg cggaattcca ggtgtaggag tgaaatccgt agatatctgg aggaacatca 660

gtggcgaagg cggccacctg gaccggtatt gacgctgang tgcgaaagcg tgnggagcaa 720

acaggattag ataccctggt agtccacgcc gtaaacgatg gatgctggat gtcgggatgt 780

atgtctcggt gtcgtagtta acgcgttaag catcccgcct ggggagtacg gtcgcaaggc 840

tgaaactcaa agaaattgac nggggcccgc acaagcggtg gagtatgtgg ttnnattcga 900

tgcaacgcga agaaccttac ctaggtttga catctgggga nncctcccga aaaggaggnn 960

tgccnttcgg gganccccnn acaggtgctg catggctgtc gtcagctcnn gtcgtgannt 1020

gtnggttaan tcccgcaacg ancgcacccc tat 1053

<210> 760
<211> 1027
<212> DNA
<213> Desulfovibrio sp. 3_1_syn3

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (12)..(15)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (21)..(21)

<223> a, c, t, g, unknown or other

<400> 760
ggatcgtnaa cnnnntcaga ngggaagaaa gtgcgtggtg ctaatcagcc gcgcattgac 60

ggtaccttca aaggaagcac cgggctaact ccgtgccagc agccgcggta atacggaggg 120

tgcaagcgtt aatcggaatt actgggcgta aagcgcacgt aggctgttgt gtaagtcagg 180

ggtgaaatcc cacggctcaa ccgtggaact gcccttgata ctgcatgact tgaatccggg 240

agagggtggc ggaattccag gtgtaggagt gaaatccgta gatatctgga ggaacatcag 300

tggcgaaggc ggccacctgg accggtattg acgctgaggt gcgaaagcgt ggggagcaaa 360

caggattaga taccctggta gtccacgctg taaacgatgg atgctagatg tcggggagta 420

ttcttcggtg tcgtagttaa cgcgttaagc atcccgcctg gggagtacgg tcgcaaggct 480

gaaactcaaa gaaattgacg ggggcccgca caagcggtgg agtatgtggt ttaattcgat 540

gcaacgcgaa gaaccttacc taggtttgac atctggggaa ccctcccgaa aaggaggggt 600

gcccttcggg gagccccaag acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 660

gttgggttaa gtcccgcaac gagcgcaacc cctatgcata gttgccagca agtgaagttg 720

ggcactctat gcagactgcc cgggttaacc gggaggaagg tggggacgac gtcaagtcat 780

catggccctt acacctaggg ctacacacgt actacaatgg cgcgcacaaa ggggagcgag 840

accgcgaggt ggagccaatc ccaaaaaacg cgtcccagtc cggattgcag tctgcaactc 900

gactgcatga agtcggaatc gctagtaatt cgagatcagc atgctcgggt gaatgcgttc 960

ccgggccttg tacacaccgc ccgtcacacc acgaaagtcg gttttacccg aagccggtga 1020

gccaacc 1027

<210> 761
<211> 1542
<212> DNA
<213> Desulfovibrio vulgaris

<400> 761
agagtttgat tctggctcag attgaacgct ggcggcgtgc ttaacacatg caagtcgcgc 60

gtgaaaggac ttcggtccga gtaaagcggc gcacgggtga gtaacgcgtg gatgatctac 120

ccatgagtta ggaataacgg ctggaaacgg tcgctaatac caaatacgct ccgatttcaa 180

cttcggggga aaggtggcct ctgcttgcaa gctactgctc atggatgagt ccgcgtccca 240

ttagctagtt ggtggggtaa cggcccacca aggcgacgat gggtagccgg tctgagagga 300

tgaccggcca cactgggact ggaacacggc ccagactcct acgggaggca gcagtgggga 360

atattgcgca atgggcgaaa gcctgacgca gcgacgccgc gtgagggatg aaggtcctcg 420

gatcgtaaac ctctgtcagg agggaagaac cgccacggtg ctaatcagcc gtggtctgac 480

ggtacctcca aaggaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 540

gcgagcgtta atcggaatca ctgggcgtaa agcgcacgta ggctgcttgg taagtcaggg 600

gtgaaagccc gcggctcaac cgcggaattg cctttgatac tgccgagcta gagtccggga 660

gagggtagtg gaattccagg tgtaggagtg aaatccgtag agatctggag gaacatcagt 720

ggcgaaggcg actacctgga ccggtactga cgctgaggtg cgaaagcgtg gggagcaaac 780

aggattagat accctggtag tccacgccgt aaacgatgga tgctaggtgt cggggccttg 840

agcttcggtg ccgtagttaa cgcgttaagc atcccgcctg gggagtacgg tcgcaaggct 900

gaaactcaaa gaaattgacg ggggcccgca caagcggtgg agtatgtggt ttaattcgat 960

gcaacgcgaa gaaccttacc taggtttgac atccggaaga ccttcccgaa aaggaagggt 1020

gcccttcggg gaattccgag acaggtgctg catggctgtc gtcagctcgt gccgtgaggt 1080

gttgggttaa gtcccgcaac gagcgcaacc cctattgcca gttgctacca ggtaatgctg 1140

ggcactctgg tgagactgcc ccggttaacg gggaggaagg tggggacgac gtcaagtcat 1200

catggccctt acgcctaggg ctacacacgt actacaatgg cgcatacaaa gggcagcgat 1260

accgcgaggt ggagccaatc ccaaaaagtg cgtcccagtc cggattgcag tctgcaactc 1320

gactgcatga agttggaatc gctagtaatt cgagatcagc atgctcgggt gaatgcgttc 1380

ccgggccttg tacacaccgc ccgtcacacc acgaaagttg gttttacccg acaccggtga 1440

gctaaccagc aatggaggca gccgtctacg gtagggccga tgattggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct tt 1542

<210> 762
<211> 965
<212> DNA
<213> Dialister invisus

<220>
<221> modified_base
<222> (9)..(10)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (12)..(12)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (16)..(17)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (20)..(22)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (43)..(49)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (700)..(700)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (716)..(716)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (785)..(785)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (940)..(940)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (944)..(944)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (954)..(954)
<223> a, c, t, g, unknown or other

<400> 762
gaaaagacnn anagannttn nnctttcag aattgagtgg cannnnnnng agtaacacgt 60

aaacaacctg ccttcaggat ggggacaaca gacggaaacg actgctaata ccgaataagt 120

tccaagagcc gcatggccca tggaagaaaa ggtggcctct acctgtaagc tatcgcctga 180

agaggggttt gcgtctgatt agctggttgg aggggtaacg gcccaccaag gcgacgatca 240

gtagccggtc tgagaggatg aacggccaca ctggaactga gacacggtcc agactcctac 300

gggaggcagc agtggggaat cttccgcaat gggcgaaagc ctgacggagc aacgccgcgt 360

gagtgatgac ggccttcggg ttgtaaaact ctgtgatccg ggacgaaaag gcagagtgcg 420

aagaacaaac tgcattgacg gtaccggaaa agcaagccac ggctaactac gtgccagcag 480

ccgcggtaat acgtaggtgg caagcgttgt ccggaattat tgggcgtaaa gcgcgcgcag 540

gcggcttccc aagtccctct taaaagtgcg gggcttaacc ccgtgatggg aaggaaactg 600

ggaagctgga gtatcggaga ggaaagtgga attcctagtg tagcggtgaa atgcgtagag 660

attaggaaga acaccggtgg cgaaggcgac tttctggacn aaaaactgac gctgangcgc 720

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatggat 780

actangtgta ggaggtatcg acccctcctg tgccggagtt aacgcaataa gtatcccgcc 840

tgggaaagta cgatcgcaag attaaaactc aaaggaattg acgggggccc gcacaagcgg 900

tggagtatgt ggtttaattc gacgcaacgc gaagaacctn accnggtctt gacnttgatc 960

gcgat 965

<210> 763
<211> 1565
<212> DNA
<213> Dialister micraerophilus

<400> 763
tggagagttt gatcctggct caggacgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgagagga catgaaaagc ttgcttttta tgaaatctag tggcaaacgg gtgagtaaca 120

cgtaaacaac ctgccttcaa gatggggaca acagacggaa acgactgcta ataccgaata 180

cgatccgaaa gtcgcatgac atttggatga aagggtggcc tatcgaagaa gctatcgctt 240

gaagaggggt ttgcgtccga ttaggtagtt ggtgaggtaa cggcccacca agccgacgat 300

cggtagccgg tctgagagga tgaacggcca cactggaact gagacacggt ccagactcct 360

acgggaggca gcagtgggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc 420

gtgagtgaag acggccttcg ggttgtaaag ctctgtgatt cgggacgaaa ggccatatgt 480

gaataatata tggaaatgac ggtaccgaaa aagcaagcca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca 600

ggcggtcact taagtccatc ttagaagtgc ggggcttaac cccgtgatgg gatggaaact 660

gggagactgg agtatcggag aggaaagtgg aattcctagt gtagcggtga aatgcgtaga 720

tattaggaag aacaccggtg gcgaaggcga ctttctggac gaaaactgac gctgaggcgc 780

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatggat 840

actaggtgta ggaggtatcg acccccttctg tgccggagtt aacgcaataa gtatcccgcc 900

tgggaagtac gatcgcaaga ttaaaactca aaggaattga cgggggcccg cacaagcggt 960

ggagtatgtg gtttaattcg acgcaacgcg aagaacctta ccaagtcttg acattgatcg 1020

ccattccaag agattggaag ttctccttcg ggagacgaga aaacaggtgg tgcacggctg 1080

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatctt 1140

ttgttgccag cacgtagagg tgggaactca gaagagaccg ccgcagacaa tgcggaggaa 1200

ggtggggatg acgtcaagtc atcatgcccc ttatgacttg ggctacacac gtactacaat 1260

gggctttaac aaagagcagc gaaaccgcga ggtggagcga aactcaaaaa caagccccca 1320

gttcagatcg caggctgcaa ctcgcctgcg tgaagcagga atcgctagta atcgcgggtc 1380

agcataccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac actatgagag 1440

tcggaaacac ccgaagccgg tgaggtaacc gcaaggagcc agccgtcgaa ggtggggctg 1500

atgattggag tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc 1560

tttct 1565

<210> 764
<211> 1328
<212> DNA
<213> Dialister microaerophilus

<400> 764
tggagagttt gatcctggct caggacgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgagagga catgaaaagc ttgcttttta tgaaatctag tggcaaacgg gtgagtaaca 120

cgtaaacaac ctgccttcaa gatggggaca acagacggaa acgactgcta ataccgaata 180

cgatccgaaa gtcgcatgac atttggatga aagggtggcc tatcgaagaa gctatcgctt 240

gaagaggggt ttgcgtccga ttaggtagtt ggtgaggtaa cggcccacca agccgacgat 300

cggtagccgg tctgagagga tgaacggcca cactggaact gagacacggt ccagactcct 360

acgggaggca gcagtgggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc 420

gtgagtgaag acggccttcg ggttgtaaag ctctgtgatt cgggacgaaa ggccatatgt 480

gaataatata tggaaatgac ggtaccgaaa aagcaagcca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca 600

ggcggtcact taagtccatc ttagaagtgc ggggcttaac cccgtgatgg gatggaaact 660

gggagactgg agtatcggag aggaaagtgg aattcctagt gtagcggtga aatgcgtaga 720

tattaggaag aacaccggtg gcgaaggcga ctttctggac gaaaactgac gctgaggcgc 780

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatggat 840

actaggtgta ggaggtatcg acccccttctg tgccggagtt aacgcaataa gtatcccgcc 900

tgggaagtac gatcgcaaga ttaaaactca aaggaattga cgggggcccg cacaagcggt 960

ggagtatgtg gtttaattcg acgcaacgcg aagaacctta ccaagtcttg acattgatcg 1020

ccattccaag agattggaag ttctccttcg ggagacgaga aaacaggtgg tgcacggctg 1080

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatctt 1140

ttgttgccag cacgtagagg tgggaactca gaagagaccg ccgcagacaa tgcggaggaa 1200

ggtggggatg acgtcaagtc atcatgcccc ttatgacttg ggctacacac gtactacaat 1260

gggctttaac aaagagcagc gaaaccgcga ggtggagcga aactcaaaaa caagccccca 1320

gttcagat 1328

<210> 765
<211> 1547
<212> DNA
<213> Dialister pneumosintes

<400> 765
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gaaagagatg aaagagcttg ctcttttatt aatttcagtg gcaaacgggt gagtaacacg 120

taaacaacct gccttaagga tggggataac agacggaaac gactgctaat accgaatacg 180

ttctaagcat cgcatggtgc atagaagaaa gggtggcctc tacaagaaag ctatcgcctt 240

aagaggggtt tgcgactgat taggtagttg gtgaggtaac ggctcaccaa gccgacgatc 300

agtagccggt ctgagaggat gaacggccac actggaactg agacacggtc cagactccta 360

cgggaggcag cagtggggaa tcttccgcaa tggacgaaag tctgacggag caacgccgcg 420

tgaacgaaga aggtcttcgg attgtaaagt tctgtgattc gggacgaaag ggtttgtggt 480

gaataatcat agacattgac ggtaccgaaa aagcaagcca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca 600

ggcggtttct taagtccatc ttaaaagcgt ggggctcaac cccatgaggg gatggaaact 660

gggaagctgg agtatcggag aggaaagtgg aattcctagt gtagcggtga aatgcgtaga 720

gattaggaag aacaccggtg gcgaaggcga ctttctagac gaaaactgac gctgaggcgc 780

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatggat 840

actaggtgta ggaggtatcg acccctcctg tgccggagtt aacgcaataa gtatcccgcc 900

tgggaagtac gatcgcaaga ttaaaactca aaggaattga cgggggcccg cacaagcggt 960

ggagtatgtg gtttaattcg acgcaacgcg aagaacctta ccaagccttg acattgatcg 1020

caatccatag aaatatggag ttcttcttcg gaagacgaga aaacaggtgg tgcacggctg 1080

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatttc 1140

ctgttaccag cacgtaaagg tggggactca ggagagaccg ccgcggacaa cgcggaggaa 1200

ggcggggatg acgtcaagtc atcatgcccc ttatggcttg ggctacacac gtactacaat 1260

gggtgccaac aaagagaagc gaaatcgcga gatggagcgg acctcataaa cgcaccccca 1320

gttcagattg caggctgcaa ctcgcctgca tgaagtagga atcgctagta atcgcgggtc 1380

agcataccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac actatgagag 1440

ttagagacac ccgaagccgg tgaggtaacc gcaagggacc agccgtctaa ggtggagctg 1500

atgattggag tgaagtcgta acaaggtagc cgtatcggaa ggtgcgg 1547

<210> 766
<211> 1396
<212> DNA
<213> Dialister propionicifaciens

<400> 766
aaaagactgc tcttttcgat ccagtggcaa acgggtgagt aacacgtaaa caacctgcct 60

tcaggatggg gacaacagac ggaaacgact gctaataccg aatacgttcc acgggccgca 120

tgacctgtgg aagaaagggt agcctctacc tgtaagctat cgcctgaaga ggggtttgcg 180

tctgattagg cagttggtgg ggtaacggcc caccaaacca acgatcagta gccggtctga 240

gaggatgaac ggccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 300

ggggaatctt ccgcaatgga cgaaagtctg acggagcaac gccgcgtgag tgaagacggc 360

cttcgggttg taaagctctg tgatccggga cgaaagagcc tgaggttaat agcctaagga 420

agtgacggta ccggaaaagc aagccacggc taactacgtg ccagcagccg cggtaatacg 480

taggtggcaa gcgttgtccg gaattattgg gcgtaaagcg cgcgcaggcg gcttcctaag 540

tccatcttaa aagtgcgggg cttaaccccg tgatgggatg gaaactggga agctggagta 600

tcggagagga aagtggaatt cctagtgtag cggtgaaatg cgtagagatt aggaagaaca 660

ccggtggcga aggcgacttt ctggacgaaa actgacgctg aggcgcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gccgtaaacg atggatacta ggtgtaggag 780

gtatcgaccc cttctgtgcc ggagttaacg caataagtat cccgcctggg aagtacgatc 840

gcaagattaa aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt 900

aattcgacgc aacgcgaaga accttaccag gtcttgacat tgatcgcaat tttcagaaat 960

gagaagttct ccttcgggag acgagaaaac aggtggtgca cggctgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc tatcatttgt tgccagcacg 1080

taaaggtggg gactcaaatg agaccgccgc agacaatgcg gaggaaggtg gggatgacgt 1140

caagtcatca tgccccttat gacctgggct acacacgtac tacaatgggt gtcaacaaag 1200

agaagcgaaa gggcgacctg gagccaacct caaaaacaca cccccagttc agatcgcagg 1260

ctgcaactcg cctgcgtgaa gcaggaatcg ctagtaatcg cgggtcagca taccgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacacta tgagagtcag aaacacccga 1380

agccggtgag gtaacc 1396

<210> 767
<211> 1547
<212> DNA
<213> Dialister sp. oral taxon 502

<400> 767
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gaaagagatg aaagagcttg ctcttttatt aatttcagtg gcaaacgggt gagtaacacg 120

taaacaacct gccttaggga tggggataac agacggaaac gactgctaat accgaatacg 180

ttctaagcat cgcatgatgc atagaagaaa gggtggcctc tacaagaaag ctatcgcctt 240

aagaggggtt tgcgactgat taggtagttg gtgaggtaac ggctcaccaa gccgacgatc 300

agtagccggt ctgagaggat gaacggccac actggaactg agacacggtc cagactccta 360

cgggaggcag cagtggggaa tcttccgcaa tggacgaaag tctgacggag caacgccgcg 420

tgaacgaaga aggtcttcgg attgtaaagt tctgtgattc gggacgaaag ggtaaatagt 480

gaataactat agacattgac ggtaccgaaa aagcaagcca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca 600

ggcggtttct taagtccatc ttaaaagcgt ggggctcaac cccatgaggg gatggaaact 660

gggaagctgg agtatcggag aggaaagtgg aattcctagt gtagcggtga aatgcgtaga 720

gattaggaag aacaccggtg gcgaaggcga ctttctagac gaaaactgac gctgaggcgc 780

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatggat 840

actaggtgta ggaggtatcg acccctcctg tgccggagtt aacgcaataa gtatcccgcc 900

tgggaagtac gatcgcaaga ttaaaactca aaggaattga cgggggcccg cacaagcggt 960

ggagtatgtg gtttaattcg acgcaacgcg aagagcctta ccaggtcttg acattgatcg 1020

cgatctgcag aaatgcggag ttcttcttcg gaagacgaga aaacaggtgg tgcacggctg 1080

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctgtcat 1140

ttgttgccag cacgtaaagg tggggactca aatgagaccg ccgcggacaa cgcggaggaa 1200

ggcggggacg acgtcaagtc atcatgcccc ttatgacctg ggctacacac gtactacaat 1260

gggtgtcaac aaagagaagc gaacccgcga gggagagcaa agctcaaaaa cacaccccca 1320

gttcagatcg caggctgcaa cccgcctgcg tgaagtagga atcgctagta atcgcgggtc 1380

agcataccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac actatgagag 1440

tcagaaacac ccgaagccgg tgaggtaacc gcaaggagcc agccgtcgaa ggcggagctg 1500

atgattggag tgaagtcgta acaaggtagc cgtatcggaa ggtgcgg 1547

<210> 768
<211> 1325
<212> DNA
<213> Dialister succinatiphilus

<400> 768
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcaaa cgggtgagta 60

acacgtaaac aacctgcctt caggatgggg acaacagacg gaaacgactg ctaataccga 120

atacggaaag tcgcctgaag aggggtttgc gtctgattag gcagttggtg aggtaacggc 180

ccaccaaacc tacgatcagt agccggtctg agaggatgaa cggccacact ggaactgaga 240

cacggtccag actcctacgg gaggcagcag tggggaatct tccgcaatgg gcgaaagcct 300

gacggagcaa cgccgcgtga gtgatgacgg ccttcgggtt gtaaagctct gtgatcgggg 360

acgatgacgg tacccgaata gcaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggctttcta 480

agtccatctt aaaagtgcgg ggcttaaccc cgtgatggga tggaaactgg gaagctggag 540

tatcggagag gaaagtggaa ttcctagtgt agcggtgaaa tgcgtagaga ttaggaagaa 600

caccggtggc gaaggcgact ttctggacga actgacgctg aggcgcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgaatacta ggtgtaggag 720

cttctgtgcc ggagctaaca caataagtat tccgcctggg aagtacgatc gcaagattaa 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc 840

aacgcgaaga accttaccag gtcttgacat taacaggtgg tgcacggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatctt atgttaccag 960

cacgtgggga ctcatgagag accgccgcgg acaacgcgga ggaaggtggg gatgacgtca 1020

agtcatcatg ccccttatga cctgggctac acacgtacta caatgggtgt caaagagaag 1080

cgaaaccgcg aggtggagcg aacctcaaca cccccagttc agatgcaggc tgcaacccgc 1140

ctgcagaagt aggaatcgct agtaatcgcg ggtcagcata ccgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcacactatg agagtcggaa acacccgaag ccggtaggta 1260

gccagccgtc gaaggtggag ctgatgattg gagtgaagtc gtaacaaggt agccgtatcg 1320

gaagg 1325

<210> 769
<211> 1433
<212> DNA
<213> Dietzia natronolimnaea

<400> 769
gcttacacat gcagtcgaac ggtaaggccc tttcgggggt acacgagtgg cgaacgggtg 60

agtaacacgt gggtaatctg ccctgcactt cgggataagc ctgggaaacc gggtctaata 120

ccggatatga gctcctgccg catggtgggg gttggaaagt ttttcggtgc aggatgagtc 180

cgcggcctat cagcttgttg gtggggtaat ggcctaccaa ggcgacgacg ggtagccggc 240

ctgagagggt gatcggccac actgggactg agacacggcc cagactccta cgggaggcag 300

cagtggggaa tattgcacaa tgggcgaaag cctgatgcag cgacgccgcg tgggggatga 360

cggtcttcgg attgtaaact cctttcagta gggacgaagc gaaagtgacg gtacctgcag 420

aagaagcacc ggccaactac gtgccagcag ccgcggtaat acgtagggtg caagcgttgt 480

ccggaattac tgggcgtaaa gagctcgtag gcggtttgtc acgtcgtctg tgaaatcctc 540

cagctcaact gggggcgtgc aggcgatacg ggcagacttg agtactacag gggagactgg 600

aattcctggt gtagcggtga aatgcgcaga tatcaggagg aacaccggtg gcgaaggcgg 660

gtctctgggt agtaactgac gctgaggagc gaaagcatgg ggagcaaaca ggattagata 720

ccctggtagt ccatgccgta aacggtgggc gctaggtgtg gggtccttcc acggattccg 780

tgccgtagct aacgcattaa gcgccccgcc tggggagtac ggccgcaagg ctaaaactca 840

aaggaattga cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg 900

aagaacctta cctaggcttg acatatacag gacgacggca gagatgtcgt ttcccttgtg 960

gcttgtatac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaacccc tgtctcatgt tgccagcacg ttatggtggg gactcgtgag 1080

agactgccgg ggtcaactcc ggatgaaggt ggggatgacg tcaaatcatc atgccccctt 1140

atgtctaggg cttcacatat gctacaatgg ctagtacaga gggctgcgag accgcgaggt 1200

ggagcgaatc ccttaaagct agtctcagtt cggattgggg tctgcaactc gaccccatga 1260

agtcggagtc gctagtaatc gcagatcagc attgctgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacgt catgaaagtc ggtaacaccc gaagccggtg gcctaaccct 1380

tgtggaggga gccgtcgaag gtgggatcgg cgattgggac gaagtcgaac aag 1433

<210> 770
<211> 1483
<212> DNA
<213> Dietzia sp. BBDP51

<400> 770
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggtaaggccc ttcggggtac acgagtggcg aacgggtgag taacacgtgg gtaatctgcc 120

ctgcacttcg ggataagcct gggaaactgg gtctaatacc ggatatgaac tcctgccgca 180

tggtgggggt tggaaagttt ttcggtgcag gatgagtccg cggcctatca gcttgttggt 240

ggggtaatgg cctaccaagg cgacgacggg tagccggcct gagagggtga tcggccacac 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg 360

ggcgaaagcc tgatgcagcg acgccgcgtg ggggatgacg gtcttcggat tgtaaacccc 420

tttcagtagg gacgaagcgc aagtgacggt acctgcagaa gaagcaccgg ctaactacgt 480

gccagcagcc gcggtaatac gtagggtgcg agcgttgtcc ggaattactg ggcgtaaaga 540

gctcgtaggc ggtttgtcac gtcgtctgtg aaatccctcg gcttaaccgg gggcgtgcag 600

gcgatacggg cagacttgag tactacaggg gagactggaa ttcctggtgt agcggtgaaa 660

tgcgcagata tcaggaggaa ccaccggtgg cgaagggcgg gtctcttggg tagtaactga 720

cgctgaggag cgaaaagcat gggttagcga acaggattag ataccctggg tagtccatgc 780

cgtaaaacgg tgggcgctag gtgtggggtc cttccacgga ttccgtgccg tagctaacgc 840

attaagcgcc ccgcctgggg agtacggccg caaggctaaa actcaaagga attgacgggg 900

gcccgcacaa gcggcggagc atgtggatta attcgatgca acgcgaagaa ccttacctag 960

gcttgacata tacaggacga cggcagagat gtcgtttccc ttgtggcttg tatacaggtg 1020

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccctgtct catgttgcca gcacgttatg gtggggactc gtgagagact gccggggtca 1140

actcggagga aggtggggat gacgtcaaat catcatgccc cttatgtcta gggcttcaca 1200

catgctacaa tggctagtac agagggctgc gataccgcga ggtggagcga atcccttaaa 1260

gctggtctca gttcggattg gggtctgcaa ctcgacccca tgaagtcgga gtcgctggta 1320

atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

cgtcatgaaa gtcggtaaca cccgaagccg gtggcctaac ccttgtggag ggagccgtcg 1440

aaggtgggat cggcgattgg gacgaagtcg taacaaggta acc 1483

<210> 771
<211> 1467
<212> DNA
<213> Dietzia sp. CA149

<400> 771
ttaactgcag tcgacggtaa ggccccttcg ggggtacacg agtggcgaac gggtgagtaa 60

cacgtgggta atctgccctg cacttcggga taagcttggg aaactgggtc taataccgga 120

tatgaactcc tgccgcatgg tgggggttgg aaagtttttc ggtgcaggat gagcccgcgg 180

cctatcagct tgttggtggg gtaatggcct accaaggcga cgacgggtag ccggcctgag 240

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggc gaaagcctga tgcagcgacg ccgcgtgggg gatgacggtc 360

ttcggattgt aaaccccttt cagtagggac gaagcgcaag tgacggtacc tgcagaagaa 420

gcaccggcta actacgtgcc agcagccgcg gtaatacgta gggtgcgagc gttgtccgga 480

attactgggc gtaaagagct cgtaggcggt ttgtcacgtc gtctgtgaaa tccctcggct 540

taaccggggg cgtgcaggcg atacgggcag acttgagtac tacaggggag actggaattc 600

ctggtgtagc ggtgaaatgc gcagatatca ggaggaacac cggtggcgaa ggcgggtctc 660

tgggtagtaa ctgacgctga ggagcgaaag catgggtagc gaacaggatt agataccctg 720

gtagtccatg ccgtaaacgg tgggcgctag gtgtggggtc cttccacgga ctccgtgccg 780

tagctaacgc attaagcgcc ccgcctgggg agtacggccg caaggctaaa actcaaagga 840

attgacgggg gcccgcacaa gcggcggagc atgtggatta attcgatgca acgcgaagaa 900

ccttacctag gcttgacatc ctttgaccct tctagagata gaagtttccc cttcggggga 960

caaagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1020

ccgcaacgag cgcaaccctt aagcttagtt gccatcatta agttgggcac tctaagttga 1080

ctgccggtga caaaccggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgat 1140

ttgggctaca cacgtgctac aatggacaat acaaagggca gcgaaaccgc gaggtcaagc 1200

aaatcccata aagttgttct cagttcggat tgtagtctgc aactcgacta catgaagctg 1260

gaatcgctag taatcgtaaa tcagcatgct acggtgaata cgttcccggg tcttgtacac 1320

accgcccgtc acgtcatgaa agtcggtaac acccgaagcc ggtggcctaa cccttgtgga 1380

gggagccgtc gaaggtggga tcggcgattg ggacgaagtc gtaacaaggt agccgtaccg 1440

gaaggtgcgg ctggatcaaa tccataa 1467

<210> 772
<211> 1472
<212> DNA
<213> Dietzia timorensis

<400> 772
ggggtgctta cacatgcagt cgaacggtaa ggcccttcgg ggtacacgag tggcgaacgg 60

gtgagtaaca cgtgggtaat ctgccctgca cttcgggata agcctgggaa actgggtcta 120

ataccggata ttcagcttct gccgcatggt ggttgttgga aagtttttcg gtgcaggatg 180

tgcccgcggc ctatcagctt gttggtgggg taatggccta ccaaggcgac gacgggtagc 240

cggcctgaga gggtgatcgg ccacattggg actgagacac ggcccagact cctacgggag 300

gcagcagtgg ggaatattgc acaatgggcg caagcctgat gcagcgacgc cgcgtgaggg 360

atgacggtct tcggattgta aacctctttc ggcagggacg aagcgcaagt gacggtacct 420

gcagaagaag caccggccaa ctacgtgcca gcagccgcgg taatacgtag ggtgcaagcg 480

ttgtccggaa ttactgggcg taaagagctc gtaggcggtt tgtcgcgtcg tctgtgaaat 540

cctacagctt aactgtgggc gtgcaggcga tacgggcaga cttgagtact acaggggaga 600

ctggaattcc tggtgtagcg gtgaaatgcg cagatatcag gaggaacacc ggtggcgaag 660

gcgggtctct gggtagtaac tgacgctgag gagcgaaagc atgggtagcg aacaggatta 720

gataccctgg tagtccatgc cgtaaacggt gggcgctagg tgtgggtttc cttccacggg 780

atccgtgccg cagctaacgc attaagcgcc ccgcctgggg agtacggccg caaggctaaa 840

actcaaagga attgacgggg gcccgcacaa gcggcggagc atgtggatta attcgatgca 900

acgcgaagaa ccttacctgg gcttgacata tacaggacga cggcagagat gtcgtttccc 960

ttgtggcttg tatacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt 1020

taagtcccgc aacgagcgca acccttgtct catgttgcca gcaattcggt tggggactcg 1080

tgagagactg ccggggtcaa ctcggaggaa ggtggggatg acgtcaaatc atcatgcccc 1140

ttagtccagg gcttcacaca tgctacaatg gccggtacag agggctgcga tactgtaaag 1200

tggagcgaat ctcttaaagc cggtctcagt tcggattggg gtctgcaact cgaccccatg 1260

aagtcgagtc gctagtaatc gcagatcagc aatgctgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacgt catgagagtc ggtaacaccc gaagccggtg gcctaaccct 1380

tgtgggggga gccgtcgaag gtgggatcgg cgattgggac gaagtcgtaa caaggtaccc 1440

gtaccggagg gtgcggctgg atcaaatcaa ta 1472

<210> 773
<211> 1392
<212> DNA
<213> Dorea formicigenerans

<400> 773
gtcgagcgaa gcacttaagt ttgattcttc ggatgaagac ttttgtgact gagcggcgga 60

cgggtgagta acgcgtgggt aacctgcctc atacaggggg ataacagtta gaaatggctg 120

ctaataccgc ataagaccac agtactgcat ggtacagtgg taaaaactcc ggtggtatga 180

gatggacccg cgtctgatta ggtagttggt gaggtaacgg cccaccaagc cgacgatcag 240

tagccgacct gagagggtga ccggccacat tgggactgag acacggccca gactcctacg 300

ggaggcagca gtggggaata ttgcacaatg ggcgaaagcc tgatgcagcg acgccgcgtg 360

aaggatgaag tatttcggta tgtaaacttc tatcagcagg gaagaaaatg acggtacctg 420

actaagaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt 480

tatccggatt tactgggtgt aaagggagcg tagacggctg tgcaagtctg aagtgaaagg 540

catgggctca acctgtggac tgctttggaa actgtgcagc tagagtgtcg gagaggtaag 600

tggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg 660

cggcttactg gacgatgact gacgttgagg ctcgaaagcg tggggagcaa acaggattag 720

ataccctggt agtccacgcc gtaaacgatg actgctaggt gtcgggtagc aaagctattc 780

ggtgccgcag ctaacgcaat aagcagtcca cctggggagt acgttcgcaa gaatgaaact 840

caaaggaatt gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 900

cgaagaacct tacctgatct tgacatcccg atgaccgctt cgtaatggaa gcttttcttc 960

ggaacatcgg tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1020

aagtcccgca acgagcgcaa cccttatctt cagtagccag catttaggat gggcactctg 1080

gagagactgc cagggataac ctggaggaag gtggggatga cgtcaaatca tcatgcccct 1140

tatgaccagg gctacacacg tgctacaatg gcgtaaacaa agggaagcag agccgcgagg 1200

ccgagcaaat ctcaaaaata acgtctcagt tcggattgta gtctgcaact cgactacatg 1260

aagctggaat cgctagtaat cgcagatcag aatgctgcgg tgaatacgtt cccgggtctt 1320

gtacacaccg cccgtcacac catgggagtc agtaacgccc gaagtcagtg acccaaccga 1380

aaggagggag ct 1392

<210> 774
<211> 1392
<212> DNA
<213> Dorea longicatena

<220>
<221> modified_base
<222> (13)..(13)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (18)..(19)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (21)..(22)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (24)..(25)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (41)..(41)
<223> a, c, t, g, unknown or other

<400> 774
gtcgagcgaa gcngcttnng nnannagatt cttcggatga nttcctttgt gactgagcgg 60

cggacgggtg agtaacgcgt gggtaacctg cctcatacag ggggataaca gttagaaatg 120

actgctaata ccgcataaga ccacggtacc gcatggtaca gtggtaaaaa ctccggtggt 180

atgagatgga cccgcgtctg attaggtagt tggtggggta acggcctacc aagccgacga 240

tcagtagccg acctgagagg gtgaccggcc acattgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtgggg aatattgcac aatggaggaa actctgatgc agcgacgccg 360

cgtgaaggat gaagtatttc ggtatgtaaa cttctatcag cagggaagaa aatgacggta 420

cctgactaag aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcaa 480

gcgttatccg gatttactgg gtgtaaaggg agcgtagacg gcacggcaag ccagatgtga 540

aagcccgggg ctcaaccccg ggactgcatt tggaactgct gagctagagt gtcggagagg 600

caagtggaat tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg 660

aaggcggctt gctggacgat gactgacgtt gaggctcgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgccgtaaac gatgactgct aggtgtcggg tggcaaagcc 780

attcggtgcc gcagctaacg caataagcag tccacctggg gagtacgttc gcaagaatga 840

aactcaaagg aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc 900

aacgcgaaga accttacctg atcttgactt cccgatgacc gcttcgtaat ggaagtcttt 960

cttcggaaca tcggtgacag tgggggcatg gatgtcgtca gctcgtgtcg tgagatgttg 1020

ggttaagtcc cgcaacgagc gcaaccccta tcttcagtag ccagcaggtt aagctgggca 1080

ctctggagag actgccaggg ataacctgga ggaaggtggg gatgacgtca aatcatcatg 1140

ccccttatga ccagggctac acacgtgcta caatggcgta aacaaagaga agcgaactcg 1200

cgagggtaag caaatctcaa aaataacgtc tcagttcgga ttgtagtctg caactcgact 1260

acatgaagct ggaatcgcta gtaatcgcag atcagaatgc tgcggtgaat acgttcccgg 1320

gtcttgtaca caccgcccgt cacaccatgg gagtcagtaa cgcccgaagt cagtgaccca 1380

accgtaagga gg 1392

<210> 775
<211> 1529
<212> DNA
<213> Dysgonomonas gadei

<400> 775
acaaagaaga gtttgatcct ggctcaggat gaacgctagc gataggccta acacatgcaa 60

gtcgaggggc agcatagggt agcaatactt tgatggcgac cggcgcacgg gtgagtaacg 120

cgtatgcaac ctacctataa caggggaata acccggagaa attcggacta ataccgcata 180

aaacaggggc tccgcatgga gatatttgtt aaagatttat cggttataga tgggcatgcg 240

ttccattagc cagttggtga ggtaacggct caccaaagca acgatggata ggggaactga 300

gaggtttgtc ccccacactg gaactgagac acggaccaga ctcctacggg aggcagcagt 360

gaggaatatt ggtcaatggg cgagagcctg aaccagccaa atcgcgtgaa ggaagactgc 420

cttatgggtt gtaaacttct tttatacagg aataaaaaga gttacgtgta acttattgca 480

tgtactgtat gaataagcat cggctaactc cgtgccagca gccgcggtaa tacggaggat 540

gcgagcgtta tccggattta ttgggtttaa agggtgcgca ggcgggaact taagtcagcg 600

gtgaaatctc gacgcttaac gtcgaaactg ccgttgaaac tgggtttctt gagtatagat 660

gaagtaggcg gaattcgttg tgtagcggtg acatgcttag atataacgag gaactccgat 720

tgcgtaggca gcttactaag ctataactga cgctcaagca cgaaagcgtg gggatcaaac 780

aggattagat accctggtag tccacgccgt aaacgatgat tactagttgt atgcgatata 840

ccgtatgtga ctaagcgaaa gcgataagta atccacctgg ggagtacgcc ggcaacggtg 900

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 960

atacgcgagg aaccttaccc gggcttgaaa tgcagaagaa taacgttgaa agatgttagc 1020

cagcaatggc ttctgtgtag gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtcg 1080

gcttaagtgc cataacgagc gcaacccaca ttgttagtta ctaacaggtc aagctgagga 1140

ctctaacaag actgccgtcg taagatgcga ggaaggtgtg gatgacgtca aatcagcacg 1200

gcccttacgt ccggggcgac acacgtgtta caatgggtgg tacaaagggc agctacttgg 1260

tgacaagatg ctaatctcca aagccactcc cagttcggat cggagtctgc aactcgactc 1320

cgtgaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt caagccatgg aagctggggg tatctgaagt gcgtaaccgc 1440

aaggagcgtc ctagggtaaa accggtgact ggggctaagt cgtaacaagg tagccgtacc 1500

ggaaggtgcg gctggaacac ctcctttct 1529

<210> 776
<211> 1003
<212> DNA
<213> Dysgonomonas mossii

<220>
<221> modified_base
<222> (879)..(879)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (972)..(974)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (979)..(981)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (991)..(992)
<223> a, c, t, g, unknown or other

<400> 776
agtcgagggg cagcatagag tagcaatact ttgatggcga ccggcgcacg ggtgagtaac 60

acgtatgcaa cctacctaca tcaggggaat aacccggaga aattcggact aataccgcat 120

aatacaggga tgccgcatgg caatatttgt taaagattta tcggatgtag atgggcatgc 180

gttccattag ctagttggta aggtaacggc ttaccaaggc aacgatggat aggggaactg 240

agaggtttgt cccccacact ggaactgaga cacggaccag actcctacgg gaggcagcag 300

tgaggaatat tggtcaatgg acgagagtct gaaccagcca aatcgcgtga aggaagactg 360

ccctacgggt tgtaaacttc ttttgtacag gaataaaaga cattacgtgt aatgtattgc 420

atgtactgta cgaataagca tcggctaact ccgtgccagc agccgcggta atacggagga 480

tgcgagcgtt atccggattt attgggttta aagggtgcgc aggcgggatt ttaagtcagc 540

ggtgaaattt tcaggctcaa cctgaacact gccgttgaaa ctgggattct tgagtatgga 600

tgaagtaggc ggaattcgtt gtgtagcggt gacatgctta gatataacga ggaactccga 660

ttgcgtaggc agcttactaa gccataactg acgctcaagc acgaaagcgt ggggatcaaa 720

caggattaga taccctggta gtccacgccg taaacgatga ttactagttg tttgcgatat 780

accgtaagtg actaagcgaa agcgataagt aatccacctg gggagtacgc cggcaacggt 840

gaaactcaaa ggaattgacg ggggcccgca caagcggang aacatgtggt ttaattcgat 900

gatacgcgag gaaccttacc cgggcttgaa atgtacctga ccgtccttga aaagggactt 960

ctagcaatag cnnnatgtnn ngctgcatgg nngtcgtcag ctc 1003

<210> 777

<211> 1547
<212> DNA
<213> Edwardsiella tarda

<400> 777
tttaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg gtagcaggga gaaagcttgc tttctccgct gacgagcggc ggacgggtga 120

gtaatgtctg gggatctgcc tgatggaggg ggataactac tggaaacggt agctaatacc 180

gcataacgtc gcaagaccaa agtgggggac cttcgggcct catgccatca gatgaaccca 240

gatgggatta gctagtaggt ggggtaatgg ctcacctagg cgacgatccc tagctggtct 300

gagaggatga ccagccacac tggaactgag acacggtcca gactcctacg ggaggcagca 360

gtggggaata ttgcacaatg ggcgcaagcc tgatgcagcc atgccgcgtg tatgaagaag 420

gccttcgggt tgtaaagtac tttcagtagg gaggaaggtg tgaacgttaa tagcgctcac 480

aattgacgtt acctacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 540

ggagggtgca agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc ggtttgttaa 600

gttggatgtg aaatccccgg gcttaacctg ggaactgcat ccaagactgg caagctagag 660

tctcgtagag ggaggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa 720

taccggtggc gaaggcggcc tcctggacga agactgacgc tcaggtgcga aagcgtgggg 780

agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgatgtcgat ttggaggttg 840

tgcccttgag gcgtggcttc cgaagctaac gcgttaaatc gaccgcctgg ggagtacggc 900

cgcaaggtta aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 960

taattcgatg caacgcgaag aaccttacct actcttgaca tccagcgaat cctgtagaga 1020

tacgggagtg ccttcgggaa cgctgagaca ggtgctgcat ggctgtcgtc agctcgtgtt 1080

gtgaaatgtt gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt gccagcggtt 1140

cggccgggaa ctcaaaggag actgccagtg ataaactgga ggaaggtggg gatgacgtca 1200

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggcgta tacaaagaga 1260

agcgaactcg cgagagcaag cggacctcat aaagtacgtc gtagtccgga ttggagtctg 1320

caactcgact ccatgaagtc ggaatcgcta gtaatcgtgg atcagaatgc cacggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt 1440

aggtagctta accttcggga gggcgcttac cactttgtga ttcatgactg gggtgaagtc 1500

gtaacaaggt aaccgtaggg gaacctgcgg ttggatcacc tccttac 1547

<210> 778
<211> 999
<212> DNA
<213> Eggerthella lenta

<220>
<221> modified_base
<222> (33)..(36)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (57)..(57)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (119)..(119)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (788)..(788)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (848)..(848)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (860)..(860)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (877)..(877)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (887)..(887)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (891)..(891)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (899)..(899)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (933)..(934)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (961)..(961)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (963)..(963)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (978)..(978)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (980)..(980)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (983)..(983)
<223> a, c, t, g, unknown or other

<400> 778
cctcgggcgg acatgaagtg gcgaacgggt gannnncacg tgaccaacct gcccccngct 60

ccgggacaac cttgggaaac cgaggctaat accggatact ccctcccctg ctcctgggng 120

ggtcgggaaa gcccaggcgg agggggatgg ggtcgcggcc cattaggtag taggcggggt 180

aacggcccac ctagcccgcg atgggtagcc gggttgagag accgaccggc cacattggga 240

ctgagatacg gcccagactc ctacgggagg cagcagtggg gaattttgcg caatggggga 300

aaccctgacg cagcaacgcc gcgtgcggga cgacggcctt cgggttgtaa accgctttca 360

gcagggaaga aattcgacgg tacctgcaga agaagctccg gctaactacg tgccagcagc 420

cgcggtaata cgtagggagc gagcgttatc cggattcatt gggcgtaaag agcgcgtagg 480

cggcctctca agcgggatct ctaatccgag ggctcaaccc ccggccggat cccgaactgg 540

gaggctcgag ttcggtagag gcaggcggaa ttcccggtgt agcggtggaa tgcgcagata 600

tcgggaagaa caccgatggc gaaggcagcc tgctgggccg caactgacgc tgaggcgcga 660

aagctagggg agcgaacagg attagatacc ctggtagtcc tagccgtaaa cgatggatac 720

taggtgtggg gggctccgcc ctccgtgccg cagccaacgc attaagtatc ccgcctgggg 780

agtacggncg caaggctaaa actcaaggaa ttgacggggg cccgcacaag cagcggagca 840

tgtggctnaa ttcgaagcan cgcgaagaac cttaccnggg cttgacntgg nacgtgaanc 900

cggggaaacc cggtggccga gaggagcgtc cgnnagtggt gcatggctgt cgtcagctcg 960

ngncgtgaga tgttgggntn agntcccgca acgagcgca 999

<210> 779
<211> 1429
<212> DNA
<213> Eggerthella sinensis

<400> 779
gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac gattaaaccg tcctcggacg 60

gacatagagt ggcgaacggg tgagtaacac gtgaccaacc tgcccccccgc tccgggacaa 120

ccttgggaaa ccgaggctaa taccggatac tcctcgcccc cctcctgggg ggcccgggaa 180

agcccagacg gcgggggatg gggtcgcggc ccattaggta gacggcgggg taacggccca 240

ccgtgcctgc gatgggtagc cgggttgaga gaccgaccgg ccacattggg actgagatac 300

ggcccagact cctacgggag gcagcagtgg ggaattttgc gcaatggggg aaaccctgac 360

gcagcaacgc cgcgtgcggg atgacggcct tcgggttgta aaccgctttc agcagggaag 420

aaattcgacg gtacctgcag aagaagctcc ggctaactac gtgccagcag ccgcggtaat 480

acgtagggag cgagcgttat ccggattcat tgggcgtaaa gagcgcgtag gcggcctttc 540

aagcgggatc tctaatccga gggctcaacc cccggccgga tcccgaactg ggaggctcga 600

gttcggtaga ggcaggcgga attcccggtg tagcggtgga atgcgcagat atcgggaaga 660

acaccgatgg cgaaggcagc ctgctgggcc gaaactgacg ctgaggcgcg aaagctaggg 720

gagcgaacag gattagatac cctggtagtc ctagccgtaa acgatgggcg ctaggtgtgg 780

ggagggtcat cctctccgtg cccgcagcta acgcattaag cgccccgcct ggggagtacg 840

gccgcaaggc taaaactcaa aggaattgac gggggcccgc acaagcagcg gagcatgtgg 900

cttaattcga agcaacgcga agaaccttac cagggcttga catgctagtg aagccgggga 960

aacccggtgg ccgagaggag ctagcgcagg tggtgcatgg ctgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caacccctat cgcatgttgc cagcattcag 1080

ttggggactc atgcgagact gccggcgtca agccggagga aggtggggac gacgtcaagt 1140

catcatgccc tttatgccct gggctgcaca cgtgctacaa tggccggtac aacgggctgc 1200

gaactcgcga gagtgagcga atcccttaaa gccggcccca gttcggatcg gaggctgcaa 1260

cccgcctccg tgaagtcgga gttgctagta atcgcggatc agcatgccgc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcac accacccgag tcgtctgcac ccgaagccgc 1380

cggccgaacc cgcaaggggc ggaggcgtcg aaggtgtgga gggtaaggg 1429

<210> 780
<211> 1346
<212> DNA
<213> Eggerthella sp. 1_3_56FAA

<220>
<221> modified_base
<222> (123)..(123)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1329)..(1329)
<223> a, c, t, g, unknown or other

<400> 780
accgccctcg ggcggacatg aagtggcgaa cgggtgagta acacgtgacc aacctgcccc 60

cctctccggg acaaccttgg gaaaccgagg ctaataccgg atactccctc ccctgctcct 120

ggnggggtcg ggaaagccca ggcggagggg gatggggtcg cggcccatta ggtagtaggc 180

ggggtaacgg cccacctagc ccgcgatggg tagccgggtt gagagaccga ccggccacat 240

tgggactgag atacggccca gactcctacg ggaggcagca gtggggaatt ttgcgcaatg 300

ggggaaaccc tgacgcagca acgccgcgtg cgggacgacg gccttcgggt tgtaaaccgc 360

tttcagcagg gaagaaattc aggcctgcag aagaagctcc ggctaactac gtgccagcag 420

ccgcggtaat acgtagggag cgagcgttat ccggattcat tgggcgtaaa gagcgcgtag 480

gcggcctctc aagcgggatc tctaatccga gggctcaacc cccggccgga tcccgaactg 540

ggaggctcga gttcggtaga ggcaggcgga attcccggtg tagcggtgga atgcgcagat 600

atcgggaaga acaccgatgg cgaaggcagc ctgctgggcc gcaactgacg ctgaggcgcg 660

aaagctaggg gagcgaacag gattagatac cctggtagtc ctagccgtaa acgatggata 720

ctaggtgtgg ggggctccgc cctccgtgcc gcagccaacg cattaagtat cccgcctggg 780

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcagcggag 840

catgtggctt agttcgaagc aacgcgaaga acctcaccag gcctgatccc gaactggaag 900

ccggggaaac ccggtggccg agaggaacgt ccgcaggtgg tgcatggctg tcgtcagctc 960

gtgtcgtgac atgttgggtt aagtcccgca acgagcgcaa cccctgcccc atgttgccag 1020

cattaggttg gggactcatg ggggactgcc ggcgtcaagc cggaggaagg tggggacgac 1080

gtcaagtcat catgcccttt atgccctggg ctgcacacgt gctacaatgg ccggtacaac 1140

gggctgcgag accgcgaggt cgagcgaatc cctcaaagcc ggccccagtt cggatcggag 1200

gctgcaaccc gcctccgtga agtcggagtt gctagtaatc gcggatcagc atgccgcggt 1260

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acccgagtcg tctgcacccg 1320

aagccgccnt ccgaacccgc aagggg 1346

<210> 781
<211> 1430
<212> DNA
<213> Eggerthella sp. HGA1

<400> 781
gaacgctggc ggcgtgccta acacatgcaa gtcgaacgat gaaaccgccc tcgggcggac 60

atgaagtggc gaacgggtga gtaacacgtg accaacctgc ccccctctcc gggacaacct 120

tgggaaaccg aggctaatac cggatactcc ctcccctgct cctgcagggg tcgggaaagc 180

ccaggcggag ggggatgggg tcgcggccca ttaggtagta ggcggggtaa cggcccacct 240

agcccgcgat gggtagccgg gttgagagac cgaccggcca cattgggact gagatacggc 300

ccagactcct acgggaggca gcagtgggga attttgcgca atgggggcaa ccctgacgca 360

gcaacgccgc gtgcgggacg acggccttcg ggttgtaaac cgctttcagc agggaagaaa 420

ttcgacggta cctgcagaag aagctccggc taactacgtg ccagcagccg cggtaatacg 480

tagggagcga gcgttatccg gattcattgg gcgtaaagag cgcgtaggcg gcctctcaag 540

cgggatctct aatccgaggg ctcaaccccc ggccggatcc cgaactggga ggctcgagtt 600

cggtagaggc aggcggaatt cccggtgtag cggtggaatg cgcagatatc gggaagaaca 660

ccgatggcga aggcagcctg ctgggccgca actgacgctg aggcgcgaaa gctaggggag 720

cgaacaggat tagataccct ggtagtccta gccgtaaacg atggatacta ggtgtggggg 780

gctccgccct ccgtgccgca gccaacgcat taagtatccc gcctggggag tacggccgca 840

aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc agcggagcat gtggcttaat 900

tcgaagcaac gcgaagaacc ttaccagggc ttgacatgga cgtgaagccg gggaaacccg 960

gtggccgaga ggagcgtccg caggtggtgc atggctgtcg tcagctcgtg tcgtgagatg 1020

ttgggttaag tcccgcaacg agcgcaaccc ctgccccatg ttgccagcat taggttgggg 1080

actcatgggg gactgccggc gtcaagccgg aggaaggtgg ggacgacgtc aagtcatcat 1140

gcccttatg ccctgggctg cacacgtgct acaatggccg gtacaacggg ctgcgagacc 1200

gcgaggtcga gcgaatccct caaagccggc cccagttcgg atcggaggct gcaacccgcc 1260

tccgtgaagt cggagttgct agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg 1320

ggccttgtac acaccgcccg tcacaccacc cgagtcgtct gcacccgaag ccgccggccg 1380

aacccgcaag gggcggaggc gtcgaaggtg tggagggtaa ggggggtgaa 1430

<210> 782
<211> 753
<212> DNA
<213> Eggerthella sp. YY7918

<220>
<221> modified_base
<222> (122)..(122)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (197)..(197)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (341)..(341)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (431)..(431)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (508)..(508)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (602)..(602)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (620)..(621)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (623)..(623)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (627)..(627)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (670)..(670)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (676)..(676)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (709)..(709)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (739)..(739)
<223> a, c, t, g, unknown or other

<400> 782
ctacccttct cttcgggaca accttgggaa accgaggcta ataccgaata ctccggtgag 60

tgcgcatgca cacgccggga aagctttcgc ggagaaggat ggggtcgcgg cccatcaggt 120

anacggcggg gtagcggccc accgtgcttt tgacgggtag ccgggttgag agaccgaccg 180

gccacattgg gactganata cggcccagac tcctacggga ggcagcagtg gggaattttg 240

cgcaatgggg gaaaccctga cgcagcaccg ccgcgtgcgg gatgaaggcc ttcgggtcgt 300

aaaccgcttt cagcagggaa gaaattcgac ggtacctgca naagaagccc cggctaacta 360

cgtgccagca gccgcggtaa tacgtagggg gcgagcgtta tccggattca ttgggcgtaa 420

agcgcgcgta ngcggccgcc taagcgggac ctctaacctt ggggctcaac ctcaagccgg 480

gttccgaact gggtggctcg agtttggnag aggaagatgg aattcccggt gtagcggtgg 540

aatgcgcaga tatcgggaag aacaccgatg gcgaaggcag tcttctgggc tcataactga 600

cnctgaagcg cgaaagctan ngnagcnaac aggattagat accctggtag tcctagccgt 660

aaacgatggn cactangtgt ggggagatac tctttccgtg ccgaagcana cgcattaagt 720

gccccgcctg gggagtacng ccgcaaggct aaa 753

<210> 783
<211> 1510
<212> DNA
<213> Ehrlichia chaffeensis

<400> 783
tcaaacttga gagtttgatc ctggctcaga acgaacgctg gcggcaagcc taacacatgc 60

aagtcgaacg gacaattgct tataaccttt tggttataaa taattgttag tggcagacgg 120

gtgagtaatg cgtaggaatc tacctagtag tatggaatag ccattagaaa tgatgggtaa 180

tactgtataa tccctgcggg ggaaagattt atcgctatta gatgagccta cgttagatta 240

gctagttggt aaggtaatgg cttaccaagg ctatgatcta tagctggtct gagaggacga 300

tcagccacac tggaactgag atacggtcca gactcctacg ggaggcagca gtggggaata 360

ttggacaatg ggcgaaagcc tgatccagct atgccgcgtg agtgaagaag gccttcgggt 420

tgtaaaactc tttcaatagg gaagataatg acggtaccta tagaagaagt cccggcaaac 480

tctgtgccag cagccgcggt aatacggagg gggcaagcgt tgttcggaat tattgggcgt 540

aaagggcacg taggtggact agtaagttaa aagtgaaata ccaaggctta actttggagc 600

ggcttttaat actgctagac tagaggtcga aagaggatag cggaattcct agtgtagagg 660

tgaaattcgt agatattagg aggaacacca gtggcgaaag cggctatctg gttcgatact 720

gacactgagg tgcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgct 780

gtaaacgatg agtgctaaat gtgaggattt tatctttgta ttgtagctaa cgcgttaagc 840

actccgcctg gggactacgg tcgcaagact aaaactcaaa ggaattgacg gggacccgca 900

caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa aaaccttacc acttttgac 960

atgaaggtcg tatccctcct aatagggga gtcagttcgg ctggacctta cacaggtgct 1020

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

cctcatcctt agttaccaac aggtaatgct gggcactcta aggaaactgc cagtgataaa 1140

ctggaggaag gtggggatga tgtcaagtca gcacggccct tataaggtgg gctacacacg 1200

tgctacaatg gcaactacaa taggtcgcga gaccgcaagg tttagctaat ccataaaagt 1260

tgtctcagtt cggattgttc tctgcaactc gagagcatga agtcggaatc gctagtaatc 1320

gtggatcatc atgccacggt gaatacgttc tcgggtcttg tacacactgc ccgtcacgcc 1380

atgggaattg gcttaactcg aagctggtgt gctaaccgca aggaagcagc catttaaggt 1440

tgggttagtg actagggtga agtcgtaaca aggtagctgt aggtgaacct gcggctggat 1500

tacctccttt 1510

<210> 784
<211> 1546
<212> DNA
<213> Eikenella corrodens

<400> 784
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcgaacg gcagcggggt agtgcttgca ctactgtccg gcgagtggcg aacgggtgag 120

taatatatcg gaacgtaccg agtaatgggg gataaccaat cgaaagattg gctaataccg 180

catacgtcct acgggagaaa gcgggggatc gcaagacctc gcgttattcg agcggccgat 240

aactgattag ctagttggtg gggtaaaggc ctaccaaggc gacgatcagt agcgggtctg 300

agaggacgat ccgccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tggggaattt tggacaatgg gggcaaccct gatccagcca tgccgcgtgt atgaagaagg 420

ccttcgggtt gtaaagtact tttgttaggg aagaaaaggg aagtgctaat accacttttt 480

gctgacggta cctaaagaat aagcaccggc taactacgtg ccagcagccg cggtaatacg 540

tagggtgcga gcgttaatcg gaattactgg gcgtaaagcg agcgcagacg gttatttaag 600

caggatgtga aatccccggg cttaacctgg gaactgcgtt ctgaactgga tagctagagt 660

gtgtcagagg ggggtagaat tccacgtgta gcagtgaaat gcgtagagat gtggaggaat 720

accgatggcg aaggcagccc cctgggataa cactgacgtt catgctcgaa agcgtgggta 780

gcaaacagga ttagataccc tggtagtcca cgccctaaac gatgtcgatt agctgttggg 840

caacttgatt gcttagtagc gtagctaacg cgtgaaatcg accgcctggg gagtacggtc 900

gcaagattaa aactcaaagg aattgacggg gacccgcaca agcggtggat gatgtggatt 960

aattcgatgc aacgcgaaga accttacctg gtcttgacat gtacggaacc ttccagagac 1020

ggaagggtgc cttcgggagc cgtaacacag gtgctgcatg gctgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctg tcattagttg ccatcattta 1140

gttgggcact ctaatgagac tgccggtgac aaaccggagg aaggtgggga tgacgtcaag 1200

tcctcatggc ccttatgacc agggcttcac acgtcataca atggtcggta cagagggtag 1260

ccaagccgcg aggtggagcc aatcccagaa aaccgatcgt agtccggatt gcactctgca 1320

actcgagtgc atgaagtcgg aatcgctagt aatcgcaggt cagcatactg cggtgaatac 1380

gttcccgggt cttgtacaca ccgcccgtca caccatggga gtgggggata ccagaagcag 1440

gtagggtaac cgcaaggagc ccgcttgcca cggtatgctt catgactggg gtgaagtcgt 1500

aacaaggtag ccgtagggga acctgcggct ggatcacctc ctttct 1546

<210> 785
<211> 1533
<212> DNA
<213> Enhydrobacter aerosaccus

<400> 785
taaactgaag agtttgatca tggctcagat tgaacgctgg cggcaggctt aacacatgca 60

agtcgaacga tgattatcta gcttgctaga tatgattagt ggcggacggg tgagtaacat 120

ttaggaatct gcctagtagt gggggatagc tcggggaaac tcgaattaat accgcatacg 180

acctacgggt gaaaggggc gcaagctctt gctattagat gagcctaaat cagattagct 240

agttggtggg gtaaaggccc accaaggcga cgatctgtaa ctggtctgag aggatgatca 300

gtcacaccgg aactgagaca cggtccggac tcctacggga ggcagcagtg gggaatattg 360

gacaatgggg gcaaccctga tccagccatg ccgcgtgtgt gaagaaggcc ttttggttgt 420

aaagcacttt aagcagggag gagaggctaa tggttaatac ccattagatt agacgttacc 480

tgcagaataa gcaccggcta actctgtgcc agcagccgcg gtaatacaga gggtgcgagc 540

gttaatcgga ttactgggc gtaaagcgag tgtaggtggc tcattaagtc acatgtgaaa 600

tccccgggct taacctggga actgcatgtg atactggtgg tgctagaata tgtgagaggg 660

aagtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata ccgatggcga 720

aggcagcttc ctggcataat attgacactg agattcgaaa gcgtgggtag caaacaggat 780

tagataccct ggtagtccac gccgtaaacg atgtctacta gccgttgggg tccttgagac 840

tttagtggcg cagttaacgc gataagtaga ccgcctgggg agtacggccg caaggttaaa 900

actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgatgca 960

acgcgaagaa ccttacctgg tcttgacata gtgagaatcc tgcagagatg cgggagtgcc 1020

ttcgggaatt cacatacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccttt ccttatttgc cagcgggtta agccgggaac 1140

tttaaggata ctgccagtga caaactggag gaaggcgggg acgacgtcaa gtcatcatgg 1200

cccttacgac cagggctaca cacgtgctac aatggtaggt acagagggtt gctacacagc 1260

gatgtgatgc taatctcaaa aagcctatcg tagtccggat tggagtctgc aactcgactc 1320

catgaagtcg gaatcgctag taatcgcaga tcagaatgct gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc acaccatggg agtctattgc accagaagta ggtagcctaa 1440

cgcaagaggg cgcttaccac ggtgtggtcg atgactgggg tgaagtcgta acaaggtagc 1500

cgtaggggaa cctgcggctg gatcacctcc tta 1533

<210> 786
<211> 1396
<212> DNA
<213> Enterobacter aerogenes

<220>
<221> modified_base
<222> (9)..(9)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (13)..(13)
<223> a, c, t, g, unknown or other

<400> 786
gcggtaacnc aanaagagct tgctctcggg tgacgagcgg cggacgggtg agtaatgtct 60

gggaaactgc ctgatggagg gggataacta ctggaaacgg tagctaatac cgcataacgt 120

cgcaagacca aagtggggga ccttcgggcc tcatgccatc agatgtgccc agatgggatt 180

agctagtagg tggggtaatg gctcacctag gcgacgatcc ctagctggtc tgagaggatg 240

accagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 300

attgcacaat gggcgcaagc ctgatgcagc catgccgcgt gtatgaagaa ggccttcggg 360

ttgtaaagta ctttcagcga ggaggaaggc gttaaggtta ataaccttgg cgattgacgt 420

tactcgcaga agaagcaccg gctaactccg tgccagcagc cgcggtaata cgggggtgca 480

agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc ggtctgtcaa gtcggatgtg 540

aaatccccgg gctcaacctg ggaactgcat tcgaaactgg caggctagag tcttgtagag 600

gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa taccggtggc 660

gaaggcggcc ccctggacaa agactgacgc tcaggtgcga aagcgtgggg agcaaacagg 720

attagatacc ctggtagtcc acgccgtaaa cgatgtcgac ttggaggttg tgcccttgag 780

gcgtggcttc cggagctaac gcgttaagtc gaccgcctgg ggagtacggc cgcaaggtta 840

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 900

caacgcgaag aaccttacct actcttgaca tccagagaac ttagcagaga tgctttggtg 960

ccttcgggaa ctctgagaca ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt 1020

gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt gccagcgatt aggtcgggaa 1080

ctcaaaggag actgccagtg ataaactgga ggaaggtggg gatgacgtca agtcatcatg 1140

gcccttacga gtagggctac acacgtgcta caatggcata tacaaagaga agcgacctcg 1200

cgagagcaag cggacctcat aaagtatgtc gtagtccgga ttggagtctg caactcgact 1260

ccatgaagtc ggaatcgcta gtaatcgtag atcagaatgc tacggtgaat acgttcccgg 1320

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt aggtagctta 1380

accttcggga gggcgc 1396

<210> 787
<211> 597
<212> DNA
<213> Enterobacter asburiae

<400> 787
cagactccta cgggaggcag cagtggggaa tattgcacaa tgggcgcaag cctgatgcag 60

ccatgccgcg tgtatgaaga aggccttcgg gttgtaaagt actttcagcg gggaggaagg 120

cgataaggtt aataaccttg tcgattgacg ttacccgcag aagaagcacc ggctaactcc 180

gtgccagcag ccgcggtaat acggagggtg caagcgttaa tcggaattac tgggcgtaaa 240

gcgcacgcag gcggtctgtc aagtcggatg tgaaatcccc gggctcaacc tgggaactgc 300

attcgaaact ggcaggctag agtcttgtag agggggggtag aattccaggt gtagcggtga 360

aatgcgtaga gatctggagg aataccggtg gcgaaggcgg cccctggac aaagactgac 420

gctcaggtgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 480

aacgatgtcg acttggaggt tgtgcccttg aggcgtggct tccggagcta acgcgttaag 540

tcgaccgcct ggggagtacg gccgcaaggt taaaactcaa tgaattgacg ggggccc 597

<210> 788
<211> 1495
<212> DNA
<213> Enterobacter cancerogenus

<400> 788
attgaacgct ggcggcaggc ctaacacatg caagtcgarc ggtarcacag agagcttgct 60

ctcgggtgac gagyggcgga cgggtgagta atgtctggga aactgcctga tggaggggga 120

taactactgg aaacggtagc taataccgca taacgtcgca agaccaaaga gggggacctt 180

cgggcctctt gccatcagat gtgcccagat gggattagct agtaggtggg gtaacggctc 240

acctaggcga cgatccctag ctggtctgag aggatgacca gccacactgg aactgagaca 300

cggtccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc gcaascctga 360

tgcagccatg ccgcgtgtat gaagaaggcc ttcgggttgt aaagtacttt cagcggggag 420

gaaggcgata aggttaataa ccttgtcgat tgacgttacc cgcagaaraa gcaccggcta 480

actccgtgcc agcagccgcg gtaatacgga gggtgcaagc gttaatcgga attactgggc 540

gtaaagcgca cgcaggcggt ctgtcaagtc ggatgtgaaa tccccgggct caacctggga 600

actgcattcg aaactggcag gctagagtct tgtagagggg ggtagaattc caggtgtagc 660

ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa ggcggccccc tggacaaaga 720

ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 780

ccgtaaacga tgtcgacttg gaggttgtgc ccttgaggcg tggcttccgg agctaacgcg 840

ttaagtcgac cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg 900

cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctact 960

cttgacatcc agagaactta gcagagatgc tttggtgcct tcgggaactc tgagacaggt 1020

gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc 1080

aacccttatc ctttgttgcc agcggtcmgg ccgggaactc aaaggagact gccagtgata 1140

aactggagga aggtggggat gacgtcaagt catcatggcc cttacgagta gggctacaca 1200

cgtgctacaa tggcgcatac aaagagaagc gacctcgcga gagcaagcgg acctcataaa 1260

gtgcgtcgta gtccggattg gagtctgcaa ctcgactcca tgaagtcgga atcgctagta 1320

atcgtagatc agaatgctac ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgggag tgggttgcaa aagaagtagg tagcttaacc tycgggaggg cgcttaccac 1440

tttgtgattc atgactgggg tgaagtcgta acaaggtaac cgtaggggaa cctgc 1495

<210> 789
<211> 1395
<212> DNA
<213> Enterobacter cloacae

<400> 789
tcgaacggta gcacagagag cttgctctcg ggtgacgagt ggcggacggg tgagtaatgt 60

ctgggaaact gcctgatgga gggggataac tactggaaac ggtagctaat accgcataac 120

gtcgcaagac caaagagggg gaccttcggg cctcttgcca tcagatgtgc ccagatggga 180

ttagctagta ggtggggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga 240

tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg 360

ggttgtaaag tactttcagc ggggaggaag ggagtaaggt taataacctt gttcattgac 420

gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 480

gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat 540

gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggctg gagtcttgta 600

gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 660

ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtc gacttggagg ttgttccctt 780

gaggagtggc ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaacgcg aagaacctta cctactcttg acatccagag aacttagcag aaatgctttg 960

gtgccttcgg gaactctgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gtccggccgg 1080

gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc 1140

atggcccttа cgagtagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc 1200

tcgcgagagc aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg 1260

actccatgaa gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1380

ttaaccttcg ggagg 1395

<210> 790
<211> 1362
<212> DNA
<213> Enterobacter cowanii

<220>
<221> modified_base
<222> (982)..(983)
<223> a, c, t, g, unknown or other

<400> 790
ggcggcaggc ctaacacatg caagtcgaac ggtaacagga agcagcttgc tgcttgctga 60

cgagtggcgg acgggtgagt aatgtctggg aaactgcctg atggaggggg ataactactg 120

gaaacggtag ctaataccgc ataacgtcgc aagaccaaag aggggacct tcgggcctct 180

tgccatcaga tgtgcccaga tgggattagc tagtaggtgg ggtaacggct cacctaggcg 240

acgatcccta gctggtctga gaggatgacc agccacactg gaactgagac acggtccaga 300

ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgcaagcctg atgcagccat 360

gccgcgtgta tgaagaaggc cttcgggttg taaagtactt tcagcgggga ggaaggcgat 420

gggttaataa ccgcgtcgat tgacgttacc cgcagaagaa gcaccggcta actccgtgcc 480

agcagccgcg gtaatacgga gggtgcaagc gttaatcgga attactgggc gtaaagcgca 540

cgcaggcggt ctgtcaagtc ggatgtgaaa tccccgggct caacctggga actgcatccg 600

aaactggcag gcttgagtct cgtagagggg ggtagaattc caggtgtagc ggtgaaatgc 660

gtagagatct ggaggaatac cggtggcgaa ggcggccccc tggacgaaga ctgacgctca 720

ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 780

tgtcgacttg gaggttgtgc ccttgaggcg tggcttccgg agctaacgcg ttaagtcgac 840

cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag 900

cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctggt cttgacatcc 960

acagaacttt ccagagatgg annggtgcct tcgggaactg tgagacaggt gctgcatggc 1020

tgtcgtcagc tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc aacccttatc 1080

ctttgttgcc agcggttagg ccgggaactc aaaggagact gccagtgata aactggagga 1140

aggtggggat gacgtcaagt catcatggcc cttacgacca gggctacaca cgtgctacaa 1200

tggcgcatac aaagagaagc aatctcgcga gagcaygcgg acctcataaa gtgcgtcgta 1260

gtccggattg gagtctgcaa ctcgactcca tgaagtcgga atcgctagta atcgtgaatc 1320

agaatgtcac ggtgaatacg ttcccgggcc ttgtacacac cg 1362

<210> 791
<211> 943
<212> DNA
<213> Enterobacter hormaechei

<400> 791
gtgccagcag ccgcggtaat acggagggtg caagcgttaa tcggaattac tgggcgtaaa 60

gcgcacgcag gcggtctgtc aagtcggatg tgaaatcccc gggctcaacc tgggaactgc 120

atccgaaact ggcaggctag agtcttgtag aggggggtag aattccaggt gtagcggtga 180

aatgcgtaga gatctggagg aataccggtg gcgaaggcgg cccctggac aaagactgac 240

gctcaggtgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 300

aacgatgtcg acttggaggt tgtgcccttg aggcgtggct tccggagcta acgcgttaag 360

tcgaccgcct ggggagtacg gccgcaaggt taaaactcaa atgaattgac gggggcccgc 420

acaagcggtg gagcatgtgg tttaattcga tgcaacgcga agaaccttac ctactcttga 480

catccagaga acttagcaga gatgctttgg tgccttcggg aactctgaga caggtgctgc 540

atggctgtcg tcagctcgtg ttgtgaaatg ttgggttaag tcccgcaacg agcgcaaccc 600

ttatcctttg ttgccagcga ttcggtcggg aactcaaagg agactgccag tgataaactg 660

gaggaaggtg gggatgacgt caagtcatca tggcccttac gagtagggct acacacgtgc 720

tacaatggca tatacaaaga gaagcgacct cgcgagagca agcggacctc ataaagtatg 780

tcgtagtccg gattggagtc tgcaactcga ctccatgaag tcggaatcgc tagtaatcgt 840

ggatcagaat gccacggtga atacgttccc gggccttgta cacaccgccc gtcacaccat 900

gggagtgggt tgcaaaagaa gtaggtagct taaccttcgg gag 943

<210> 792
<211> 1390
<212> DNA
<213> Enterobacter sp. 247BMC

<400> 792
gcacagagag cttgctctcg ggtgacgagt ggcggacggg tgagtaatgt ctgggaaact 60

gcctgatgga gggggataac tactggaaac ggtagctaat accgcataac gtcgcaagac 120

caaagagggg gaccttcggg cctcttgcca tcagatgtgc ccagatggga ttagctagta 180

ggtggggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga tgaccagcca 240

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattgcaca 300

atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg ggttgtaaag 360

tactttcagc ggggaggaag gcgataaggt taataacctt gtccattgac gttacccgca 420

gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt gcaagcgtta 480

atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat gtgaaatccc 540

cgggctcaac ctgggaactg cattcgaaac tggcaggctg gagtcttgta gaggggggta 600

gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg 660

gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgctgt aaacgatgtc gacttggagg ttgttccctt gaggagtggc 780

ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg ttaaaactca 840

aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg atgcaacgcg 900

aagaacctta cctactcttg acatccagag aacttagcag agatgctttg gtgccttcgg 960

gaactctgat acagtgtgaa atcgccgggc tccagctcgt gttgtgaaat gttgggttaa 1020

gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gtccggccgg gaactcaaag 1080

gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc atggcccttа 1140

cgagtagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc tcgcgagagc 1200

aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg actccatgaa 1260

gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc ttaaccttcg 1380

ggagggcgct 1390

<210> 793
<211> 1532
<212> DNA
<213> Enterobacter sp. 638

<400> 793
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggtagcacag ggagcttgct cctgggtgac gagcggcgga cgggtgagta atgtctggga 120

aactgcctga tggaggggga taactactgg aaacggtagc taataccgca taacgtcgca 180

agaccaaaga gggggacctt cgggcctctt gccatcagat gtgcccagat gggattagct 240

agtaggtggg gtaatggctc acctaggcga cgatccctag ctggtctgag aggatgacca 300

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggc gcaagcctga tgcagccatg ccgcgtgtat gaagaaggcc ttcgggttgt 420

aaagtacttt cagcgaggag gaaggcattg tggttaataa ccacagtgat tgacgttact 480

cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 540

gttaatcgga attactgggc gtaaagcgca cgcaggcggt ctgtcaagtc ggatgtgaaa 600

tccccgggct caacctggga actgcattcg aaactggcag gctagagtct tgtagagggg 660

ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa 720

ggcggccccc tggacaaaga ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgtcgacttg gaggttgttc ccttgaggag 840

tggcttccgg agctaacgcg ttaagtcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctact cttgacatcc agagaactta gcagagatgc tttggtgcct 1020

tcgggaactc tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcggttcgg ccgggaactc 1140

aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgagta gggctacaca cgtgctacaa tggcatatac aaagagaagc gacctcgcga 1260

gagcaagcgg acctcacaaa gtatgtcgta gtccggatcg gagtctgcaa ctcgactccg 1320

tgaagtcgga atcgctagta atcgtagatc agaatgctac ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgcaa aagaagtagg tagcttaacc 1440

ttcgggaggg cgcttaccac tttgtgattc atgactgggg tgaagtcgta acaaggtaac 1500

cgtaggggaa cctgcggttg gatcacctcc tt 1532

<210> 794
<211> 943
<212> DNA
<213> Enterobacter sp. JC163

<220>
<221> modified_base
<222> (88)..(88)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (126)..(126)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (129)..(129)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (148)..(148)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (233)..(233)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (475)..(476)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (489)..(490)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (494)..(494)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (497)..(498)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (507)..(508)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (511)..(511)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (527)..(527)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (624)..(624)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (628)..(628)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (781)..(781)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (927)..(927)
<223> a, c, t, g, unknown or other

<400> 794
ccgtgccagc agccgcggta atacggaggg tgcaagcgtt aatcggaatt actgggcgta 60

aagcgcacgc aggcggtctg tcaagtcnga tgtgaaatcc ccgggctcaa cctgggaact 120

gcattngana ctggcaggct ggagtctngt agaggggggt agaattccag gtgtagcggt 180

gaaatgcgta gagatctgga ggaataccgg tggcgaaggc ggcccctgg acnaagactg 240

acgctcaggt gcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgctg 300

taaacgatgt cgacttggag gttgttccct tgaggagtgg cttccggagc taacgcgtta 360

agtcgaccgc ctggggagta cggccgcaag gttaaaactc aaatgaattg acgggggccc 420

gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc gaagaacctt acctnntctt 480

gacatccann gaanttnnca gagatgnntt ngtgccttcg ggaactntga gacaggtgct 540

gcatggctgt cgtcagctcg tgttgtgaaa tgttgggtta agtcccgcaa cgagcgcaac 600

ccttatcctt tgttgccagc grtncggncg ggaactcaaa ggagactgcc agtgataaac 660

tggaggaagg tggggatgac gtcaagtcat catggccctt acgasyaggg ctacacacgt 720

gctacaatgg cryatacaaa gagaagcgac ctcgcgagag caagcggacc tcataaagtr 780

ngtcgtagtc cggattggag tctgcaactc gactccatga agtcggaatc gctagtaatc 840

gtggatcaga atgccacggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc 900

atgggagtgg gttgcaaaag aagtagntag cttaaccttc ggg 943

<210> 795
<211> 920
<212> DNA
<213> Enterobacter sp. SCSS

<220>
<221> modified_base
<222> (59)..(60)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (100)..(102)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (107)..(110)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (124)..(124)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (153)..(153)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (179)..(179)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (216)..(216)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (282)..(282)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (295)..(295)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (300)..(300)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (309)..(309)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (314)..(314)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (319)..(319)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (910)..(911)
<223> a, c, t, g, unknown or other

<400> 795
aatacggagg gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggtnn 60

gtcaagtcag atgtgaaatc cccgggctca acctgggaan nngcatnnnn aactggtcag 120

gctngagtct cgtagagggg ggtagaattc cangtgtagc ggtgaaatgc gtagagatnt 180

ggaggaatac cggtggcgaa ggcggccccc tggacnaaga ctgacgctca ggtgcgaaag 240

cgtggggagc aaacaggatt agataccctg gtagtccacg cngtaaacga tgtcnatttn 300

gaggttgtnc cctngaggng tggcttccgg agctaacgcg ttaaatagac cgcctgggga 360

gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca 420

tgtggtttaa ttcgatgcaa cgcgaagaac cttacctggt cttgacatcc acagaacttg 480

gcagagatgc ttgggtgcct tcgggaactg tgagacaggt gctgcatggc tgtcgtcagc 540

tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc aacccttatc ctttgttgcc 600

agcggttcgg ccgggaactc aaaggagact gccagtgata aaccggagga aggtggggat 660

gacgtcaagt catcatggcc cttacgacta gggctacaca cgtgctacaa tggcgtatac 720

aaagagaagc gacctcgcga gagcaagcgg acctcataaa gtatgtcgta gtccggattg 780

gagtctgcaa ctcgactcca tgaagtcgga atcgctagta atcgtagatc agaatgccac 840

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggttgcaa 900

aagaagtagn ntagcttaac 920

<210> 796
<211> 1377
<212> DNA
<213> Enterobacter sp. TSE38

<220>
<221> modified_base
<222> (1357)..(1363)
<223> a, c, t, g, unknown or other

<400> 796
gcacagagag cttgctctcg ggtgacgagt ggcggacggg tgagtaatgt ctgggaaact 60

gcctgatgga gggggataac tactggaaac ggtagctaat accgcataac gtcgcaagac 120

caaagagggg gaccttcggg cctcttgcca tcagatgtgc ccagatggga ttagctagta 180

ggtggggtaa tggctcacct aggcgacgat ccctagctgg tctgagagga tgaccagcca 240

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattgcaca 300

atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg ggttgtaaag 360

tactttcagc ggggaggaag gtgttgtggt taataaccac agcaattgac gttacccgca 420

gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt gcaagcgtta 480

atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat gtgaaatccc 540

cgggctcaac ctgggaactg cattcgaaac tggcaggcta gagtcttgta gaggggggta 600

gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg 660

gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgtc gacttggagg ttgtgcccct gaggcgtggc 780

ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg ttaaaactca 840

aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg atgcaacgcg 900

aagaacctta cctactcttg actccagaga acttcagaat gattgggcct tcgggaactc 960

tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg ttaagtcccg 1020

caacgagcgc aacccttatc ctttgttgcc agcggtccgg ccgggaactc aaaggagact 1080

gccagtgata aactggagga aggtggggat gacgtcaagt catcatggcc cttacgagta 1140

gggctacaca cgtgctacaa tggcgcatac aaagagaagc gaactcgcga gagcaagcgg 1200

acctcataaa gtgcgtcgta gtccggattg gagtctgcaa ctcgactcca tgaagtcgga 1260

atcgctagta atcgtagatc agaatgctac ggtgaatacg ttcccgggcc ttgtacacac 1320

cgcccgtcac accatgggag tgggttgcaa aagaagnnnn nnncttaacc ttcggga 1377

<210> 797
<211> 1546
<212> DNA
<213> Enterobacteriaceae bacterium 9_2_54FAA

<400> 797
tttaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgagcg gtagcacaag agagcttgct ctctgggtga cgagcggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtag ctaataccgc 180

atgacgtctt cggaccaaag tgggggacct tcgggcctca cgccatcaga tgtgcccaga 240

tgggattagc tagtaggtgg ggtaatggct cacctaggcg acgatctcta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgagga ggaaggcatt aaggttaata accttggtga 480

ttgacgttac tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg ttgattaagt 600

cagatgtgaa atccccgagc ttaacttggg aactgcattt gaaactggtc agctagagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc cagagaattt gctagagata 1020

gcttagtgcc ttcgggaact ctgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgaataa 1140

tgtcgggaac tcaaaggaga ctgccggtga taaaccggag gaaggtgggg atgacgtcaa 1200

gtcatcatgg cccttacgag tagggctaca cacgtgctac aatggcatat acaaagagaa 1260

gcgaactcgc gagagcaagc ggacctcata aagtatgtcg tagtccggat tggagtctgc 1320

aactcgactc catgaagtcg gaatcgctag taatcgtaga tcagaatgct acggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta 1440

ggtagcttaa ccttcgggag ggcgcttacc actttgtgat tcatgactgg ggtgaagtcg 1500

taacaaggta accgtagggg aacctgcggt tggatcacct ccttac 1546

<210> 798
<211> 1314
<212> DNA
<213> Enterobacteriaceae bacterium CF01Ent-1

<400> 798
tggctcagat tgaacgctgg cggcaggcct aacacatgca agtcgagcga gcggcggacg 60

ggtgagtaat gtctgggaaa ctgcccgatg gaggggggata actactggaa acggtagcta 120

ataccgcata accaaagttg ccatcggatg tgcccagatg ggattagcta gtaggtgggg 180

taatggctca cctaggcgac gatccctagc tggtctgaga ggatgaccag ccacactgga 240

actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg 300

caagcctgat gcagccatgc cgcgtgtatg aagaaggcct tcgggttgta aagtactttc 360

agcgaggagg atgacgttac tcgcagaaga agcaccggct aactccgtgc cagcagccgc 420

ggtaatacgg agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg 480

tctgtcaagt cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca 540

ggctagagtc ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc 600

tggaggaata ccggtggcga aggcggcccc ctggacaaac tgacgctcag gtgcgaaagc 660

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gtcgacttgg 720

aggttgtgcg tggcttccgg agctaacgcg ttaagtcgac cgcctgggga gtacggycgc 780

aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 840

ttcgatgcaa cgcgaagaac cttacctact cttgacatcg acaggtgctg catggctgtc 900

gtcagctcgt gttgtgaaat gttgggttaa gtcccgcaac gagcgcaacc cttatccttt 960

gttgccagcg gccgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga 1020

tgacgtcaag tcatcatggc ccttacgagt agggctacac acgtgctaca atggcgcaca 1080

aagagaagcg acctcgcgag agcaagcgga cctcattgcg tcgtagtccg gatggagtct 1140

gcaactcgac tccagaagtc ggaatcgcta gtaatcgtag atcagaatgc tacggtgaat 1200

acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt 1260

aggtgcttag ggcgcttacc actttgtgat tcatgactgg ggtgaagtcg taac 1314

<210> 799
<211> 1485
<212> DNA
<213> Enterobacteriaceae bacterium Smarlab 3302238

<400> 799
tagagtttga tcctggctca gattgaacgc tggcggcagg cctaacacat gcaagtcgaa 60

cggcagcaca gaagagcttg ctctttgggt ggcgagtggc ggacgggtga gtaatgtctg 120

ggaaactgcc cgatggaggg ggataactac tggaaacggt agctaatacc gcataacgtc 180

gcgagaccaa agtgggggac cttcgggcct cacaccatcg gatgtgccca gatgggatta 240

gctagtaggt ggggtaacgg ctcacctagg cgacgatccc tagctggtct gagaggatga 300

ccagccacac tggaactgag acacggtcca gactcctacg ggaggcagca gtggggaata 360

ttgcacaatg ggcgcaagcc tgatgcagcc atgccgcgtg tatgaagaag gccttcgggt 420

tgtaaagtac tttcagcggg gaggaaggcg atgtggttaa taaccgcgtc gattgacgtt 480

acccgcagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgca 540

agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc ggtctgtcaa gtcggatgtg 600

aaatccccgg gcttaacctg ggaactgcat tcgaaactgg caggctagag tcttgtagag 660

gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga tctggaggaa taccggtggc 720

gaaggcggcc ccctggacaa agactgacgc tcaggtgcga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgtcgac ttggaggctg ttcccctgag 840

gagtggcttc cggagctaac gcgttaagtc gaccgcctgg ggagtacggc cgcaaggtta 900

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacct actcttgaca tccacggaat ttggcagaga tgccttagtg 1020

ccttcgggaa ccgtgagaca ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt gccagcgatt cggtcgggaa 1140

ctcaaaggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcgca tacaaagaga agcgacctcg 1260

cgagagcaag cggacctcat aaagtgcgtc gtagtccgga tcggagtctg caactcgact 1320

ccgtgaagtc ggaatcgcta gtaatcgtgg atcagaatgc cacggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt aggtagctta 1440

accttcggga gggcgcttac cactttgtga ttcatgactg gggtg 1485

<210> 800
<211> 1403
<212> DNA
<213> Enterococcus avium

<400> 800
tttctttcac cggagcttgc tccaccgaaa gaaaaggagt ggcgaacggg tgagtaacac 60

gtgggtaacc tgcccatcag aaggggataa cacttggaaa caggtgctaa taccgtataa 120

caatcgaaac cgcatggttt cggtttgaaa ggcgcttttg cgtcactgat ggatggaccc 180

gcggtgcatt agctagttgg tgaggtaacg gctcaccaag gcaacgatgc atagccgacc 240

tgagagggtg atcggccaca ttgggactga gacacggccc aaactcctac gggaggcagc 300

agtagggaat cttcggcaat ggacgcaagt ctgaccgagc aacgccgcgt gagtgaagaa 360

ggttttcgga tcgtaaaact ctgttgttag agaagaacaa ggatgagagt agaatgttca 420

tcccttgacg gtatctaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggtttctt 540

aagtctgatg tgaaagcccc cggctcaacc ggggagggtc attggaaact gggaaacttg 600

agtgcagaag aggagagtgg aattccatgt gtagcggtga aatgcgtaga tatatggagg 660

aacaccagtg gcgaaggcgg ctctctggtc tgtaactgac gctgaggctc gaaagcgtgg 720

ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 780

ggagggtttc cgcccttcag tgctgcagct aacgcattaa gcactccgcc tggggagtac 840

gaccgcaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg gacatgtggt 900

ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac atcctttgac cactctagag 960

atagagcttc cccttcgggg gcaaagtgac aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tattgttagt tgccatcatt 1080

tagttgggca ctctagcgag actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1140

aatcatcatg cccctttatga cctgggctac acacgtgcta caatgggaag tacaacgagt 1200

cgcgaagtcg cgaggctaag ctaatctctt aaagcttctc tcagttcgga ttgtaggctg 1260

caactcgcct acatgaagcc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt 1380

cggtgaggta acctttttgga gcc 1403

<210> 801
<211> 1483
<212> DNA
<213> Enterococcus caccae

<400> 801

gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac gcttcttttc taccgagtgc 60

ttgcactcat ttgaaaagag gagtggcgga cgggtgagta acacgtgggt aacctaccca 120

tcagaggggg ataacacttg gaaacaggtg ctaataccgc ataatagtcg acaccgcatg 180

gtgttgattt gaaagacgct ttcgggtgtc actgatggat ggacccgcgg tgcattagct 240

agttggtgag gtaacggctc accaaggcca tgatgcatag ccgacctgag agggtgatcg 300

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta gggaatcttc 360

ggcaatggac gaaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt ttcggatcgt 420

aaaactctgt tgttagagaa gaacaagtag gagagtaact gctcttacct tgacggtatc 480

taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc 540

gttgtccgga tttattgggc gtaaagcgag cgcaggcggt ttcttaagtc tgatgtgaaa 600

gcccccggct caaccgggga gggtcattgg aaactgggag acttgagtgc agaagaggag 660

agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac cagtggcgaa 720

ggcgactctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttggagg gtttccgccc 840

ttcagtgctg cagctaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa 900

actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 960

acgcgaagaa ccttaccagg tcttgacatc ctttgaccac tcgagagatc gagctttccc 1020

ttcggggaca aagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccttat tgttagttgc catcattcag ttgggcactc 1140

tagcgagact gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc 1200

cttatgacct gggctacaca cgtgctacaa tgggaagtac aacgagtcgc taggccgcga 1260

ggtcatgcaa atctcttaaa gcttctctca gttcggattg taggctgcaa ctcgcctaca 1320

tgaagccgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accacgaaag tttgtaacac ccgaagtcgg tgaggtaacc 1440

cttgtggagc cagccgccta aggtgggata gatgattggg gtg 1483

<210> 802
<211> 1559
<212> DNA
<213> Enterococcus casseliflavus

<400> 802
tatgagagtt tgatcctggc tcaggacgaa cgctggcggc gtgcctaata catgcaagtc 60

gaacgctttt tctttcaccg gagcttgctc caccgaaaga aaaagagtgg cgaacgggtg 120

agtaacacgt gggtaacctg cccatcagaa ggggataaca cttggaaaca ggtgctaata 180

ccgtataaca ctattttccg catggaagaa agttgaaagg cgcttttgcg tcactgatgg 240

atggacccgc ggtgcattag ctagttggtg aggtaacggc tcaccaaggc aacgatgcat 300

agccgacctg agagggtgat cggccacact gggactgaga cacggcccag actcctacgg 360

gaggcagcag tagggaatct tcggcaatgg acgaaagtct gaccgagcaa cgccgcgtga 420

gtgaagaagg ttttcggatc gtaaaactct gttgttagag aagaacaagg atgagagtaa 480

aacgttcatc ccttgacggt atctaaccag aaagccacgg ctaactacgt gccagcagcc 540

gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc 600

ggtttcttaa gtctgatgtg aaagcccccg gctcaaccgg ggagggtcat tggaaactgg 660

gagacttgag tgcagaagag gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata 720

tatggaggaa caccagtggc gaaggcggct ctctggtctg taactgacgc tgaggctcga 780

aagcgtgggg agcgaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtgc 840

taagtgttgg agggtttccg cccttcagtg ctgcagcaaa cgcattaagc actccgcctg 900

gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg gggcccgca caagcggtgg 960

agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac atcctttgac 1020

cactctagag atagagcttc cccttcgggg gcaaagtgac aggtggtgca tggttgtcgt 1080

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tattgttagt 1140

tgccatcatt tagttgggca ctctagcgag actgccggtg acaaaccgga ggaaggtggg 1200

gatgacgtca aatcatcatg cccctttatga cctgggctac acacgtgcta caatgggaag 1260

tacaacgagt tgcgaagtcg cgaggctaag ctaatctctt aaagcttctc tcagttcgga 1320

ttgtaggctg caactcgcct acatgaagcc ggaatcgcta gtaatcgcgg atcagcacgc 1380

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1440

cacccgaagt cggtgaggta acctttttgg agccagccgc ctaaggtggg atagatgatt 1500

ggggtgaagt cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1559

<210> 803
<211> 1397
<212> DNA
<213> Enterococcus durans

<400> 803
tcgtacgctt ctttttccac cggagcttgc tccaccggaa aaagaagagt ggcgaacggg 60

tgagtaacac gtgggtaacc tgcccatcag aaggggataa cacttggaaa caggtgctaa 120

taccgtataa caatcgaaac cgcatggttt tgatttgaaa ggcgctttcg ggtgtcgctg 180

atggatggac ccgcggtgca ttagctagtt ggtgaggtaa cggctcacca aggccacgat 240

gcatagccga cctgagaggg tgatcggcca cattgggact gagacacggc ccaaactcct 300

acgggaggca gcagtaggga atcttcggca atggacgaaa gtctgaccga gcaacgccgc 360

gtgagtgaag aaggttttcg gatcgtaaaa ctctgttgtt agagaagaac aaggatgaga 420

gtaactgttc atcccttgac ggtatctaac cagaaagcca cggctaacta cgtgccagca 480

gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa agcgagcgca 540

ggcggtttct taagtctgat gtgaaagccc ccggctcaac cggggagggt cattggaaac 600

tgggagactt gagtgcagaa gaggagagtg gaattccatg tgtagcggtg aaatgcgtag 660

atatatggag gaacaccagt ggcgaaggcg gctctctggt ctgtaactga cgctgagctc 720

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt 780

gctaagtgtt ggagggtttc cgcccttcag tgctgcagct aacgcattaa gcactccgcc 840

tggggagtac gaccgcaagg ttgaaactca aaggaattga cgggggcccg cacaagcggt 900

ggatcatgtg gtttaattcg aagcaacgcg aagaaactta ccaggtcttg acatcctttg 960

accactctag agatagagct tccccttcgg gggcaaagtg acaggtggtg catggttgtc 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttattgtta 1080

gttgccatca ttcagttggg cactctagca agactgccgg tgacaaaccg gaggaaggtg 1140

gggatgacgt caaatcatca tgcccccttat gacctgggct acacacgtgc tacaatggga 1200

agtacaacga gtcgcgaagt cgcgaggcta agctaatctc ttaaagcttc tctcagttcg 1260

gattgtaggc tgcaactcgc ctacatgaag ccggaatcgc tagtaatcgc ggatcagcac 1320

gccgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac gagagtttgt 1380

aacacccgaa gtcggtg 1397

<210> 804
<211> 1421
<212> DNA
<213> Enterococcus faecalis

<220>
<221> modified_base
<222> (1411)..(1411)
<223> a, c, t, g, unknown or other

<400> 804
gtcgaacgct tctttcctcc cgagtgcttg cactcaattg gaaagaggag tggcggacgg 60

gtgagtaaca cgtgggtaac ctacccatca gaggggata acacttggaa acaggtgcta 120

ataccgcata acagtttatg ccgcatggca taagagtgaa aggcgctttc gggtgtcgct 180

gatggatgga cccgcggtgc attagctagt tggtgaggta acggctcacc aaggccacga 240

tgcatagccg acctgagagg gtgatcggcc acactgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtaggg aatcttcggc aatggacgaa agtctgaccg agcaacgccg 360

cgtgagtgaa gaaggtttc ggatcgtaaa actctgttgt tagagaagaa caaggacgtt 420

agtaactgaa cgtcccctga cggtatctaa ccagaaagcc acggctaact acgtgccagc 480

agccgcggta atacgtaggt ggcaagcgtt gtccggattt attgggcgta aagcgagcgc 540

aggcggtttc ttaagtctga tgtgaaagcc cccggctcaa ccggggaggg tcattggaaa 600

ctgggagact tgagtgcaga agaggagagt ggaattccat gtgtagcggt gaaatgcgta 660

gatatatgga ggaacaccag tggcgaaggc ggctctctgg tctgtaactg acgctgagct 720

cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag 780

tgctaagtgt tggagggttt ccgcccttca gtgctgcagc aaacgcatta agcactccgc 840

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 900

tggagcatgt ggcttcagtc gcagtaatac gaagaacctt accaggtctt gacatccttt 960

gaccactcta gagatagagc tttcccttcg gggacaaagt gacaggtggt gcatggttgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttattgtt 1080

agttgccatc atttagttgg gcactctagc gagactgccg gtgacaaacc ggaggaaggt 1140

ggggatgacg tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg 1200

aagtacaacg agtcgctaga ccgcgaggtc atgcaaatct cttaaagctt ctctcagttc 1260

ggattgcagg ctgcaactcg cctgcatgaa gccggaatcg ctagtaatcg cggatcagca 1320

cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagtttg 1380

taacacccga agtcggtgag gtaacctttt nggagccagc c 1421

<210> 805
<211> 1422
<212> DNA
<213> Enterococcus faecium

<220>
<221> modified_base
<222> (1411)..(1411)
<223> a, c, t, g, unknown or other

<400> 805
tcgtacgctt ctttttccac cggagcttgc tccaccggaa aaagaggagt ggcgaacggg 60

tgagtaacac gtgggtaacc tgcccatcag aaggggataa cacttggaaa caggtgctaa 120

taccgtataa caatcgaaac cgcatggttt tgatttgaaa ggcgctttcg ggtgtcgctg 180

atggatggac ccgcggtgca ttagctagtt ggtgaggtaa cggctcacca aggccacgat 240

gcatagccga cctgagaggg tgatcggcca cattgggact gagacacggc ccaaactcct 300

acgggaggca gcagtaggga atcttcggca atggacgaaa gtctgaccga gcaacgccgc 360

gtgagtgaag aaggttttcg gatcgtaaaa ctctgttgtt agagaagaac aaggatgaga 420

gtaactgttc atcccttgac ggtatctaac cagaaagcca cggctaacta cgtgccagca 480

gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa agcgagcgca 540

ggcggtttct taagtctgat gtgaaagccc ccggctcaac cggggagggt cattggaaac 600

tgggagactt gagtgcagaa gaggagagtg gaattccatg tgtagcggtg aaatgcgtag 660

atatatggag gaacaccagt ggcgaaggcg gctctctggt ctgtaactga cgctgaggct 720

cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag 780

tgctaagtgt tggagggttt ccgcccttca gtgctgcagc taacgcatta agcactccgc 840

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 900

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatccttt 960

gaccactcta gagatagagc ttcccccttcg ggggcaaagt gacaggtggt gcatggttgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttattgtt 1080

agttgccatc attcagttgg gcactctagc aagactgccg gtgacaaacc ggaggaaggt 1140

ggggatgacg tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg 1200

aagtacaacg agttgcgaag tcgcgaggct aagctaatct cttaaagctt ctctcagttc 1260

ggattgcagg ctgcaactcg cctgcatgaa gccggaatcg ctagtaatcg cggatcagca 1320

cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagtttg 1380

taacacccga agtcggtgag gtaacctttt nggagccagc cg 1422

<210> 806
<211> 1254
<212> DNA
<213> Enterococcus gallinarum

<400> 806
agtggcgaac gggtgagtaa cacgtgggta acctgcccat cagaagggga taacacttgg 60

aaacaggtgc taataccgta taacgaaagt cactgatgga tggacccgcg gtgcattagc 120

tagttggtga ggtaacggct caccaaggcc acgatgcata gccgacctga gagggtgatc 180

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 240

cggcaatgga cgaaagtctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg 300

taaaactctg ttgttagaga agatgacggt atctaaccag aaagccacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggtttcttaa gtctgatgtg aaagcccccg gctcaaccgg ggagggtcat 480

tggaaactgg gagacttgag tgcagaagag gagagtggaa ttccatgtgt agcggtgaaa 540

tgcgtagata tatggaggaa caccagtggc gaaggcggct ctctggtctg actgacgctg 600

aggctcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac gccgtaaacg 660

atgagtgcta agtgttggag cttcagtgct gcagcaaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttattgt tagttgccat catgggcact ctagcgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atgggaagca acgagttgcg aagtcgcgag gctaagctaa tctcttcttc tctcagttcg 1080

gatgtaggct gcaactcgcc tacagaagcc ggaatcgcta gtaatcgcgg atcagcacgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1200

cacccgaagt cggtaggtag ccagccgcct aaggtgggat agatgattgg ggtg 1254

<210> 807
<211> 1295
<212> DNA
<213> Enterococcus gilvus

<400> 807
acgctttttc tttcaccgga gcttgctcca ccgaaagaaa aggagtggcg aacgggtgag 60

taacacgtgg gtaacctgcc catcagaagg ggataacact tggaaacagg tgctaatacc 120

gtataacaat agaaaccgca tggtttctat ttgaaaggcg cttttgcgtc actgatggat 180

ggacccgcgg tgcattagct agttggtgag gtaacggctc accaaggcaa cgatgcatag 240

ccgacctgag agggtgatcg gccacattgg gactgagaca cggcccaaac tcctacggga 300

ggcagcagta gggaatcttc ggcaatggac gaaagtctga ccgagcaacg ccgcgtgagt 360

gaagaaggtt ttcggatcgt aaaactctgt tgttagagaa gaacaaggat gagagtaaaa 420

tgttcatccc ttgacggtat ctgaccagaa agccacggct aactacgtgc cagcagccgc 480

ggtaatacgt aggtggcaag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg 540

tttcttaagt ctgatgtgaa agcccccggc tcaaccgggg agggtcattg gaaactggga 600

aacttgagtg cagaagagga gagtggaatt ccatgtgtag cggtgaaatg cgtagatata 660

tggaggaaca ccagtggcga aggcggctct ctggtctgta actgacgctg aggctcgaaa 720

gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta 780

agtgttggag ggtttccgcc cttcagtgct gcagctaacg cattaagcac tccgcctggg 840

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 900

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cctttgacca 960

ctctagagat agagcttccc cttcgggggc aaagtgacag gtggtgcatg gttgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta ttgttagttg 1080

ccatcattta gttgggcact ctagcgagac tgccggtgac aaaccggagg aaggtgggga 1140

tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca atgggaagta 1200

caacgagtcg cgaagtcgcg aggctaagct aatctcttaa agcttctctc agttcggatt 1260

gtaggctgca actcgcctac atgaagccgg aatcg 1295

<210> 808
<211> 1295
<212> DNA
<213> Enterococcus hawaiiensis

<400> 808
gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgggt aacctgccca tcagaagggg ataacacttg gaaacaggtg ctaataccgt 120

ataatgaaag tcactgatgg atggacccgc ggtgcattag ctagttggtg aggtaacggc 180

tcaccaaggc aacgatgcat agccgacctg agagggtgat cggccacatt gggactgaga 240

cacggcccaa actcctacgg gaggcagcag tagggaatct tcggcaatgg acgaaagtct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaaactct gttgttagag 360

aagatgacgg tatctaacca gaaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggtttctta 480

agtctgatgt gaaagccccc ggctcaaccg gggagggtca ttggaaactg ggaaacttga 540

gtgcagaaga ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga 600

acaccagtgg cgaaggcggc tctctggtct gactgacgct gaggctcgaa agcgtgggga 660

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttgga 720

gcttcagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac cgcaaggttg 780

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgaag 840

caacgcgaag aaccttacca ggtcttgaca tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttattg ttagttgcca 960

tcatgggcac tctagcgaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1020

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatgggaagc aacgagtcgc 1080

gaagtcgcga ggctaagcta atctcttctt ctctcagttc ggatgtaggc tgcaactcgc 1140

ctacagaagc cggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag tcggtaggta 1260

gccagccgcc taaggtggga tagatgattg gggtg 1295

<210> 809
<211> 1395
<212> DNA
<213> Enterococcus hirae

<220>
<221> modified_base
<222> (950)..(950)
<223> a, c, t, g, unknown or other

<400> 809
gtcgaacgct tctttttcca ccggagcttg ctccaccgga aaaagaggag tggcgaacgg 60

gtgagtaaca cgtgggtaac ctgcccatca gaaggggata acacttggaa acaggtgcta 120

ataccgtata acaatcaaaa ccgcatggtt ttgatttgaa aggcgctttc gggtgtcgct 180

gatggatgga cccgcggtgc attagctagt tggtgaggta acggctcacc aaggccacga 240

tgcatagccg acctgagagg gtgatcggcc acattgggac tgagacacgg cccaaactcc 300

tacgggaggc agcagtaggg aatcttcggc aatggacgaa agtctgaccg agcaacgccg 360

cgtgagtgaa gaaggttttc ggatcgtaaa actctgttgt tagagaagaa caaggatgag 420

agtaactgtt catcccttga cggtatctaa ccagaaagcc acggctaact acgtgccagc 480

agccgcggta atacgtaggg gcacttcgga tttattgggc gtaaagcgag cgcaggcggt 540

ttcttaagtc tgatgtgaaa gcccccggct caaccgggga gggtcattgg aaactgggag 600

acttgagtgc agaagaggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat 660

ggaggaacac cagtggcgaa ggcggctctc tggtctgtaa ctgacgctga ggctcgaaag 720

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa 780

gtgttggagg gtttccgccc ttcagtgctg cagctaacgc attaagcact ccgcctgggg 840

agtacgaccg caggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggacca 900

tgtggtttaa ttcgaagcaa cgcgaagata gttgccaggc gttgtccgcn ttttactggt 960

ctagagatag agcttcccct tcgggggcaa agtgacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt gttagttgcc 1080

atcattcagt tgggcactct agcaagactg ccggtgacaa accggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat gggaagtaca 1200

acgagtcgcg aagtcgcgag gctaagctaa tctcttaaag cttctctcag ttcggattgc 1260

aggctgcaac tcgcctgcat gaagccggaa tcgctagtaa tcgcggatca gcacgccgcg 1320

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc 1380

cgaagtcggt gaggt 1395

<210> 810
<211> 1559
<212> DNA
<213> Enterococcus italicus

<400> 810
ttttatgaga gtttgatcct ggctcaggac gaacgctggc ggcgtgccta atacatgcaa 60

gttgaacgct tctttcttat cgaacttcgg ttcaccaaga aagaagagta gcgaacgggt 120

gagtaacacg tgggtaacct gcccatcagc gggggataac acttggaaac aggtgctaat 180

accgcataat acttttttctc tcatgagtga aagttgaaag gcgcttttgc gtcactgatg 240

gatggacccg cggtgcatta gctagttggt agggtaacgg cctaccaagg caacgatgca 300

tagccgacct gagagggtga tcggccacac tgggactgag acacggccca gactcctacg 360

ggaggcagca gtagggaatc ttcggcaatg gacgaaagtc tgaccgagca acgccgcgtg 420

agtgaagaag gttttcggat cgtaaaactc tgttgttaga gaagaacaag gatgagaaga 480

gaatgttcat cccttgacgg tatctaacca gaaagccacg gctaactacg tgccagcagc 540

cgcggtaata cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag cgagcgcagg 600

cggttcttta agtctgatgt gaaagccccc ggctcaaccg gggagggtca ttggaaactg 660

gggaacttga gtgcagaaga ggagagtgga attccatgtg tagcggtgaa atgcgtagat 720

atatggagga acaccagtgg cgaaggcggc tctctggtct gtaactgacg ctgaggctcg 780

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg 840

ctaagtgttg gagggtttcc gcccttcagt gctgcagcta acgcattaag cactccgcct 900

ggggagtacg accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg 960

gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga catcctttga 1020

ccactctaga gatagagctt tcccttcggg gacaaagtga caggtggtgc atggttgtcg 1080

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttattgttag 1140

ttgccatcat ttagttgggc actctagcga gactgccggt gacaaaccgg aggaaggtgg 1200

ggatgacgtc aaatcatcat gccccttatg acctgggcta cacacgtgct acaatgggaa 1260

gtacaacgag ttgcgaagtc gcgaggctaa gctaatctct taaagcttct ctcagttcgg 1320

attgtaggct gcaactcgcc tacatgaagc cggaatcgct agtaatcgcg gatcagcacg 1380

ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta 1440

acacccgaag tcggtgaggt aacctttttgg agccagccgc ctaaggtggg atagatgatt 1500

ggggtgaagt cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1559

<210> 811
<211> 1529
<212> DNA
<213> Enterococcus mundtii

<400> 811
acgaacgctg gcggcgtgcc taatacatgc aagtcgaacg cttcttttcc caccggagct 60

tgctccaccg ggaaaagagg agtggcgaac gggtgagtaa cacgtgggta acctgcccat 120

cagaagggga taacacttgg aaacaggtgc taataccgta taacaatcga aaccgcatgg 180

tttcgttttg aaaggcgctt tacggtgccg ctgatggatg gacccgcggt gcattagcta 240

gttggtgagg taacggctca ccaaggccac gatgcatagc cgacctgaga gggtgatcgg 300

ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtag ggaatcttcg 360

gcaatggacg aaagtctgac cgagcaacgc cgcgtgagtg aagaaggttt tcggatcgta 420

aaactctgtt gttagagaag aacaagggtg agagtaactg ttcacccctt gacggtatct 480

aaccagaaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg 540

ttgtccggat ttattgggcg taaagcgagc gcaggcggtt tcttaagtct gatgtgaaag 600

cccccggctc aaccggggag ggtcattgga aactgggaga cttgagtgca gaagaggaga 660

gtggaattcc atgtgtagcg gtgaaatgcg tagatatatg gaggaacacc agtggcgaag 720

gcggctctct ggtctgtaac tgacgctgag gctcgaaagc gtggggagca aacaggatta 780

gataccctgg tagtccacgc cgtaaacgat gagtgctaag tgttggaggg tttccgccct 840

tcagtgctgc agctaacgca ttaagcactc cgcctgggga gtacgaccgc aaggttgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 960

cgcgaagaac cttaccaggt cttgacatcc tttgaccact ctagagatag agcttcccct 1020

tcgggggcaa agtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccttatt gttagttgcc atcatttagt tgggcactct 1140

agcaagactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgcccc 1200

ttatgacctg ggctacacac gtgctacaat gggaagtaca acgagtcgcg aagtcgcgag 1260

gctaagctaa tctcttaaag cttctctcag ttcggattgt aggctgcaac tcgcctacat 1320

gaagccggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt gaggtaacct 1440

ttttggagcc agccgcctaa ggtgggatag atgattgggg tgaagtcgta acaaggtagc 1500

cgtatcggaa ggtgcggctg gatcacctc 1529

<210> 812
<211> 1396
<212> DNA
<213> Enterococcus raffinosus

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (13)..(13)
<223> a, c, t, g, unknown or other

<400> 812
cgaacgcntt ttntttcacc ggagcttgct ccaccgaaag aaaaggagtg gcgaacgggt 60

gagtaacacg tgggtaacct gcccatcaga aggggataac acttggaaac aggtgctaat 120

accgtataac aatagaaacc gcatggtttc tatttgaaag gcgcttttgc gtcactgatg 180

gatggacccg cggtgcatta gctagttggt gaggtaacgg ctcaccaagg caacgatgca 240

tagccgacct gagagggtga tcggccacat tgggactgag acacggccca aactcctacg 300

ggaggcagca gtagggaatc ttcggcaatg gacgaaagtc tgaccgagca acgccgcgtg 360

agtgaagaag gttttcggat cgtaaaactc tgttgttaga gaagaacaag gatgagagta 420

gaatgttcat cccttgacgg tatctaacca gaaagccacg gctaactacg tgccagcagc 480

cgcggtaata cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag cgagcgcagg 540

cggtttctta agtctgatgt gaaagccccc ggctcaaccg gggagggtca ttggaaactg 600

ggaaacttga gtgcagaaga ggagagtgga attccatgtg tagcggtgaa atgcgtagat 660

atatggagga acaccagtgg cgaaggcggc tctctggtct gtaactgacg ctgaggctcg 720

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg 780

ctaagtgttg agggtttcc gcccttcagt gctgcagcta acgcattaag cactccgcct 840

ggggagtacg accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggcg 900

gtaatacgtg ggtggcaagc gttaacgcga agaaccttac caggtcttga catcctttga 960

ccactctaga gatagagctt ccccttcggg ggcaaagtga caggtggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttattgttag 1080

ttgccatcat ttagttgggc actctagcga gactgccggt gacaaaccgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccccttatg acctgggcta cacacgtgct acaatgggaa 1200

gtacaacgag tcgcgaagtc gcgaggctaa gctaatctct taaagcttct ctcagttcgg 1260

attgtaggct gcaactcgcc tacatgaagc cggaatcgct agtaatcgcg gatcagcacg 1320

ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta 1380

acacccgaag tcggtg 1396

<210> 813
<211> 876
<212> DNA
<213> Enterococcus sp. BV2CASA2

<220>
<221> modified_base
<222> (34)..(34)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (41)..(41)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (47)..(47)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (247)..(247)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (850)..(850)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (853)..(853)
<223> a, c, t, g, unknown or other

<400> 813
atttattggg cgtaaagcga gcgcaggcgg tttnttaagt ntgatgngaa agcccccggc 60

tcaaccgggg agggtcattg gaaactggga gacttgagtg cagaagagga gagtggaatt 120

ccatgtgtag cggtgaaatg cgtagatata tggaggaaca ccagtggcga aggcggctct 180

ctggtctgta actgacgctg aggctcgaaa gcgtggggag caaacaggat tagataccct 240

ggtagtncac gccgtaaacg atgagtgcta agtgttggag ggtttccgcc cttcagtgct 300

gcagcaaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga aactcaaagg 360

aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 420

accttaccag gtcttgacat cctttgacca ctctagagat agagctttcc cttcggggac 480

aaagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 540

cgcaacgagc gcaaccctta ttgttagttg ccatcattta gttgggcact ctagcgagac 600

tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc 660

tgggctacac acgtgctaca atgggaagta caacgagtcg ctagaccgcg aggtcatgca 720

aatctcttaa agcttctctc agttcggatt gcaggctgca actcgcctgc atgaagccgg 780

aatcgctagt aatcgcggat cagcacgccg cggtgaatac gttcccgggc cttgtacaca 840

ccgcccgtcn cancacgaga gtttgtaaca cccgaa 876

<210> 814
<211> 1262
<212> DNA
<213> Enterococcus sp. CCRI-16620

<400> 814
gaaaagagga gtggcggacg ggtgagtaac acgtgggtaa cctacccatc agaggggat 60

aacacttgga aacaggtgct aataccgcat aatagtcgac accgcatggt gttgatttga 120

aagacgcttt cgggtgtcac tgatggatgg acccgcggtg cattagctag ttggtgaggt 180

aacggctcac caaggccatg atgcatagcc gacctgagag ggtgatcggc cacactggga 240

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttcgg caatggacga 300

aagtctgacc gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa aactctgttg 360

ttagagaaga acaagtagga gagtaactgc tcttaccttg acggtatcta accagaaagc 420

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tgtccggatt 480

tattgggcgt aaagcgagcg caggcggttt cttaagtctg atgtgaaagc ccccggctca 540

accggggagg gtcattggaa actgggagac ttgagtgcag aagaggagag tggaattcca 600

tgtgtagcgg tgaaatgcgt agatatatgg aggaacacca gtggcgaagg cgactctctg 660

gtctgtaact gacgctgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt 720

agtccacgcc gtaaacgatg agtgctaagt gttggagggt ttccgccctt cagtgctgca 780

gctaacgcat taagcactcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 840

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 900

ttaccaggtc ttgacatcct ttgaccactc gagagatcga gctttccctt cggggacaaa 960

gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1020

aacgagcgca acyyctattg ttagttgcca tcatttagtt gggcactcta gcgagactgc 1080

cggtgacaaa ccggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg 1140

gctacacacg tgctacaatg ggaagtacaa cgagtcgcta ggccgcgagg tcatgcaaat 1200

ctcttaaagc ttctctcagt tcggattgta ggctgcaact cgcctacatg aagccggaat 1260

cg 1262

<210> 815
<211> 1522
<212> DNA
<213> Enterococcus sp. F95

<400> 815
agggtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gcttctttcc tcccgagtgc ttgcactcaa ttggaaagag gagtggcgga cgggtgagta 120

acacgtgggt aacctaccca tcagaggggg ataacacttg gaaacaggtg ctaataccgc 180

ataacagttt atgccgcatg gcataagagt gaaaggcgct ttcgggtgtc gctgatggat 240

ggacccgcgg tgcattagct agttggtgag gtaacggctc accaaggcca cgatgcatag 300

ccgacctgag agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga 360

ggcagcagta gggaatcttc ggcaatggac gaaagtctga ccgagcaacg ccgcgtgagt 420

gaagaaggtt ttcggatcgt aaaactctgt tgttagagaa gaacaaggac gttagtaact 480

gaacgtcccc tgacggtatc taaccagaaa gccacggcta actacgtgcc agcagccgcg 540

gtaatacgta ggtggcaagc gttgtccgga tttattgggc gtaaagcgag cgcaggcggt 600

ttcttaagtc tgatgtgaaa gcccccggct caaccgggga gggtcattgg aaactgggag 660

acttgagtgc agaagaggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat 720

ggaggaacac cagtggcgaa ggcggctctc tggtctgtaa ctgacgctga ggctcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa 840

gtgttggagg gtttccgccc ttcagtgctg cagcaaacgc attaagcact ccgcctgggg 900

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 960

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctttgaccac 1020

tctagagata gagctttccc ttcggggaca aagtgacagg tggtgcatgg ttgtcgtcag 1080

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat tgttagttgc 1140

catcatttag ttgggcactc tagcgagact gccggtgaca aaccggagga aggtggggat 1200

gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa tgggaagtac 1260

aacgagtcgc tataccgcga ggtcatgcaa atctcttaaa gcttctctca gttcggattg 1320

caggctgcaa ctcgcctgca tgaagccgga atcgctagta atcgcggatc agcacgccgc 1380

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac 1440

ccgaagtcgg tgaggtaacc tttttggagc cagccgccta aggtgggata gatgattggg 1500

gtgaagtcgt aacaaggtag cc 1522

<210> 816
<211> 1406
<212> DNA
<213> Enterococcus sp. RfL6

<400> 816
tcacttgaaa agaagagtgg cggacggggt gagtaacacg tgggtaacct gccccatcag 60

aggggataa gacttggaaa caggtgctaa taccgcataa tagtcgacac cgcatggtgt 120

tgatttgaaa gacgctttcg ggtgtcactg atggatggac ccgcggtgca ttagctagtt 180

ggtgaggtaa cggctcacca aggccatgat gcatagccga cctgagaggg tgatcggcca 240

cactgggact gagacacggc cagactccta cgggaggcag cagtagggaa tcttcggcaa 300

tggacgaagt ctgaccgagc aacgccgcgt gagtgaagaa ggttttcgga tcgtaaaact 360

ctgttgttag agaagaacaa gtgggagagt aactgctccc gccttgacgg tatctaacca 420

gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc 480

cggatttatt gggcgtaaag cgagcgcagg cggtttctta agtctgatgt gaaagccccc 540

ggctcaaccg gggagggtca ttggaaactg ggagacttga gtgcagaaga ggagagttga 600

attccatgtg tagcgtgaaa tgcgtagata tatggaggaa caccagtggc gaaggcgact 660

ctctggtctg taactgacgc tgaggctcga aagcgtgggg agcaaacagg attagatacc 720

ctggtagtcc acgccgtaaa cgatgagtgc taagtgttgg agggtttccg cccttcagtg 780

ctgcagctaa cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa 840

ggaattkacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgga 900

gaaccttacc aggtcttgac atcctttgac cactctagag atagagcttt cccttcgggg 960

acaaagtgac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaaccct tattgttagt tgccatcatt cagttgggca ctctagcgag 1080

actgccggtg acaaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga 1140

cctgggctac acacgtgcta caatgggaag tacaacgagt cgctaggccg cgaggtcatg 1200

caaatctctt aaagcttctc tcagttcgga ttgtaggctg caactcgcct acatgaagcc 1260

ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg gccttgtaca 1320

caccgcccgt cacaccacga aagtttgtaa cacccgaagt cggtgaggta acctttgga 1380

gccagccgcc taaggtggga tagatg 1406

<210> 817
<211> 1295
<212> DNA
<213> Enterococcus thailandicus

<400> 817
gacgaacgct ggcggcgtgc ctaatacatg caagtcgtac gagtggcgaa cgggtgagta 60

acacgtgggt aacctgccca tcagaagggg ataacacttg gaaacaggtg ctaataccgt 120

ataacgaaag tcgctgatgg atggacccgc ggtgcattag ctagttggtg aggtaacggc 180

tcaccaaggc cacgatgcat agccgacctg agagggtgat cggccacatt gggactgaga 240

cacggcccaa actcctacgg gaggcagcag tagggaatct tcggcaatgg acgaaagtct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaaactct gttgttagag 360

aagatgacgg tatctaacca gaaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggtttctta 480

agtctgatgt gaaagccccc ggctcaaccg gggagggtca ttggaaactg ggagacttga 540

gtgcagaaga ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga 600

acaccagtgg cgaaggcgac tctctggtct gactgacgct gaggctcgaa agcgtgggga 660

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttgga 720

gcttcagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac cgcaaggttg 780

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgaag 840

caacgcgaag aaccttacca ggtcttgaca tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttattg ttagttgcca 960

tcatgggcac tctagcaaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1020

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatgggaagc aacgagtcgc 1080

gaagtcgcga ggctaagcta atctcttctt ctctcagttc ggatgtaggc tgcaactcgc 1140

ctacagaagc cggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcacaccacg aaagtttgta acacccgaag tcggtaggta 1260

gccagccgcc taaggtggga tagatgattg gggtg 1295

<210> 818
<211> 1543
<212> DNA
<213> Eremococcus coleocola

<400> 818
atgagagttt gatcctggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg 60

aacgcactga cggagaactt gttctcttaa cgtgagtggc ggacgggtga gtaacacgtg 120

ggaaacctac ccttgagcgg gggataacgg tcggaaacga tcgctaatac cgcataacag 180

caatcatcgc ctgatggttg attgaaagat ggctctgcta tcactcaagg atgggcccgc 240

ggtgcattag ctagttggta aggtaacggc ttaccaaggc catgatgcat agccgacctg 300

agagggtaat cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg acgcaagtct gacggagcaa cgccgcgtgt gtgaagaagg 420

ttttcggatc gtaaagcact gttattagcc aagaacaccc ctagtagtaa ctggctaggg 480

attgacggta actaatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttgtccg gatttattgg gcgtaaaggg agcgcaggcg gtgacttaag 600

tctgatgtga aagcccacgg cttaaccgtg gagggtcatt ggaaactggg tcacttgagt 660

acagaagagg aaagcggaat tccatgtgta gcggtgaaat gcgtagatat atggaggaac 720

accagtggcg aaggcggctt tctggtctga tactgacgct gaggctcgaa agcgtgggga 780

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttgga 840

gggtttccac ccttcagtgc tggcgttaac gcaataagca ctccgcctgg ggagtacggt 900

cgcaagactg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca ggtcttgaca tcctatgacc actctagaga 1020

tagagtttct cttcggagca tagagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttat aactagttgc cagcattcag 1140

atggggactc tagttagact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggacgatac aacgagcagc 1260

aaactcgcga gggcaagcga atctcttaaa gtcgttctca gttcggattg caggctgcaa 1320

ctcgcctgca tgaagccgga atcgctagta atcgtggatc agcacgccac ggtgaatccg 1380

ttcccgggtc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagccgg 1440

tggcctaacc tatgagggag ccgtcgaagg tgggatagat gattggggtg aagtcgtaac 1500

aaggtagccg tatcggaagg tgcggctgga tcacctcctt tct 1543

<210> 819
<211> 1504
<212> DNA
<213> Erysipelothrix inopinata

<400> 819
ggctcaggat gaacgctggc ggcgtgccta atacatgcaa gtcgaacgaa gttcgaaact 60

agcttgctag attcgaaact tagtggcgaa cgggtgagta atacataagc aacctgcctc 120

tatgcctggg ataacagatg gaaacgtctg ctaataccgg atacgttaat cgaagacatc 180

ttcgattaat taaagttggg atacaacaca aagagatggg cttatggcgc attagttagt 240

tggtgaggta acggctcacc aagacgatga tgcgtagccg acctgagagg gtgaccggcc 300

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg aattttcggc 360

aatgggggaa accctgaccg agcaacgccg cgtgagtgaa gaaggccttc gggttgtaaa 420

gctctgttgt aagggaagaa caagtatgag agggaatgct cgtactatga cggtacctta 480

ccagaaagcc acggctaact acgtgccagc agccgcggta atacgtaggt ggcgagcgtt 540

atccggaatt attgggcgta aagggagcgc aggcggttta ttaagtttat ggtgaaagtt 600

cggggcttaa ccccgtgatg ccatagaaac tggtagacta gagtgcagga gaggttagtg 660

gaattccatg tgtagcggta aaatgcgtag atatatggag gaacaccagt ggcgaaggcg 720

gctaactggc ctgtaactga cgctgaggct cgaaagcgtg gggagcaaat aggattagat 780

accctagtag tccacgccgt aaacgatgga tactaagtgt tggatagaat tcagtgctgt 840

agttaacgca ataagtatcc cgcctgggga gtatgcgcgc aagcgtaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggtggagta tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaggt cttgacatac cgcgcaaaag catagagata tgtaatagtt atggcggata 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtcttcag ttaccatcat taagttgggg actctggaga gactgccggt 1140

gataaaccgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg atctgggcta 1200

cacacgtact acaatggcgt atacagaggg aagcgaagca gtgatgtgga gcgaatctca 1260

gaaagtacgt ctcagttcgg attggagtct gcaactcgac tccatgaagt cggaatcgct 1320

agtaatcgcg gatcagcatg ccgcggtgaa tacgttctcg ggccttgtac acaccgcccg 1380

tcaaaccatg agagttggta atacccgaag ccggtggcct aaccctgtaa agggagggag 1440

ccgtcgaagg taggaccgat gattggggtt aagtcgtaac aaggtatccc taccggaagg 1500

tggg 1504

<210> 820
<211> 1545
<212> DNA

<213> Erysipelothrix rhusiopathiae

<400> 820
aaatggagag tttgatcctg gctcaggatg aacgctggcg gcgtgcctaa tacatgcaag 60

tcgaacgaag tgaagaggag cttgctcctt ggaacttagt ggcgaacggg tgagtaatac 120

ataagcaacc tgcctcgatg cctgggataa cagagggaaa cttctgctaa taccggatac 180

gttaatctaa gacatcttag attaattaaa gatgggatac atcacaacga gatgggctta 240

tggcgcatta gttagttggt aaggtaacgg cttaccaaga cgatgatgcg tagccgacct 300

gagagggtga ccggccacac tgggactgag acacggccca gactcctacg ggaggcagca 360

gtagggaatt ttcggcaatg ggggaaaccc tgaccgagca acgccgcgtg agtgaagacg 420

gccttcgggt tgtaaagctc tgttgtaagg gaagaacgat aggaagaggg aatgcttctt 480

atatgacggt accttaccag aaagccacgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggtggca agcgttatcc ggaattattg ggcgtaaagg gagcgcaggc ggtttatcaa 600

gtttatggtt aaagttcggg gcttaacccc gtgatgccat agaaactggt agactagagt 660

gcaggagagg ttagtggaat tccatgtgta gcggtaaaat gcgtagatat atggaggaac 720

accagtggcg aaggcggcta actggcctgt aactgacgct gaggctcgaa agcgtgggga 780

gcaaatagga ttagataccc tagtagtcca cgccgtaaac gatggatact aagtgttgga 840

gaaattcagt gctgtagtta acgcaataag tatcccgcct ggggagtatg cgcgcaagcg 900

taaaactcaa aggaattgac gggggcccgc acaagcggtg gagtatgtgg tttaattcga 960

agcaacgcga agaaccttac caggtcttga cataccgcgc aaaagcacag agatgtgtaa 1020

tagttatggc ggatacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccttgtc tttagttacc agcattaagt tggggactct 1140

aaagagactg ccggtgataa accggaggaa ggtggggatg acgtcaaatc atcatgcccc 1200

ttatgatctg ggctacacac gtactacaat ggcgtataca gagggcagcg aagcagcgat 1260

gcggagcgaa tctcagaaag tacgtctcag ttcggattgg agtctgcaac tcgactccat 1320

gaagtcggaa tcgctagtaa tcgcggatca gaatgccgcg gtgaatacgt tctcgggcct 1380

tgtacacacc gcccgtcaaa ccatgagagt tggtaatacc cgaagccggt ggcctaacct 1440

agtttactag gagggagccg tcgaaggtag gatcgatgat tggggttaag tcgtaacaag 1500

gtatccctac cggaaggtgg ggatggatca cctcctttct aagga 1545

<210> 821
<211> 1479
<212> DNA
<213> Erysipelothrix tonsillarum

<400> 821
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gaagtgaaga ggagcttgct ccttggaact tagtggcgaa cgggtgagta atacataagc 120

aacctgcctc gatgcctggg ataacagagg gaaacttctg ctaataccgg atacgttaat 180

ctaagacatc ttagattaat taaagatggg atacatcaca acgagatggg cttatggcgc 240

attagttagt tggtaaggta acggcttacc aagacgatga tgcgtagccg acctgagagg 300

gtgaccggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg 360

aattttcggc aatgggggaa accctgaccg agcaacgccg cgtgagtgaa gacggcctta 420

gggttgtaaa gctctgttgt aagggaagaa caataagaag agggaatgct tcttatatga 480

cggtacctta ccagaaagcc acggctaact acgtgccagc agccgcggta atacgtaggt 540

ggcaagcgtt atccggaatt attgggcgta aagggagcgc aggcggttta tcaagtttat 600

ggttaaagtt cggggcttaa ccccgtgatg ccatagaaac tggtagacta gagtgcagga 660

gaggttagtg gaattccatg tgtagcggta aaatgcgtag atatatggag gaacaccagt 720

ggcgaaggcg gctaactggc ctgtaactga cgctgaggct cgaaagcgtg gggagcaaat 780

aggattagat accctagtag tccacgccgt aaacgatgga tactaagtgt tggagaaatt 840

cagtgctgta gttaacgcaa taagtatccc gcctggggag tatgcgcgca agcgtaaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggtggagtat gtggtttaat tcgaagcaac 960

gcgaagaacc ttaccaggtc ttgacatacc gcgcaaaagc acagagatgt gtaatagtta 1020

tggcggatac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tgtctttagt taccagcatt aagttgggga ctctaaagag 1140

actgccggtg ataaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga 1200

tctgggctac acacgtacta caatggcgta tacagagggc agcgaagcag cgatgcggag 1260

cgaatctcag aaagtacgtc tcagttcgga ttggagtctg caactcgact ccatgaagtc 1320

ggaatcgcta gtaatcgcgg atcagaatgc cgcggtgaat acgttctcgg gccttgtaca 1380

caccgcccgt caaaccatga gagttggtaa tacccgaagc cggtggccta acctagttta 1440

ctaggaggga gccgtcgaag gtaggatcga tgattgggg 1479

<210> 822
<211> 1387
<212> DNA
<213> Erysipelotrichaceae bacterium 3_1_53

<220>
<221> modified_base
<222> (935)..(936)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1381)..(1381)
<223> a, c, t, g, unknown or other

<400> 822
tctctaggaa gcttgcttcc aaagagactt agtggcgaac gggtgagtaa cacgtaggta 60

acctgcccat gtgtctggga taactgctgg aaacggtagc taaaaccgga taggtatacg 120

gagcgcatgc tctgtatatt aaagcaccct tcaaggtgtg aacatggatg gacctgcggc 180

gcattagcta gttggtgagg taacggccca ccaaggcgat gatgcgtagc cggcctgaga 240

gggtaaacgg ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtag 300

ggaattttcg tcaatggggg gaaccctgaa cgagcaatgc cgcgtgagtg aagaaggtct 360

tcggatcgta aagctctgtt gtaagtgaag aacggctcat aggaaatgct atgggagtga 420

ggtagcttac cagaaagcca cggctaacta cgtgccagca gccgcggtaa tacgtaggtg 480

gcaagcgtta tccggaatca ttgggcgtaa agggtgcgta ggtggcgtac taagtctgta 540

gtaaaaggca atggtcaacc attgtaagct atggaaactg gtaggctaga gtgcagaaga 600

gggcgatgga attccatgtg tagcggtaaa atgcgtagat atatggagga acaccagtgg 660

cgaaggcggt cgcctggtct gtaactgaca ctgaggcacg aaagcgtggg gagcaaatag 720

gattagatac cctagtagtc cacgccgtaa acgatgagaa ctaagtgttg gaggaattca 780

gtgctgcagt taacgcaata agttctccgc ctggggagta tgcacgcaag tgtgaaactc 840

aaaggaattg acgggggccc gcacaagcgg tggagtatgt ggtttaattc gaagcaacgc 900

gaagaacctt accaggcctt gacatggaaa caaanncccc agagataggg agataaatat 960

ggatcacaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1020

ccgcaacgag cgcaaccctt gtcgcatgtt accagcatca agttggggac tcatgcgaga 1080

ctgccggtga caaaccggag gaaggtgggg atgacgtcaa atcatcatgc cccttatggc 1140

ctgggctaca cacgtactac aatggcgacc acaaagagca gcgacttggt gacaagaagc 1200

gaatctcata aaggccgtct cagttcggat tgaagtctgc aactcgactt catgaagtcg 1260

gaatcgctag taatcgcaga tcagcatgct gcggtgaata cgttctcggg ccttgtacac 1320

accgcccgtc aaaccatggg agtcagtaat acccgaagcc ggtggcataa ccgtaaggag 1380

ngagccg 1387

<210> 823
<211> 1357
<212> DNA
<213> Erysipelotrichaceae bacterium 5_2_54FAA

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1311)..(1312)
<223> a, c, t, g, unknown or other

<400> 823
tccaaagaga cttngtgggg aacgggtgag taacacgtag gtaacctgcc catgtgcccg 60

ggataactgc tggaaacggt agctaaaacc ggataggtat gagggaggca tcttcctcat 120

attaaagcac cttcgggtgt gaacatggat ggacctgcgg cgcattagct ggttggtgag 180

gtaacggccc accaaggcga tgatgcgtag ccgacctgag agggtgaacg gccacattgg 240

gactgagaca cggcccaaac tcctacggga ggcagcagta gggaattttc gtcaatgggg 300

ggaaccctga acgagcaatg ccgcgtgtgt gaagaaggtc ttcggatcgt aaagcactgt 360

tgtaagtgaa gaatgccata tagaggaaat gctatgtggg tgacggagct taccagaaag 420

ccacggtaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tatccggaat 480

cattgggcgt aaagggtgcg taggtggcac gataagtctg aagtaaaagg caacagctca 540

actgttgtat gctttggaaa ctgtcgagct agagtgcaga agagggcgat ggaattccat 600

gtgtagcggt aaaatgcgta gatatatgga ggaacaccag tggcgaaggc ggtcgcctgg 660

tctgtaactg acactgatgc acgaaagcgt ggggagcaaa taggattaga taccctagta 720

gtccacgccg taaacgatga gaactaagtg ttggagagat tcagtgctgc agttaacgca 780

ataagttctc cgcctgggga gtatgcacgc aagtgtgaaa ctcaaaggaa ttgacggggg 840

cccgcacaag cggtggagta tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggc 900

cttgacatgt atataaatga tctagaaata gaaagatagc tatatatcac acaggtggtg 960

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1020

cttgtcttct gttaccagca ttaagttggg gactcaggag agactgccgg tgacaaaccg 1080

gaggaaggtg gggatgacgt caaatcatca tgccccttat ggcctgggct acacacgtac 1140

tacaatggcg cctacaaaga gcagcgacac cgcgaggtgg agcgaatctc ataaagggcg 1200

tctcagttcg gattgaagtc tgcaactcga cttcatgaag tcggaatcgc tagtaatcgc 1260

agatcagcat gctgcggtga atacgttctc gggccttgta cacaccgccc nncaaaccat 1320

gggagttggt aatacccgaa gccggtggca taaccgc 1357

<210> 824
<211> 1545
<212> DNA
<213> Escherichia albertii

<400> 824
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa acagcttgct gtttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcccg atggaggggg ataactactg gaaacggtag ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tagggcctct tgccatcgga tgtgcccaga 240

tgggattagc ttgttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaagggagt aaagttaata cctttgctca 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg ttgattaagt 600

cagatgtgaa atccccgggc tcaacctggg aactgcatct gatactggtc agcttgagtc 660

tcgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacgaag actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtcgactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcggtccg 1140

gccgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 825
<211> 1403
<212> DNA
<213> Escherichia coli

<220>
<221> modified_base
<222> (20)..(20)
<223> a, c, t, g, unknown or other

<400> 825
gtcgaacggt aacaggaagn cagcttgctg ctttgctgac gagtggcgga cgggtgagta 60

atgtctggga aactgcctga tggaggggga taactactgg aaacggtagc taataccgca 120

taacgtcgca agaccaaaga gggggacctt cgggcctctt gccatcggat gtgcccagat 180

gggattagct agtaggtggg gtaaaggctc acctaggcga cgatccctag ctggtctgag 240

aggatgacca gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggc gcaagcctga tgcagccatg ccgcgtgtat gaagaaggcc 360

ttcgggttgt aaagtacttt cagcggggag gaagggagta aagttaatac ctttgctcat 420

tgacgttacc cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga 480

gggtgcaagc gttaatcgga attactgggc gtaaagcgca cgcaggcggt ttgttaagtc 540

agatgtgaaa tccccgggct caacctggga actgcatctg atactggcaa gcttgagtct 600

cgtagagggg ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac 660

cggtggcgaa ggcggccccc tggacgaaga ctgacgctca gtgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gtcgacttgg aggttgtgcc 780

cttgaggcgt ggcttcggag ctaacgcgtt aagtcgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgcaacg cgaagaacct tacctggtct tgacatccac ggaagttttc agagatgaga 960

atgtgccttc gggaaccgtg agacaggtgc tgcatggctg tcgtcagctc gtgttgtgaa 1020

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cggtccggcc 1080

gggaactcaa aggagactgc cagtgataaa ctggaggaag gtggggatga cgtcaagtca 1140

tcatggccct tacgaccagg gctacacacg tgctacaatg gcgcatacaa agagaagcga 1200

cctcgcgaga gcaagcggac ctcataaagt gcgtcgtagt ccggattgga gtctgcaact 1260

cgactccatg aagtcggaat cgctagtaat cgtggatcag aatgccacgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catgggagtg ggttgcaaaa gaagtaggta 1380

gcttaacctt cgggagggcg cta 1403

<210> 826
<211> 1395
<212> DNA
<213> Escherichia fergusonii

<220>
<221> modified_base
<222> (14)..(16)
<223> a, c, t, g, unknown or other

<400> 826
tcgaacggta acannnagca gcttgctgct ttgctgacga gtggcggacg ggtgagtaat 60

gtctgggaaa ctgcctgatg gaggggggata actactggaa acggtagcta ataccgcata 120

acgtcgcaag accaaagagg gggaccttcg ggcctcttgc catcggatgt gcccagatgg 180

gattagcttg taggtggggt aacggctcac ctaggcgacg atccctagct ggtctgagag 240

gatgaccagc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 360

cgggttgtaa agtactttca gcggggagga agggagtaaa gttaatacct ttgctcattg 420

acgttacccg cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggttt gttaagtcag 540

atgtgaaatc cccgggctca acctgggaac tgcatctgat actggcaagc ttgagtctcg 600

tagaggggg tagaattcca ggtgtagcgg tgaaatgcgt agagatctgg aggaataccg 660

gtggcgaagg cggccccctg gacgaagact gacgctcagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgcc gtaaacgatg tcgacttgga ggttgtgccc 780

ttgaggcgtg gcttccggag ctaacgcgtt aagtcgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgcaacg cgaaaaacct tacctggtct tgacatccac agaactttcc agagatggat 960

gcgtaacgtg caggaaggcg gtttgtgaag tcagatgctg tcgtcagctc gtgttgtgaa 1020

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cggtccggcc 1080

gggaactcaa aggagactgc cagtgataaa ctggaggaag gtggggatga cgtcaagtca 1140

tcatggccct tacgaccagg gctacacacg tgctacaatg gcgcatacaa agagaagcga 1200

cctcgcgaga gcaagcggac ctcataaagt gcgtcgtagt ccggattgga gtctgcaact 1260

cgactccatg aagtcggaat cgctagtaat cgtggatcag aatgccacgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catgggagtg ggttgcaaaa gaagtaggta 1380

gcttaacctt cggga 1395

<210> 827
<211> 1517
<212> DNA
<213> Escherichia hermannii

<400> 827
ctccagagtt tgatcatggc tcagattgaa cgctggcggc aggcctaaca catgcaagtc 60

gaacggtaac aggaagcagc ttgctgcttc gctgacgagt ggcggacggg tgagtaatgt 120

ctgggaaact gcctgatgga gggggataac tactggaaac ggtagctaat accgcataac 180

gtcgcaagac caaagagggg gaccttcggg cctcttgcca tcagatgtgc ccagatggga 240

ttagctagta ggtggggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga 300

tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 360

atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg 420

ggttgtaaag tactttcagc ggggaggaag gcgatgcggt taataaccgc gtcgattgac 480

gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 540

gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat 600

gtgaaatccc cgggctcaac ctgggaactg catccgaaac tggcaggctt gagtctcgta 660

gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 720

ggcgaaggcg gccccctgga cgaagactga cgctcaggtg cgaaagcgtg gggagcaaac 780

aggattagat accctggtag tccacgccgt aaacgatgtc gacttggagg ttgtgccctt 840

gaggcgtggc ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg 900

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

atgcaacgcg aagaacctta cctggtcttg acatccacag aactttccag agatggattg 1020

gtgccttcgg gaactgtgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gttaggccgg 1140

gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc 1200

atggccctta cgaccagggc tacacacgtg ctacaatggc gcatacaaag agaagcaatc 1260

tcgcgagagc tagcggacct cataaagtgc gtcgtagtcc ggattggagt ctgcaactcg 1320

actccatgaa gtcggaatcg ctagtaatcg tgaatcagaa tgtcacggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1440

ttaaccttcg ggagggcgct taccactttg tgattcatga ctggggtgaa gtcgtaacaa 1500

ggtaaccgta ggggaac 1517

<210> 828
<211> 1542
<212> DNA
<213> Escherichia sp. 1_1_43

<400> 828
aaattgaaga gtttgatcat ggctcagatt gaacgctggc ggcaggccta acacatgcaa 60

gtcgaacggt aacaggaaac agcttgctgt ttcgctgacg agtggcggac gggtgagtaa 120

tgtctgggaa actgcctgat ggagggggat aactactgga aacggtagct aataccgcat 180

aacgtcgcaa gaccaaagag ggggaccttc gggcctcttg ccatcggatg tgcccagatg 240

ggattagcta gtaggtgggg taacggctca cctaggcgac gatccctagc tggtctgaga 300

ggatgaccag ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg caagcctgat gcagccatgc cgcgtgtatg aagaaggcct 420

tcgggttgta aagtactttc agcggggagg aagggagtaa agttaatacc tttgctcatt 480

gacgttaccc gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag 540

ggtgcaagcg ttaatcggaa ttactgggcg taaagcgcac gcaggcggtt tgttaagtca 600

gatgtgaaat ccccgggctc aacctgggaa ctgcatctga tactggcaag cttgagtctc 660

gtagaggggg gtagaattcc aggtgtagcg gtgaaatgcg tagagatctg gaggaatacc 720

ggtggcgaag gcggcccccc ggacgaagac tgacgctcag gtgcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gtcgacttgg aggttgtgcc 840

cttgaggcgt ggcttccgga gctaacgcgt taagtcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctggtc ttgacatcca cggaagtttt cagagatgag 1020

aatgtgcctt cgggaaccgt gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcggtccggc 1140

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgaccag ggctacacac gtgctacaat ggcgcataca aagagaagcg 1260

acctcgcgag agcaagcgga cctcataaag tgcgtcgtag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgtggatca gaatgccacg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtaggt 1440

agcttaacct tcgggagggc gcttaccact ttgtgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct ta 1542

<210> 829
<211> 1530

<212> DNA
<213> Escherichia sp. 4_1_40B

<400> 829
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgaac 60

ggtaacagga aacagcttgc tgtttcgctg acgagtggcg gacgggtgag taatgtctgg 120

gaaactgcct gatggagggg gataactact ggaaacggta gctaataccg cataacgtcg 180

caagaccaaa gaggggggacc ttcgggcctc ttgccatcgg atgtgcccag atgggattag 240

ctagtaggtg gggtaacggc tcacctaggc gacgatccct agctggtctg agaggatgac 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt atgaagaagg ccttcgggtt 420

gtaaagtact ttcagcgggg aggaagggag taaagttaat acctttgctc attgacgtta 480

cccgcagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga 600

aatccccggg ctcaacctgg gaactgcatc tgatactggc aagcttgagt ctcgtagagg 660

ggggtagaat tccaggtgta gcggtgaaat gcgtagagat ctggaggaat accggtggcg 720

aaggcggccc cctggacgaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgtcgact tggaggttgt gcccttgagg 840

cgtggcttcc ggagctaacg cgttaagtcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttacctg gtcttgacat ccacggaagt tttcagagat gagaatgtgc 1020

cttcgggaac cgtgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcggtcc ggccgggaac 1140

tcaaaggaga ctgccagtga taaactggag gaaggtgggg atgacgtcaa gtcatcatgg 1200

cccttacgac cagggctaca cacgtgctac aatggcgcat acaaagagaa gcgacctcgc 1260

gagagcaagc ggacctcata aagtgcgtcg tagtccggat tggagtctgc aactcgactc 1320

catgaagtcg gaatcgctag taatcgtgga tcagaatgcc acggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta ggtagcttaa 1440

ccttcgggag ggcgcttacc actttgtgat tcatgactgg ggtgaagtcg taacaaggta 1500

accgtagggg aacctgcggt tggatcacct 1530

<210> 830
<211> 1334
<212> DNA
<213> Escherichia sp. B4

<400> 830
gagtttgatc ctggctcaga ttgaacgctg gcggcaggcc taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa tgtctgggaa actgcctgat ggaggggat aactactgga 120

aacggtagct aataccgcat aaccaaagtt gccatcggat gtgcccagat gggattagct 180

agtaggtggg gtaacggctc acctaggcga cgatccctag ctggtctgag aggatgacca 240

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 300

cacaatgggc gcaagcctga tgcagccatg ccgcgtgtat gaagaaggcc ttcgggttgt 360

aaagtacttt cagcggggag gatgacgtta cccgcagaag aagcaccggc taactccgtg 420

ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg gcgtaaagcg 480

cacgcaggcg gtttgttaag tcagatgtga aatccccggg ctcaacctgg gaactgcatc 540

tgatactggc aagcttgagt ctcgtagagg ggggtagaat tccaggtgta gcggtgaaat 600

gcgtagagat ctggaggaat accggtggcg aaggcggccc cctggacgaa ctgacgctca 660

ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 720

tgtcgacttg gaggttgtgc gtggcttccg gagctaacgc gttaagtcga ccgcctgggg 780

agtacggccg caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgatgca acgcgaagaa ccttacctgg tcttgacatc gacaggtgct 900

gcatggctgt cgtcagctcg tgttgtgaaa tgttgggtta agtcccgcaa cgagcgcaac 960

ccttatcctt tgttgccagc ggccgggaac tcaaaggaga ctgccagtga taaactggag 1020

gaaggtgggg atgacgtcaa gtcatcatgg cccttacgac cagggctaca cacgtgctac 1080

aatggcgcac aaagagaagc gaactcgcga gagcaagcgg acctcattgc gtcgtagtcc 1140

ggatggagtc tgcaactcga ctccagaagt cggaatcgct agtaatcgtg gatcagaatg 1200

ccacggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagtgggtt 1260

gcaaaagaag taggtgctta gggcgcttac cactttgtga ttcatgactg gggtgaagtc 1320

gtaacaaggt aacc 1334

<210> 831
<211> 1397
<212> DNA
<213> Escherichia vulneris

<400> 831
agtcgaacgg tagcacagag agcttgctct cgggtgacga gtggcggacg ggtgagtaat 60

gtctgggaaa ctgcctgatg gaggggggata actactggaa acggtagcta ataccgcata 120

acgtcgcaag accaaagagg gggaccttcg ggcctcttgc catcagatgt gcccagatgg 180

gattagctag taggtggggt aacggctcac ctaggcgacg atccctagct ggtctgagag 240

gatgaccagc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 360

cgggttgtaa agtactttca gcggggagga aggcgataag gttaataacc ttgtcgattg 420

acgttacccg cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggtct gtcaagtcgg 540

atgtgaaatc cccgggctca acctgggaac tgcattcgaa actggcaggc tggagtcttg 600

tagaggggg tagaattcca ggtgtagcgg tgaaatgcgt agagatctgg aggaataccg 660

gtggcgaagg cggccccctg gacaaagact gacgctcagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgct gtaaacgatg tcgacttgga ggttgttccc 780

ttgaggagtg gcttccggag ctaacgcgtt aagtcgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgcaacg cgaagaacct tacctactct tgacatccag agaacttagc agagatgctt 960

tggtgccttc gggacgcacg caggcggtct gtcaagtcgg atgtcagctc gtgttgtgaa 1020

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cggtccggcc 1080

gggaactcaa aggagactgc cagtgataaa ctggaggaag gtggggatga cgtcaagtca 1140

tcatggccct tacgagtagg gctacacacg tgctacaatg gcatatacaa agagaagcga 1200

cctcgcgaga gcaagcggac ctcataaagt atgtcgtagt ccggattgga gtctgcaact 1260

cgactccatg aagtcggaat cgctagtaat cgtggatcag aatgccacgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catgggagtg ggttgcaaaa gaagtaggta 1380

gcttaacctt cgggagg 1397

<210> 832
<211> 1497
<212> DNA
<213> Ethanoligenens harbinense

<400> 832
agagtttgat cctggctcag gacgaacgct ggcggcgcgc ctaacacatg caagtcgagc 60

ggagtccttc gggacttagc ggcggacggg tgagtaacgc gtgagcaacc tggccttcag 120

agggggataa cgtctggaaa cggacgctaa taccgcatga catggcggag tcgcatggct 180

ctgccatcaa aggagtaatc cgctgaggga tgggctcgcg tccgattagg tagttggtga 240

ggtaacggct caccaagccc gcgatcggta gccggactga gaggttggcc ggccacattg 300

ggactgagac acggcccaga ctcctacggg aggcagcagt gggggatatt gcacaatgga 360

ggaaactctg atgcagcgac gccgcgtgag ggaagaaggt cttcggattg taaacctctg 420

tctttgggga cgaatcaatg acggtaccca aggaggaagc cacggctaac tacgtgccag 480

cagccgcggt aatacgtagg tggcaagcgt tgtccggaat tactgggtgt aaagggtgcg 540

caggcggggc ggcaagttgg atgtgaaaac tccgggctca acccggagcc tgcattcaaa 600

actgtcgctc ttgagtgaag tagaggcagg cggaattccc ggtgtagcgg tgaaatgcgt 660

agatatcggg aggaacacca gtggcgaagg cggcctgctg ggcttttact gacgctgagg 720

cacgaaagca tgggtagcaa acaggattag ataccctggt agtccatgcc gtaaacgatg 780

attgctaggt gtgggggtc tgacccttc cgtgccggag ttaacacaat aagcaatcca 840

cctggggagt acgggtcgca aggttgaaac tcaaaggaat tgacgggggc tcgcacaagc 900

agtggagtat gtggtttgat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatcca 960

ccgaatcccc cagagattgg ggagtgccct tcggggagcg gtgagacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttgt 1080

gaatagttgc tacgaaagag cactctattc agaccgccgt tgacaaaacg gaggaaggtg 1140

gggatgacgt caaatcatca tgccccttat gacctgggct acacacgtac tacaatggcc 1200

atcaacagag ggaagcaagg ccgcgaggtg gagcgaaccc ctaaaaatgg tctcagctca 1260

gattgcaggc tgaaacccgc ctgcatgaag atggaattgc tagtaatcgc ggatcagcat 1320

gccgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccat gagagccggg 1380

gacacccgaa gtcggttggg taaccgtaag gagcccgccg ccgaaggtgg aatcggtaat 1440

tggggtgaag tcgtaacaag gtagccgtat cggaaggtgc ggctggatca cctccta 1497

<210> 833
<211> 1318
<212> DNA
<213> Eubacteriaceae bacterium P4P_50 P4

<400> 833
gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac gagtggcgga cgggtgagta 60

acacgtaagt aatcaaccta taacacacga ataactaata gaaatgttag ctaatacgag 120

ataaacaaag gcggttatag acgagcttgc gtctgattag ctagttggtg gggtaagagc 180

ctaccaaggc gacgatcagt agccgacctg agagggtgaa cggccacatt ggaactgaga 240

gacggtccaa actcctacgg gaggcagcag tgggggatat tgcacaatgg ggggaaccct 300

gatgcagcaa cgccgcgtga acgaagaagg ccctagggtc gtaaagttct gtcgtatggg 360

aagatgacag taccatacaa gaaagccccg gctaactacg tgccagcagc cgcggtaata 420

cgtaggggcc aagcgttatc cggaattact gggcgtaaag ggtgcgtagg cggcttgtta 480

agtcaaggtt aaaaggcagt agctcaacta ctgttcggcc ttgaaactat taagcttgag 540

tataggagag gaaagtggaa ttcccagtgt agcggtgaaa tgcgtagata ttgggaggaa 600

taccggtggc gaaggcgact ttctggacta actgacgctg aggcacgaaa gtgtgggtag 660

caaacaggat tagataccct ggtagtccac accgtaaacg atgaacacta ggtgtcggga 720

tctcggtgcc ggcgcaaacg caataagtgt tccgcctggg gagtacgttc gcaagaataa 780

aactcaaagg aattgacggg gacccgcaca agtagcggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccta agcttgacat gcacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattaa tagttgccag 960

tgcgcaggca ctctagtaag acagttaggg ataacctaaa ggaaggtggg gatgacgtca 1020

aatcatcatg ccccttatgc ttagggctac acacgtgcta caatggccgt caaagagaag 1080

cgaatctgtg aagaagagca aacctgaaac ggtccaagtt cggatgtagg ctgaaactcg 1140

cctacagaag tcggagttac tagtaatcgc aaatcagaat gttgcggtga atgcgttccc 1200

gggtcttgta cacaccgccc gtcacaccat gggagctgag ggcacccaaa gtcagtatct 1260

aagaagctgc ctaaggtgaa cttagtaact ggggtgaagt cgtaacaagg tagccgta 1318

<210> 834
<211> 1527
<212> DNA
<213> Eubacterium barkeri

<220>
<221> modified_base
<222> (617)..(618)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1473)..(1473)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1475)..(1479)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1488)..(1493)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1504)..(1512)
<223> a, c, t, g, unknown or other

<400> 834
tttaattgag agtttgatcc tggctcagga cgaacgctgg cggtatgctt aacacatgca 60

agtcgaacga gaagcttttt atggatcctt cgggagaaat aagagtggaa agtggcgaac 120

gggtgagtaa cgcgtgggta acctgcctca tggaaaggaa tagcctcggg aaactgggag 180

taaagcctta tattattaag acatcgcatg gtgttttaat gaaaactccg gtgccatgag 240

atggacccgc gtcccattag ctagttggtg agataacagc ccaccaaggc aacgatgggt 300

aaccggtctg agagggcgaa cggtcacact ggaactgaga cacggtccag actcctacgg 360

gaggcagcag tggggaatat tgcgcaatgg gggcaaccct gacgcagcaa taccgcgtga 420

gtgaagaagg ttttcggatc gtaaaactct tttattgggg aagaagaagt gacggtaccc 480

aatgaagaag tcccggctaa ctacgtgcca gcagccgcgg taatacgtag gggacaagcg 540

ttgtccggaa tcactgggcg taaagggcgc gtaggcggtt ttataagtca gatgtgaaag 600

gtaccggctc aaccggnnac gtgcatttga aactgtaaga cttgagtact ggagaggcaa 660

gtggaattcc tagtgtagcg gtgaaatgcg tagatattag gaggaacacc ggtggcgaag 720

gcggcttgct ggacagatac tgacgctgag gtgcgaaagc gtggggagcg aacaggatta 780

gataccctgg tagtccacgc cgtaaacgat gatgactagg tgttggggaa actcagtgcc 840

gcagttaaca cattaagtca tccgcctggg gagtacgacc gcaaggttga aactcaaagg 900

aattgacggg gacccgcaca agcagcggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccag gccttgacat cctctgacca tcctagagat aggagatttc cttcgggaac 1020

agagagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg cctttagttg ccagcattaa gttgggcact ctaaagggac 1140

tgccgtagac aatacggagg aaggtgggga cgacgtcaaa tcatcatgcc ccttatggcc 1200

tgggctacac acgtgctaca atgggttggg acaaagggaa gcgaagccgc gaggtgaagc 1260

caatcccata aaacaacccc cagttcggat tgcaggctga aacccgcctg catgaagttg 1320

gagttgctag taatcgcaga tcagaatgct gcggtgaatg cgttcccggg tcttgtacac 1380

accgcccgtc acaccacgag agttggcaac acccgaagcc agtgagcgaa ccgcaaggac 1440

gcagctgtcg aaggtggggt cagtaattgg ggngnnnnng taacaagnnn nnngtatcgg 1500

aagnnnnnnn nngatcacct cctttct 1527

<210> 835
<211> 1538
<212> DNA
<213> Eubacterium biforme

<400> 835
tggagagttt gatcctggct caggatgaac gctggcggca tgcctaatac atgcaagtcg 60

aacgagagga aggaaagctt gcttttctga atctagtggc gaacgggtga gtaacacgta 120

ggtaacctgc ccatgtgccc gggataactt ctggaaacgg atgctaaaac cggataggta 180

gcagacaagc atttgactgc tattaaagtg gctaaggcca tgaacatgga tggacctgcg 240

gtgcattagc tagttggtga ggtaacggcc caccaaggcg acgatgcata gccggcctga 300

gagggcggac ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt 360

agggaatttt cgtcaatggg gggaaccctg aacgagcaat gccgcgtgag tgaggaaggt 420

cttcggatcg taaagctctg ttgtaagaga aaaacgacat tcatagggaa tgatgagtga 480

gtgatggtat cttaccagaa agtcacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtggcgag cgttatccgg aatgattggg cgtaaagggt gcgtaggtgg cagaacaagt 600

ctggagtaaa aggtatgggc tcaacccgta ctggctctgg aaactgttca gctagagaac 660

agaagaggac ggcggaactc catgtgtagc ggtaaaatgc gtagatatat ggaagaacac 720

cggtggcgaa ggcggccgtc tggtctgttg ctgacactga agcacgaaag cgtggggagc 780

aaataggatt agataccta gtagtccacg ccgtaaacga tgagaactag gtgttggggg 840

aataactcag tgccgcagtt aacgcaataa gttctccgcc tggggagtat gcacgcaagt 900

gtgaaactca aaggaattga cgggggcccg cacaagcggt ggagtatgtg gtttaattcg 960

aagcaacgcg aagaacctta ccaggccttg acatcccttg cagaggtata gagatatatc 1020

cgaggttatc aaggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaacccttg tgatatgtta ctaacattga gttgaggact 1140

catatcagac tgccggtgat aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc 1200

ccttatggcc tgggctacac acgtactaca atggcgtcta caaagagcgg caagcctgtg 1260

aaggcaagcg aatctcataa aggacgtctc agttcggatt gaagtctgca acccgacttc 1320

atgaagctgg aatcgctagt aatcgcgaat cagcatgtcg cggtgaatac gttctcgggc 1380

cttgtacaca ccgcccgtca aaccatggga gttggtaatg cccgaagccg gtggcataac 1440

ctttcgagga gtgagccgtc gaaggcagga ccgatgactg gggttaagtc gtaacaaggt 1500

atccctacgg gaacgtgggg atggatcacc tcctttct 1538

<210> 836
<211> 1438
<212> DNA
<213> Eubacterium brachy

<400> 836
gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc gagaagtttt gaaaagattc 60

ttcggatgaa atttaaaatg gaaagcggcg gacgggtgag taacgcgtag gcaaccatac 120

aaagggatag catttggaaa cgaatattaa taccttatga aacttaacta gtgcatgcta 180

ggtaggtcaa agatttatcg gtatgggatg ggcctgcgtc tgactgccct tagctagttg 240

gtgaggtaac ggctcaccaa ggcgacgatc agtagccgac ctgagagggt gaacggccac 300

attggaactg agacacggtc caaactccta cgggaggcag cagtggggaa tattgcacaa 360

tgggggaaac cctgatgcag caacgccgcg tgaacgatga aggcctttgg gtcgtaaagt 420

tctgttctag gtgatgaaaa ctgacagtaa cctaggagaa agccccggct aactccgtgc 480

cagcagccgc ggtaatactg gagggggcaa gcgttatccg gaattattgg gcgtaaaggg 540

tacgtaggtg gccttttaag cgtagggtat aaggcaatgg ctcaaccatt gttcgcccta 600

tgaactggaa ggcttgagtg caggagagga aagcggaatt cctagtgtag cggtggaatg 660

catagatatt aggaggaaca tcagcggcga aggcggcttt ctggactgca actgacactg 720

aggtacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 780

atgagcacta ggtgtcgggg tcgtaaggct tcggtgccgt agttaacgca ttaagtgctc 840

cgcctgggga gtacgcacgc aagtgtgaaa ctcaaaggaa ttgacgggga cccgcacaag 900

cagcggagca tgtggtttaa ttcgaagcaa cgcgagaacc ttaccaggac ttgacatcct 960

tctgaccggt ctttaatagg acctttcttt tgacagaaga gacaggtggt gcatggttgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtcatt 1080

agttgccatc attaagttgg gcactctagt gagactgccg gggacaactc ggaggaaggt 1140

ggggatgacg tcaaatcatc atgccccttа tgttctgggc tacacacgtg ctacaatggc 1200

tggtacaaag agaagcaaga ccgcaaggtg gagcaaagct caaaaaccag ccccagttcg 1260

gattgtaggc tgaaactcgc ctacatgaag tcggagttgc tagtaatcgc agatcagaat 1320

gctgcggtga atgcgttccc gggtcttgta cacaccgccc gtcacaccat ggaagttggg 1380

ggcgcccaaa gttggcagat aaatatgcta cctaaggtga aaccaatgac tggggtga 1438

<210> 837
<211> 1472
<212> DNA
<213> Eubacterium budayi

<400> 837
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gatgaagttt ccttcgggaa acggattagc ggcggacggg tgagtaacac gtgggtaacc 120

tgcctcatag aggggaatag cctcccgaaa gggagattaa taccgcataa cattgcagtt 180

tcgcatgaaa cagcaattaa aggagcaatc cgctatgaga tggacccgcg gcgcattagc 240

tagttggtaa ggtaatggct taccaaggcg acgatgcgta gccgacctga gagggtgatc 300

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg ggaaaccctg atgcagcaac gccgcgtgag tgatgacggt cttcggattg 420

taaagctctg tctttgggca cgataatgac gtacccaagg aggaagccac ggctaactac 480

gtgccagcag ccgcggtaat acgtaggtgc cgaacgttgt ccggatttac tggccgtaaa 540

gggagcgtag gcggattttt aagtgggatg tgaaataccc gggctcaacc tgggtgctgc 600

attccaaact gggaatctag agtgcaggag gggagagtgg aattcctagt gtagcggtga 660

aatgcgtaga gattaggaag aacaccagtg gcgaaggcga ctctctggac tgtaactgac 720

gctgaggctc gaaacgtggg gagcgaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgaata ctaggtgtag gggtttcaac acctctgtgc cgccctaacg cattaagtat 840

tccgcctggg gagtacggtc gcaagattaa aactcaaagg aattgacggg ggcccgcaca 900

agtagcggag catgtggttt aattcgaagc aacgcgaaga accttaccta gacttgacat 960

cctctgcatt acccttaatc ggggaagttc cttcgggaac agagtgacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta 1080

ttgttagttg ctaccattaa gttgagcact ctagcgagac tgcctgggtt aaccaggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgtct agggctacac acgtgctaca 1200

atggcaagta cagagagatg caataccgcg aggtggagct aaacttcaaa acttgtctca 1260

gttcggattg taggctgaaa ctcgcctaca tgaagctgga gttactagta atcgcgaatc 1320

agcatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

ttggcaatac ccaaagttcg tgagctaacg cgtaagcagg cagctaccta aggtagggtc 1440

agcgattggg gtgaagtcgt aacaaggtaa cc 1472

<210> 838
<211> 1338
<212> DNA
<213> Eubacterium callanderi

<400> 838
cttcgggtga cattagaact ggaaagtggc gaacgggtga gtaacgcgtg ggtaacctgc 60

cctatggaaa ggaatagcct cgggaaactg ggagtaaagc cttatattat ggttttgtcg 120

catggcaaga tcatgaaaac tccggtgcca taggatggac ccgcgtccca ttagctagtt 180

ggtgagataa cagcccacca aggcgacgat gggtaaccgg tctgagaggg cgaacggtca 240

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattgcgca 300

atgggggcaa ccctgacgca gcaataccgc gtgagtgaag aaggttttcg gatcaaagct 360

ctgttattgg ggaagaagaa tgacggtaga gaaccgctaa ctacgtgcca gcagccgcgg 420

taatacgtag gggacaagcg tttccggaat gactgggcgt aaagggcgcg taggcggtct 480

attaagttga tgtgaaaggt accggctcaa ccggtgaagt gcattggaaa ctggtaactt 540

gagtattgga gaggcaagtg gaattcctag tgtacggtga aatgcgtaat attaggagga 600

acaccagtgg cgaaggcggc ttgctggaca aatactgacg ctgagtgcga aagcgtgggg 660

agcgaacagg atcagatacc ctggtagtcc acgccgtaaa cgatgaatgc taggtgttgg 720

ggaaactcag tgccgcagtt aacacaataa gcattccgcc tggggagtac gaccgccagg 780

ttgaaactca aaggaattga cggggacccg cacaagcagc ggagcatgtg gtttaattcg 840

aagcaacgcg aagaagctta ccattggtaa ctggcagact tgagtcttgg agagggaaag 900

tttccttcgg gaacagagag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 960

gttgggttaa gtcccgcaac gagcgcaacc cctgccttta gttgccagca ttaagttggg 1020

cactctagag ggactgccgt agacaatacg gaggaaggtg gggacgacgt caaatcatca 1080

tgccccttat gacctgggct acacacgtgc tacaatggtc tgaacagagg gccgcgaagc 1140

cgcgaggtga agcaaatccc ttaaaacaga tcccagttcg gattgcaggc tgcaactcgc 1200

ctgcatgaag ttggagttgc tagtaatcgc ggatcagaat gccgcggtga atgcgttccc 1260

gggtcttgta cacaccgccc gtcacaccac gagagttggc aacacccgaa gcctgtgaga 1320

gaaccgcaag gactcagc 1338

<210> 839
<211> 1524
<212> DNA
<213> Eubacterium cellulosolvens

<220>
<221> modified_base
<222> (1492)..(1492)
<223> a, c, t, g, unknown or other

<400> 839
tgagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

taagcactct ggaagattcc ttcgggatga ttccttagtg acttagcggc ggacgggtga 120

gtaacgcgtg ggcaacctgc cttgtacagg gggataacag ttagaaatga ctgctaatac 180

cgcataagcg cacagcatgg catcatgcag tgtgaaaaac tccggtggta caagatgggc 240

ccgcgttgga ttagcttgtt ggtggggtaa cggcccacca aggcgacgat ccatagccgg 300

actgagaggt cgaacggcca cattgggact gagacacggc ccagactcct acgggaggca 360

gcagtgggga atattgcaca atggaggaaa ctctgatgca gcgacgccgc gtgagtgatg 420

aagtatttcg gtatgtaaag ctctatcagc agggaagaaa ttgacggtac ctgactaaga 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt agggggcaag cgttatccgg 540

atttactggg tgtaaaggga gcgtagacgg cgatgcaagt ctgaagtgaa aacctggggc 600

tcaaccccag gattgctttg gaaactgtat tgctagagta ccggaggggt aagcggaatt 660

cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccggtggcga aggcggctta 720

ctggacggca actgacgttg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatacta ggtgtcagca ggcaaagcct gttggtgccg 840

ccgctaacgc attaatgtat tccacctggg gagtacgttc gcaagaatga aactcaaagg 900

aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccaa atcttgacat ccctctgaca gatccttaat cggatccttc cttcgggaca 1020

gaggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaaccctta tccttagtag ccagcaggtc aagctgggca ctctggggag 1140

actgccaggg agaacctgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga 1200

tttgggctac acacgtgcta caatggcgtg aacagaggga agcgaagccg cgaggcctgg 1260

caaatctcaa aaaacacgtc ccagttcgga ctgtagtctg caactcgact acacgaagct 1320

ggaatcgcta gtaatcgcag atcagaatgc tgcggtgaat acgttcccgg gtcttgtaca 1380

caccgcccgt cacaccatgg gagttggtaa tgcccgaagt ctgtgaccca accgcaagga 1440

gggagcagcc gaaggcaggg ccagtaactg gggtgaagtc gtaacaaggt anccgtatcg 1500

gaaggtgccg gctggatcac cttt 1524

<210> 840
<211> 1362
<212> DNA
<213> Eubacterium contortum

<400> 840
cggattgaag agttttgcga ctgagcggcg gacgggtgag taacgcgtgg gtaacctgcc 60

tcatacaggg ggataacagt tagaaatgac tgctaatacc gcataagacc acggtaccgc 120

atggtaccgt gggaaaaact ccggtggtat gagatggacc cgcgtctgat tagctagttg 180

gtaaggtaac ggcttaccaa ggcgacgatc agtagccgac ctgagagggt gaccggccac 240

attgggactg agacacggcc caaactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggggaaac cctgatgcag cgacgccgcg tgaaggatga agtatttcgg tatgtaaact 360

tctatcagca gggaagaaaa tgacggtacc tgactaagaa gccccggcta actacgtgcc 420

agcagccgcg gtaatacgta gggggcaagc gttatccgga tttactgggt gtaaagggag 480

cgtagacggt tatgtaagtc tgatgtgaaa acccggggct caaccccggg actgcattgg 540

aaactatgta actagagtgt cggagaggta agtggaattc ctagtgtagc ggtgaaatgc 600

gtagatatta ggaggaacac cagtggcgaa ggcggcttac tggacgatga ctgacgttga 660

ggctcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 720

tgcatactag gtgtcgggtg gcaaagccat tcggtgccgc agcaaacgca ataagtatgc 780

cacctgggga gtacgttcgc aagaatgaaa ctcaaaggaa ttgacgggga cccgcacaag 840

cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttacctgct cttgacatcc 900

ccctgaccgg cgcgtaatgg tgcctttcct tcgggacagg gctagtggag gggtgaagtt 960

cgtagacagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatc 1020

tttagtagcc agcggttcgg ccgggcactc tagagagact gccagggata acctggagga 1080

aggtggggat gacgtcaaat catcatgccc cttatgagca gggctacaca cgtgctacaa 1140

tggcgtaaac aaagggaggc gaagccgcga ggtggagcaa atcccaaaaa taacgtctca 1200

gttcggattg tagtctgcaa ctcgactaca tgaagctgga atcgctagta atcgcgaatc 1260

agaatgtcgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accatgggag 1320

ttggtaacgc ccgaagtcag tgacccaacc gtaaggaggg ag 1362

<210> 841
<211> 1446
<212> DNA
<213> Eubacterium coprostanoligenes

<400> 841
gtgtgcctaa cacatacaag tcagtcgacg agcttgacga acgattcttc ggatgaattc 60

tgatatgact gagtggcgga cgggtgagta acgcgtgagc aacctgccct tcagaggggg 120

atagcgtctg gaaacggacg gtaataccgc ataatgtaca atgatggcat cattgatgta 180

ccaaagctat tgcgctgaag gatgggctcg cgtctgatta gatagttggt ggggtaacgg 240

cctaccaagt cgacgatcag tagccggact gagaggttga acggccacat tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc 360

tgatgcagca acgccgcgtg gaggaagacg gttttcggat tgtaaactcc tgttcttagt 420

gaagaaaaat gacggtagct aaggagcaag ccacggctaa ctacgtgcca gcagccgcgg 480

taatacgtag gtggcaagcg ttgtccggaa ttactgggtg taaagggagc gcaggcgggg 540

gagcaagtca gctgtgaaat ctatgggctt aacccataaa ctgcagttga aactgttctt 600

cttgagtgaa gtagaggttg gcggaattcc gagtgtagcg gtgaaatgcg tagatattcg 660

gaggaacacc ggtggcgaag gcggccaact gggcttttac tgacgctgag gctcgaaagt 720

gtggggagca aacaggatta gataccctgg tagtccacac tgtaaacgat gataactagg 780

tgtaggggtc ctgacccctt ctgtgccgca gctaacgcaa taagttatcc acctggggag 840

tacgaccgca aggttgaaac tcaaaggaat tgacggggac ccgcacaagc agtggattat 900

gtggtttaat tcgatgcaac gcgaagaacc ttaccagcac ttgacatcca actaacgaaa 960

tagagatata ttaggtgccc ctcggggaaa gttgagacag gtggtgcatg gttgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccctg ccattagttg 1080

ctacgcaaga gcactctaat gggaccgcta ccgacaaggt ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgtgctgggc tacacacgta atacaatggt cgttaacaaa 1200

gagaagcaat accgcgaggt ggagcaaaac ttcaaaaacg atctcagttc ggactgtagg 1260

ctgaaactcg cctgcacgaa gttggaattg ctagtaatcg tggatcagca tgccacggtg 1320

aatacgttcc cgggtcttgt acacaccgcc cgtcacacca tgggagccgg taatacccga 1380

agtcagtagt ctaaccttaa tggaggacgc tgccgaaggt aggattggcg actggggtga 1440

agtcgt 1446

<210> 842
<211> 1541
<212> DNA
<213> Eubacterium cylindroides

<400> 842
tggagagttt gatcctggct caggatgaac gctggcggca tgcctaatac atgcaagtcg 60

aacggaccga agggaaagct tgcttttcct gaagtcagtg gcgaacgggt gagtaacacg 120

taggtaacct gcccatgtgc ccgggacaac gcctggaaac gggtgctaaa accggatagg 180

tagagagatc gcatgaactt tctattaaag gggctacggc cctgaacatg gatggacctg 240

cggtgcatta gctagttggt gaggtaacgg cccaccaagg cgacgatgca tagccgacct 300

gagagggcga acggccacat tgggactgag acacggccca aactcctacg ggaggcagca 360

gtagggaatt ttcgtcaatg gggggaaccc tgaacgagca atgccgcgtg agtgaagacg 420

gtcttcggat tgtaaagctc tgttgcgaga gaaaaacgac acggataggg aatgatccgt 480

gggtgatggt atctcgccag aaagtcacgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggtggcg agcgttatcc ggaatgattg ggcgtaaagg gtgcgtaggc ggcccgttaa 600

gtctggagtc aaagccggca gctcaactgt cgtacgcttt ggaaactggc gggctggagt 660

gcagaagagg gcgatggaac tccatgtgta gcggtaaaat gcgtagatat atggaagaac 720

accagtggcg aaggcggtcg cctggtctgc aactgacgct gaagcacgaa agcgtgggga 780

gcaaatagga ttagataccc tagtagtcca cgccgtaaac gatgagaact aagtgttggg 840

ggaataactc agtgctgcag ttaacgcaat aagttctccg cctggggagt atgcacgcaa 900

gtgtgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagtatg tggtttaatt 960

cgaagcaacg cgaagaacct taccaggcct tgacatcccg ggcaagggcg tagagatacg 1020

ccggaggcta tcccggtgac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaacga gcgcaaccct tgtgatatgt tactaccagt aagatgagga 1140

ctcatatcag actgccggtg acaaaccgga ggaaggtggg gatgacgtca aatcatcatg 1200

ccccttatgg cctgggctac acacgtacta caatggcgca tacaaagagc agcgaacccg 1260

tgagggcagg cgaatctcgc aaagtgcgtc tcagttcgga ttgaagtctg caacccgact 1320

tcatgaagtt ggaatcgcta gtaatcgcga atcagcatgt cgcggtgaat acgttctcgg 1380

gccttgtaca caccgcccgt caaaccatgg gagttggtaa tacccgaagc cggtggcata 1440

acccattcag ggagtgagcc gtcgaaggta ggatcgatga ctggggttaa gtcgtaacaa 1500

ggtatcccta cgggaacgtg gggatggatc acctcctttc t 1541

<210> 843
<211> 1470
<212> DNA
<213> Eubacterium desmolans

<220>
<221> modified_base
<222> (1)..(1)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (32)..(32)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (275)..(275)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (401)..(401)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (575)..(575)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (580)..(580)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (602)..(602)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (917)..(919)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (957)..(958)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (980)..(980)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1017)..(1017)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1026)..(1026)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (1039)..(1039)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1080)..(1080)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1180)..(1181)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1196)..(1196)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1374)..(1375)
<223> a, c, t, g, unknown or other

<400> 843
nttttttagag agtttgatcc tggctcagga tnaacgctgg cggcgtgcct aacacatgca 60

agtcgaacgg agttattttg gaaatctctt cggagatgga attcataact tagtggcgga 120

cgggtgagta acgcgtgagc aatctgcctt taggtggggg ataacagtcg gaaacggctg 180

ctaataccgc ataatacgtt ttgggggcat ccttgaaacg tcaaagattt attgccttta 240

gatgagctcg cgtctgatta gctggttggc ggggnaacgg cccaccaagg cgacgatcag 300

tagccggact gagaggttga acggccacat tgggactgag acacggccca gactcctacg 360

ggaggcagca gtggggaata ttgcgcaatg ggggaaaccc ngacgcagca acgccgcgtg 420

attgaagaag gccttcgggt tgtaaagatc tttaatcagg gacgaatttt gacggtacct 480

gaagaataag ctccggctaa ctacgtgcca gcagccgcgg taatacgtag ggagcaagcg 540

ttatccggat ttactgggtg taaagggcgc gcagncgggn cggcaagttg ggagtgaaat 600

cnggggggctt aacccccgaa ctgctttcaa aactgctggt cttgagtgat ggagaggcag 660

gcggaattcc gtgtgtagcg gtgaaatgcg tagatatacg gaggaacacc agtggcgaag 720

gcggcctgct ggacattaac tgacgctgag gcgcgaaagc gtggggagca aacaggatta 780

gataccctgg tagtccacgc cgtaaacgat ggatactagg tgtgggaggt attgacccct 840

tccgtgccgc agttaacaca ataagtatcc cacctgggga gtacggccgc aaggttgaaa 900

ctcaaaggaa ttgacgnnng cccgcacaag cagtggagta tgtggtttaa ttcgaannaa 960

cgcgaagaac cttaccaggn cttgacatcc cggtgaccgt cctagagata ggacttncct 1020

tcgggncaac ggtgacagnt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggn 1080

ttaagtcccg caacgagcgc aacccttacg gttagttgat acgcaagatc actctagccg 1140

gactgccgtt gacaaaacgg aggaaggtgg ggacgacgtn naatcatcat gccccntatg 1200

acctgggcta cacacgtact acaatggcag tcatacagag ggaagcaaaa tcgcgaggtg 1260

gagcaaatcc ctaaaagctg tcccagttca gattgcaggc tgcaacccgc ctgcatgaag 1320

tcggaattgc tagtaatcgc ggatcagcat gccgcggtga atacgttccc gggnnttgta 1380

cacaccgccc gtcacaccat gagagccgtc aatacccgaa gtccgtagcc taaccgcaag 1440

gggggcgcgg ccgaaggtag gggtggtaat 1470

<210> 844
<211> 1013
<212> DNA
<213> Eubacterium dolichum

<220>
<221> modified_base
<222> (10)..(10)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (49)..(49)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (74)..(76)
<223> a, c, t, g, unknown or other

<400> 844
atcgtaaagn tctntgtaag agaaaaacga tggatatagg aaatgatgnc caagtgatgg 60

tatcttacca gaannnacgg ctaactacgt gccagcagcc gcggtaatac gtaggtggca 120

agcgttatcc ggaatgattg ggcgtaaagg gtgcgtaggt ggtgcattaa gtctgaagta 180

aaagccagca gctcaactgc tgtaagcttt ggaaactggt gtactagagt gcaggagagg 240

gcgatggaat tccatgtgta gcggtaaaat gcgtagatat atggaggaac accagtggcg 300

aaggcggtcg cctggcctgt aactgacact gaggcacgaa agcgtgggga gcaaatagga 360

ttagataccc tagtagtcca cgccgtaaac gatgagaact aagtgttgga gagattcagt 420

gctgcagtta acgcaataag ttctccgcct ggggagtatg cacgcaagtg tgaaactcaa 480

aggaattgac gggggcccgc acaagcggtg gagtatgtgg tttaattcga agcaacgcga 540

agaaccttac caggccttga catggatata aatgttctag agatagaaag atagctatat 600

atcacacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 660

gcaacgagcg caacccttgt cgcatgttac cagcattcag ttggggactc atgtgagact 720

gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc cttatggcct 780

gggctacaca cgtactacaa tggcgtctac aaagaggagc gacacagtga tgtgaagcaa 840

atctcataaa ggacgtctca gttcggattg aagtctgcaa ctcgacttca tgaagtcgga 900

atcgctagta atcgcagatc agcatgctgc ggtgaatacg ttctcgggcc ttgtacacac 960

cgcccgtcaa accatgggag ttggtaatac ccgaagccgg tggcataacc gca 1013

<210> 845
<211> 1394
<212> DNA
<213> Eubacterium eligens

<220>
<221> modified_base
<222> (19)..(20)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (44)..(45)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1382)..(1382)
<223> a, c, t, g, unknown or other

<400> 845
tcgaacgaag catttaggnn acagattatt tcggtatgaa gttnnttatg actgagtggc 60

ggacgggtga gtaacgcgtg ggtaacctgc cttgtactgg gggatagcag ctggaaacgg 120

ctggtaatac cgcataagcg cacaatgttg catgacatgg tgtgaaaaac tccggtggta 180

taagatggac ccgcgtctga ttagctagtt ggtgagataa cagcccacca aggcgacgat 240

cagtagccga cctgagaggg tgaccggcca cattgggact gagacacggc ccagactcct 300

acgggaggca gcagtgggga atattgcaca atggaggaaa ctctgatgca gcgacgccgc 360

gtgagtgaag aagtaattcg ttatgtaaag ctctatcagc agggaagata gtgacggtac 420

ctgactaaga agctccggct aaatacgtgc cagcagccgc ggtaatacgt atggagcaag 480

cgttatccgg atttactggg tgtaaaggga gtgtaggtgg ccatgcaagt cagaagtgaa 540

aatccggggc tcaaccccgg aactgctttt gaaactgtaa ggctggagtg caggaggggt 600

gagtggaatt cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccagtggcga 660

aggcggctca ctggactgta actgacactg aggctcgaaa gcgtggggag caaacaggat 720

tagataccct ggtagtccac gccgtaaacg atgaatacta ggtgtcgggg cccataaggg 780

cttcggtgcc gcagcaaacg caataagtat tccacctggg gagtacgttc gcaagaatga 840

aactcaaagg aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc 900

aacgcgaaga accttaccaa gtcttgacat cccttactgc gggtaaagag agtgtcgttg 960

cctagggaca gtggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1020

ggttaagtcc cgcaacgagc gcaaccccta tccttagtag ccagcagtaa gatgggcact 1080

ctagggagac tgccagggat aacctggagg aaggtgggga tgacgtcaaa tcatcatgcc 1140

ccttatgact tgggctacac acgtgctaca atggcgtaaa caaagtgaag cgaagtcgtg 1200

aggccaagca aatcacaaaa ataacgtctc agttcggatt gtagtctgca actcgactac 1260

atgaagctgg aatcgctagt aatcgcagat cagaatgctg cggtgaatac gttcccgggt 1320

cttgtacaca ccgcccgtca caccatggga gtcgaaaatg cccgaagtcg gtgacctaac 1380

gnaagaagga gccg 1394

<210> 846
<211> 1319
<212> DNA
<213> Eubacterium fissicatena

<220>
<221> modified_base
<222> (23)..(23)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (43)..(45)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (887)..(887)
<223> a, c, t, g, unknown or other

<400> 846
ggattgaaga gtgttgcgac ggngcggcgg acgggtgagt gannngtggg taacctgcct 60

catacagggg gataacagtt agaaatgact gctaataccg cataagacca cggtaccgca 120

tggtacagtg ggaaaaactc cggtggtatg agatggaccc gcgtctgatt agctagttgg 180

taaggtaacg gcttaccaag gcgacgatca gtagccgacc tgagagggtg accggccaca 240

ttgggactga gacacggccc aaactcctac gggaggcagc agtggggaat attgcacaat 300

gggggaaacc ctgatgcagc gacgccgcgt gaaggatgaa gtatttcggt atgtaaactt 360

ctatcagcag ggaagaaaat gacggtacct gactaagaag ccccggctaa ctacgtgcca 420

gcagccgcgg taatacgtag ggggcaagcg ttatccggat ttactgggtg taaagggagc 480

gtagacggtt atgtaagtct gatgtgaaaa cccggggctc aaccccggga ctgcattgga 540

aactatgtaa ctagagtgtc ggagaggtaa gtggaattcc tagtgtagcg gtgaaatgcg 600

tagatattag gaggaacacc agtggcgaag gcggcttact ggacgatcac tgacgttgag 660

gctcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 720

gaatactagt gtcgggtggc aaagccattc ggtgccgcag caaacgcaat aagtattcca 780

cctggggagt acgttcgcaa gaatgaaact caaaggaatt gacggggacc cgcacaagcg 840

gtggacatgt ggtttaattg aagcaacgcg atagggtgca agcgctntcc agaccacact 900

gaccggcgtg taatggcgcc ttcccttcgg ggcagtggag acaggtggtg catggttgtc 960

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttatcttta 1020

gtagccagcg gtttggccgg gcactctaga gagactgcca gggataacct ggaggaaggt 1080

ggggaggacg tcaaatcatc atgccccttа tgagcagggc tacacacgtg ctacaatggc 1140

gtaaacaaag ggaggcaata ccgcgaggtt gagcaaatcc caaaaataac gtctcagttc 1200

ggattgtagt ctgcaactcg actacatgaa gctggaatcg ctagtaatcg cgaatcagaa 1260

tgtcgcggtg aatacgttcc cgggtcttgt acacaccccc cgtcacacca tgggagttg 1319

<210> 847
<211> 937
<212> DNA
<213> Eubacterium hadrum

<220>
<221> modified_base
<222> (83)..(83)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (890)..(890)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (903)..(903)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (923)..(923)
<223> a, c, t, g, unknown or other

<400> 847
acgaaacacc ttatttgatt ttcttcggaa ctgaagattt ggtgattgag tggcggacgg 60

gtgagtaacg cgtgggtaac ctnccctgta cagggggata acagtcagaa atgactgcta 120

ataccgcata agaccacagc accgcatggt gcaggggtaa aaactccggt ggtacaggat 180

ggacccgcgt ctgattagct ggttggtgag gtaacggctc accaaggcga cgatcagtag 240

ccggcttgag agagtgaacg gccacattgg gactgagaca cggcccaaac tcctacggga 300

ggcagcagtg gggaatattg cacaatgggg gaaaccctga tgcagcgacg ccgcgtgagt 360

gaagaagtat ctcggtatgt aaagctctat cagcagggaa gaaaatgacg gtacctgact 420

aagaagcccc ggctaactac gtgccagcag ccgcggtaat acgtaggggg caagcgttat 480

ccggaattac tgggtgtaaa gggtgcgtag gtggtatggc aagtcagaag tgaaaaccca 540

gggcttaact ctgggactgc ttttgaaact gtcagactgg agtgcaggag aggtaagcgg 600

aattcctagt gtagcggtga aatgcgtaga tattaggagg aacatcagtg gcgaaggcgg 660

cttactggac tgaaactgac actgaggcac gaaagcgtgg ggagcaaaca ggattagata 720

ccctggtagt ccacgccgta aacgatgaat actaggtgtc ggggccgtag aggcttcggt 780

gccgcagcca acgcagtaaa gtattccacc tggggagtac gttcgcaaga atgaaactca 840

aaggaattga cggggacccg cacaagcggt ggagcatgtg gtttaattcn aagcaacgcg 900

aanaacctta cctggtcttg acntccttct gaccggt 937

<210> 848
<211> 1342
<212> DNA
<213> Eubacterium hallii

<400> 848
caccttttga gattcttcgg atgatcgatt ggtgactgag tggcggacgg gtgagtaacg 60

cgtgggtaac ctgccctgta caggggggata acagctggaa acggctgcta ataccgcata 120

agcgcacgag gagacatctc ctagtgtgaa aaactccggt ggtacaggat gggcccgcgt 180

ctgattagct ggttggcagg gtaacggcct accaaggcaa cgatcagtag ccggtctgag 240

aggatgaacg gccacattgg aactgagaca cggtccaaac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggg gaaaccctga tgcagcaacg ccgcgtgagt gaagaagtat 360

ttcggtatgt aaagctctat cagcagggaa gataatgacg gtacctgact aagaagctcc 420

ggctaaatac gtgccagcag ccgcggtaat acgtatggag caagcgttat ccggatttac 480

tgggtgtaaa gggtgcgtag gtggcagtgc aagtcagatg tgaaaggccg gggctcaacc 540

ccggagctgc atttgaaact gctcggctag agtacaggag aggcaggcgg aattcctagt 600

gtagcggtga aatgcgtaga tattaggagg aacaccagtg gcgaaggcgg cctgctggac 660

tgttactgac actgaggcac gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 720

cacgccgtaa acgatgaata ctaggtgtcg gggccgtata ggcttcggtg ccgccgcaac 780

gcagtaagta ttccacctgg ggagtacgtt ggcaagaatg aaactcaaag gaattgacgg 840

ggacccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag aagcttacca 900

ggtcttgaca tccttgtgac cgcaccttaa tcggggcttt ccttcgggac agaagagaca 960

ggtggtgcat ggttgttgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1020

cgcaacccct attttcagta gccagcaggt aaggctgggc actctggaga gactgccagg 1080

gataacctgg aggaaggtgg ggacgacgtc aaatcatcat gccccttatg atctgggcga 1140

cacacgtgct acaatggcgg tcacagagtg aggcgaaccc gcgaggggga gcaaaccaca 1200

aaaaggccgt cccagttcgg actgtagttt gcaacccgac tacccgaagc tggaatcgct 1260

agtaatcgcg aatcagaatg tcgcggtgaa tacgttcccg ggttttgtac ccccccccg 1320

tcacaccctg ggagttggaa at 1342

<210> 849
<211> 1494
<212> DNA
<213> Eubacterium infirmum

<400> 849
gatgaacgct ggcggcgtgc ctaacacatg caagtcgagc gagaagtaaa gaaatgaagc 60

ttcggtagat ttcattatgg aaagcggcgg acgggtgagt aacgcgtagg caacctgccc 120

tgtacagggg gatagccacc cgaaaaggtg attaataccc catgatgcaa gagatacaca 180

tgtatcactt gtcaaagatt tatcggtatg ggatgggcct gcgtctgatt agctagttgg 240

tagggtaacg gcttaccaag gcaacgatca gtagccgacc tgagagggtg atcggccaca 300

ttggaactga gacacggtcc aaactcctac gggaggcagc agtggggaat attgcacaat 360

gggggaaacc ctgatgcagc aacgccgcgt gaaggaagaa ggccttcggg ttgtaaactt 420

ctgtcctagg ggaagaaaca aatgacatta cccttggagg aagccccggc taactacgtg 480

ccagcagccg cgggtaatac gtaggggcg agcgttatcc ggaattattg ggcgtaaaga 540

gtgcgtaggt ggcatcttaa gcgcagggtt taaggcaatg gctcaaccat tgttcgcctt 600

gcgaactggg gtgcttgagt gcaggagggg aaagtggaat tcctagtgta gcggtgaaat 660

gcgtagatat taggaggaac accagtggcg aaggcgactt tctggactgt tactgacact 720

gaggcacgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac 780

gatgagcact aggtgtcggg gtcgcaagac ttcggtgccg cagttaacgc attaagtgct 840

ccgcctggga agtacgcacg caagtgtaaa actcaaagga attgacgggg acccgcacaa 900

gcagcggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg aacttgacat 960

cctcttgaca gatccttaat cggattcttc ttcggacaag agagacaggt ggtgcatggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgcc 1080

attagttgcc atcatttagt tgggcactct agtgggactg ccggggaaaa ctcggaggaa 1140

ggtggggatg acgtcaaatc atcatgcccc ttatgttctg ggctacacac gtgctacaat 1200

ggccggtaca acaggcagcg aacccgtgag ggggagcgaa tcccaaaagc cggtcccagt 1260

tcggactgta ggctgcaact cgcctacacg aagttggagt tgctagtaat cgcggatcag 1320

aatgccgcgg tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac catggaagtt 1380

gggggtgccc gaagtcggtt atttaatcta tcgcctaagg caaaaccaat gactggggtg 1440

aagtcgtaac caaggtagcc cgtatcggaa ggtgccggct ggatcacctc ctta 1494

<210> 850
<211> 1377
<212> DNA
<213> Eubacterium limosum

<220>
<221> modified_base
<222> (1310)..(1310)
<223> a, c, t, g, unknown or other

<400> 850
gaacgagaag atcagttaag aaccttcggg ggaataagtg attggaaagt ggcgaacggg 60

tgagtaacgc gtgggtaacc tgccctatgg aaaggaatag cctcgggaaa ctgggagtaa 120

agccttatat tatggagaga tcgcatggtc atttcatgaa aactccggtg ccataggatg 180

gacccgcgtc ccattagcta gttggtgaga taacagccca ccaaggcgac gatgggtaac 240

cggtctgaga gggcgaacgg tcacactgga actgagacac ggtccagact cctacgggag 300

gcagcagtgg ggaatattgc gcaatggggg caaccctgac gcagcaatac cgcgtgagtg 360

aagaaggttt tcggatcgta aagctctgtt attggggaag aaaacatgac ggtacccaat 420

gaggaagtcc cggctaacta cgtgccagca gccgcggtaa tacgtagggg acaagcgttg 480

tccggaatga ctgggcgtaa agggcgcgta ggcggtctga taagtcagat gtgaaaggta 540

ccggctcaac cggtgacgtg catttgaaac tgtcagactt gagtattgga gaggcaagtg 600

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg 660

gcttgctgga caaatactga cgctgaggtg cgaaagcgtg gggagcgaac aggattagat 720

accctggtag tccacgccgt aaacgatgaa tgctaggtgt tggggaaact cagtgccgca 780

gttaacacaa taagcattcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 840

tgacggggac ccgcacaagc agcggagcat gtggtttaat tcgaagcaac gcgaagaacc 900

ttaccaggtc ttgacgtcct ctgacaatcc cagagatggg acgtttcctt cgggaacaga 960

gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1020

aacgagcgca acccctgcct ttagttgcca gcattgagtt gggcactcta gagggactgc 1080

cgtagacaat acggaggaag gtggggatga cgtcaaatca tcatgccctt tatgacctgg 1140

gctacacacg tgctacaatg gtctgatcag agggccgcga aaccgcgagg tgaagcaaat 1200

cccttaaaac agatcccagt tcggattgca ggctgcaatt cgcctgcatg aagttggagt 1260

tgctagtaat cgcggatcag aatgccgcgg tgaatgcgtt cccgggtctn gtacacaccg 1320

cccgtcacac cacgagagtt ggcaacaccc gaagcctgtg agagaaccgc aaggact 1377

<210> 851
<211> 1488
<212> DNA
<213> Eubacterium moniliforme

<400> 851
gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc gatgaarttt ccttcgggaa 60

atggattagc ggcggacggg tgagtaacac gtgggtaacc tgccttgtag aggggaatag 120

ccttccgaaa ggaagattaa taccgcataa tattgtactt tcgcatgaaa gaacaattaa 180

aggagcaatc cgctacaaga tggacccgcg gcgcattagc tagttggtaa ggtaatggct 240

taccaaggcg acgatgcgta gccgacctga gagggtgatc ggccacattg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg ggaaaccctg 360

atgcagcaac gccgcgtgag tgatgacggt cttcggattg taaagctctg tctttgggga 420

cgataatgac ggtacccaag gaggaagcca cggctaacta cgtgccagca gccgcggtaa 480

tacgtaggtg gcgagcgttg tccggattta ctgggcgtaa agggagcgta ggcggattct 540

taagtgggat gtgaaatact cgggcttaac ctgagtgctg cattccaaac tgggaatcta 600

gagtgcagga ggggagagtg gaattcctag tgtagcggtg aaatgcgtag agattaggaa 660

gaacaccagt ggcgaaggcg actctctgga ctgtaactga cgctgaggct cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgaa tactaggtgt 780

aggggtttca acacctctgt gccgccgcta acgcattaag tattccgcct ggggagtacg 840

gtcgcaagat taaaactcaa aggaattgac gggggcccgc acaagtagcg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac ctagacttga catcttctgc attaccctta 960

atcggggaag ttccttcggg aacagaatga caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctattgttag ttgctaccat 1080

taagttgagc actctagcga gactgcccgg gttaaccggg aggaaggtgg ggatgacgtc 1140

aaatcatcat gcccccttatg tctagggcta cacacgtgct acaatggcaa gtacagagag 1200

atgcaatacc gtgaggtgga gctaaacttc aaaacttgtc tcagttcgga ttgtaggctg 1260

aaactcgcct acatgaagct ggagttacta gtaatcgcga atcagcatgt cgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacaccatga gagttggcaa tacccaaagt 1380

tcgtgagcta acgcgtaagc ggggcagcga cctaaggtag ggtcagcgat tggggtgaag 1440

tcgtaacaag gtagccgtag gagaacctgc ggctggatca cctccttt 1488

<210> 852
<211> 1471
<212> DNA
<213> Eubacterium multiforme

<400> 852
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gatgaagttt cttcgggaaa cggattagcg gcggacgggt gagtaacacg tgggtaacct 120

gccttgtaga gggaaatagc cttccgaaag gaagattaat accgcataat attgtacctt 180

cgcatgaagg aacaattaaa ggagcaatcc gctacaagat ggacccgcgg cgcattagct 240

agttggtaag gtaatggctt accaaggcga cgatgcgtag ccgacctgag agggtgatcg 300

gccacattgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggg gaaaccctga tgcagcaacg ccgcgtgagt gatgacggtc ttcggattgt 420

aaagctctgt ctttgggacg ataatgacgt acccaagaag gaagccacgg ctaactacgt 480

gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggatttactg ggcgtaaagg 540

gagcgtaggc ggattcttaa gtgggatgtg aaatactcgg gctcaacctg agtgctgcat 600

tccaaactgg gaatctagag tgcaggaggg gagagtggaa ttcctagtgt agcggtgaaa 660

tgcgtagaga ttaggaagaa caccagtggc gaaggcgact ctctggactg taactgacgc 720

tgaggctcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa 780

cgatgaatac taggtgtagg ggtttaaaca cctctgtgcc gccctaacgc attaagtatt 840

ccgcctggga gtacggtcgc aagattaaaa ctcaaagaaa ttgacggggg cccgcacaag 900

tagcggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttacctaga cttgacatct 960

tctgcattac ccttaatcgg ggaagttctt cgggaacaga atgacaggtg gtgcatggtt 1020

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctattg 1080

ttagttgcta ccattaagtt gagcactcta gcgagactgc ccgggttaac cgggaggaag 1140

gtggggatga cgtcaaatca tcatgcccct tatgtctagg gctacacacg tgctacaatg 1200

gcaagtacag agagatgcaa taccgtgagt ggagctaaac ttcaaaactt gtctcagttc 1260

ggattgtagg ctgaaactcg cctacatgaa gctggagtta ctagtaatcg cgaatcagca 1320

tgtcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgagagttgg 1380

caatacccaa agttcgtgag ctaacgcgta agcaggggca gccacctaag gtagggtcag 1440

ccatttgggt gaagtcgtta acaaggtaac c 1471

<210> 853
<211> 1477
<212> DNA
<213> Eubacterium nitritogenes

<400> 853
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gatgaagttt ccttcgggaa acggattacc gccggacggg tgagtaacac gtgggtaacc 120

tgcctcatag aggggaatag cctcccgaaa gggagattaa taccgcataa cattgcagtt 180

tcgcatgaaa cagcaattaa aggagcaatc cgctatgaga tggacccgcg gcgcattagc 240

tagttggtaa ggtaatggct taccaaggcg acgatgcgta gccgacctga gagggtgatc 300

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg ggaaaccctg atgcagcaac gccgcgtgag tgatgacggt cttcggattg 420

taaagctctg tctttgggac gataatgacg tacccaagga ggaagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc gagcgttgtc cggatttact gggcgtaaag 540

ggagcgtagg cggattttta agtgggatgt gaaatacccg ggctcaacct gggtgctgca 600

ttccaaactg ggaatctaga gtgcaggagg ggagagtgga attcctagtg tagcggtgaa 660

atgcgtagag attaggaaga acaccagtgg cgaaggcgac tctctggact gtaactgacg 720

ctgaggctcg aaagcgtggg gagcgaacag gattagatac cctggtagtc cacgccgtaa 780

acgataaata ctaggtgtag gggtttaaac acctctgtgc cgccctaacg cattaagtat 840

cccgcctggg aagtacggtc gcaagattaa aactcaaagg aattgacggg ggcccgcaca 900

agtagcggag catgtggttt aattcgaagc aacgcgaaga accttaccta gacttgacat 960

cctctgcatt acccttaatc ggggaagttc ttcgggaaca gagtgacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccctat 1080

tgttagttgc taccattaag ttgagcactc tagcgagact gcctgggtta accaggagga 1140

aggtggggat gacgtcaaat catcatgccc cttatgtcta gggctacaca cgtgctacaa 1200

tggcaagtac agagagatgc aataccgcga ggtggagcta aacttcaaaa ctcgtctcag 1260

ttcggattgt aggctgaaac tcgcctacat gaagctggag ttactagtaa tccgcgaatc 1320

agcatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

ttggcaatac ccaaagttcg tgagctaacg cgtaagcagg ggcagccacc taaggtaggg 1440

ttcagccatt tggcctgaag tgcgtaacaa ggtaacc 1477

<210> 854
<211> 1351
<212> DNA
<213> Eubacterium nodatum

<400> 854
gatgaacgct ggcggcgtgc ctaacacatg caagttgagc gagaaatcac ttaaagaagc 60

ttcggtagac ttaagagatg gagagcagcg gacgggtgag gaacgcgtgg gaaacctgcc 120

cttgacagga ggatagccga gagaaatttc gatttaatac ttcataaagc agagcattcg 180

catggatgaa ctgccaaaga attatcggtc aaggatggtc cagcgtctga ttagctggtt 240

ggtaaggtac cggcttacca aggcgacgat cagtagccgg cctgagaggg tgaacggcca 300

cattggaact gagacacggt ccagactcta cgggaggcag cagtggggaa tattgcacaa 360

tgggcgaagc ctgatgcagc aacgccgcgt gaaggaagaa ggctttcgag tcgtaaactt 420

ctgtccaaag ggaagaataa tgacggtacc tttgaagaaa gccccggcta actacgtgcc 480

agcagccgcg gtaatacgta gggggcgagc gttatccgga attactgggc gtaaagagta 540

tgtaggtggt taagtaagcg tagggtttaa ggcgacagcc caactgtcgt atgccccgcg 600

agctgtttaa cttgagtaca ggaggggaag gcggaattcc tagtgtagcg ctgaaatgcg 660

tagatattag gaggaacacc agtggcgaag gcggccttct ggactgtaac tgacactgag 720

atacgaaagc gtgggtagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 780

gagcactagg tgtcgggctc gcaagagttc ggtgccggag caaacgcatt aagtgctccg 840

cctggggagt acgcacgcaa gtgtgaaact caaaggaatt gacggggacc cgcacaagca 900

gcggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggact tgacatccca 960

ctgaaagctc ggttaaaact gagcccttct tcggaacagt ggagacaggt ggtgcatggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgcc 1080

gttagttgcc atcattaagt tgggcactct aatgggactg ccggggagaa cccggaggaa 1140

ggcggggatg acgtcaaatc atcatgcccc ttatgttctg ggctacacac gtgctacaat 1200

ggccgtcaca gagggaagcg agagagcgat cttaagcgaa accaaaaagg cggtcccagt 1260

tcggactgca ggctgcaact cgcctgcacg aagccggagt tgctagtaat cgcggatcag 1320

aatgtcgcgg tgaatgcgtt cccgggtctt g 1351

<210> 855
<211> 1386
<212> DNA
<213> Eubacterium ramulus

<220>
<221> modified_base
<222> (1339)..(1339)
<223> a, c, t, g, unknown or other

<400> 855
gcactttacc tgatttcctt cggggatgat tgttctgtga ctgagtggcg gacgggtgag 60

taacgcgtgg ataacctgcc tcacacaggg ggataacagt tggaaacggc tgctaatacc 120

gcataagcgc acagcaccgc atggtgcagt gtgaaaaact ccggtggtgt gagatggatc 180

cgcgtctgat tagcttgttg gcggggtaac ggcccaccaa ggcgacgatc agtagccggc 240

ctgagagggc gaccggccac attgggactg agacacggcc cagactccta cgggaggcag 300

cagtggggaa tattgcacaa tgggggaaac cctgatgcag cgacgccgcg tgagcgatga 360

agtatttcgg tatgtaaagc tctatcagca gggaagataa tgacggtacc tgactaagaa 420

gctccggcta aatacgtgcc agcagccgcg gtaatacgta tggagcaagc gttatccgga 480

tttactgggt gtaaagggag cgtaggcggt cctgcaagtc tgatgtgaaa ggccggggct 540

caaccccggg actgcattgg aaactgtagg actagagtgt cggaggggta agtggaattc 600

ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa ggcggcttac 660

tggacgacta ctgacgctga ggctcgaaag cgtggggagc aaacaggatt agataccctg 720

gtagtccacg ccgtaaacga tgaatactag gtgttggcag gtaagacctg tcggtgccgc 780

agcaaacgca ataagtattc cacctgggga gtacgttcgc aagaatgaaa ctcaaaggaa 840

ttgacgggga cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac 900

cttaccaagt cttgacctcc cggtgacaga tgaaagaccg ggttttccct tcggggcacc 960

ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1020

caacgagcgc aacccttatc cccagtagcc agcatttcgg atgggcactc tgtggagact 1080

gccagggaca acctggagga aggtggggat gacgtcaaat catcatgccc cttatgactt 1140

gggctacaca cgtgctacaa tggcgtaaac aaagggaagc gagaccgcga ggtggagcaa 1200

atcccaaaaa taacgtccca gttcggattg tagtctgcaa ctcgactaca tgaagctgga 1260

atcgctagta atcgcagatc agaatgctgc ggtgaatacg ttcccgggtc ttgtacacac 1320

cgcccgtcac accatgggna gtcggaaatg cccgaagccg gtggcctaac cgcaaggaag 1380

gagccg 1386

<210> 856
<211> 1387
<212> DNA
<213> Eubacterium rectale

<400> 856
tcgaacgaag cactttattt gatttccttc gggactgatt attttgtgac tgagtggcgg 60

acgggtgagt aacgcgtggg taacctgcct tgtacagggg gataacagtt ggaaacggct 120

gctaataccg cataagcgca cagcatcgca tgatgcagtg tgaaaaactc cggtggtata 180

agatggaccc gcgttggatt agctagttgg tgaggtaacg gcccaccaag gcgacgatcc 240

atagccgacc tgagagggtg accggccaca ttgggactga gacacggccc aaactcctac 300

gggaggcagc agtggggaat attgcacaat gggcgaaagc ctgatgcagc gacgccgcgt 360

gagcgaagaa gtatttcggt atgtaaagct ctatcagcag ggaagataat gacggtacct 420

gactaagaag caccggctaa atacgtgcca gcagccgcgg taatacgtat ggtgcaagcg 480

ttatccggat ttactgggtg taaagggagc gcaggcggtg cggcaagtct gatgtgaaag 540

cccggggctc aaccccggta ctgcattgga aactgtcgta ctagagtgtc ggaggggtaa 600

gcggaattcc tagtgtagcg gtgaaatgcg tagatattag gaggaacacc agtggcgaag 660

gcggcttact ggacgataac tgacgctgag gctcgaaagc gtggggagca aacaggatta 720

gataccctgg tagtccacgc cgtaaacgat gaatactagg tgttgggaag cattgcttct 780

cggtgccgtc gcaaacgcag taagtattcc acctggggag tacgttcgca agaatgaaac 840

tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac 900

gcgaagaacc ttaccaagtc ttgacatcct tctgaccggt acttaaccgt accttctctt 960

cggagcagga gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt 1020

taagtcccgc aacgagcgca acccttatct ttagtagcca gcggtccggc cgggcactct 1080

agagagactg ccagggataa cctggaggaa ggcggggatg acgtcaaatc atcatgcccc 1140

ttatgacttg ggctacacac gtgctacaat ggcgtaaaca aagggaagca aagctgtgaa 1200

gccgagcaaa tctcaaaaat aacgtctcag ttcggactgt agtctgcaac ccgactacac 1260

gaagctggaa tcgctagtaa tcgcagatca gaatgctgcg gtgaatacgt tcccgggtct 1320

tgtacacacc gcccgtcaca ccatgggagt tgggaatgcc cgaagccagt gacctaaccg 1380

aaaggaa 1387

<210> 857
<211> 929
<212> DNA
<213> Eubacterium ruminantium

<220>
<221> modified_base
<222> (12)..(15)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (36)..(36)
<223> a, c, t, g, unknown or other

<400> 857
tcgaacgaag annnnctgga gtgcttgcac ttgganggac tgagtggcgg acgggtgagt 60

aacgcgtggg taacctgcct tatacagggg gataacagtt ggaaacgact gctaataccg 120

cataagcgca cggtatcgca tgatacagtg tgaaaaactc cggtggtata agatggaccc 180

gcgtctgatt agcttgttgg tgaggtaacg gcccaccaag gcgacgatca gtagccggcc 240

tgagagggtg aacggccaca ttgggactga gacacggccc aaactcctac gggaggcagc 300

agtggggaat attgcacaat gggggaaacc ctgatgcagc gacgccgcgt gagtgatgaa 360

gtatttcggt atgtaaaact ctatcagcag ggaagataat gacggtacct gactaagaag 420

caccggctaa atacgtgcca gcagccgcgg taatacgtat ggtgcaagcg ttatccggat 480

ttactgggtg taaagggtgc gtaggtggta tggcaagtca gaagtgaaag gctggggctc 540

aaccccggga ctgcttttga aactgtcaaa ctagagtaca ggagaggaaa gcggaattcc 600

tagtgtagcg gtgaaatgcg tagatattag gaggaacacc agtggcgaag gcggctttct 660

ggactgaaac tgacactgag gcacgaaagc gtggggagca aacaggatta gataccctgg 720

tagtccacgc cgtaaacgat gaatactagg tgtcgggcag catagctgtt cggtgccgca 780

gcaaacgcat taagtattcc acctggggag tacgttcgca agaatgaaac tcaaaggaat 840

tgacggggac ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 900

ttaccaggtc ttgacatccc gatgaccgc 929

<210> 858
<211> 1384
<212> DNA
<213> Eubacterium saburreum

<220>
<221> modified_base
<222> (17)..(18)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1375)..(1375)
<223> a, c, t, g, unknown or other

<400> 858
tcgaacgaag ctgttannag gaagtcttcg gatggaattt taacagactt agtggcggac 60

gggtgagtaa cgcgtggata acctgcctta tacaggggga taacggagag aaatttccgc 120

taagaccgca taagaccaca gcaccgcatg gtgcaggggt aaaatattaa taggtataag 180

atggatccgc gtccgattag cttgttggtg aggtagaggc tcaccaaggc gacgatcggt 240

agccggcctg agagggtgaa cggccacatt gggactgaga cacggcccaa actcctacgg 300

gaggcagcag tggggaatat tggacaatgg gggaaaccct gatccagcga cgccgcgtga 360

gtgaagaagt atttcggtat gtaaagctct atcagcaggg aagaaaatga cggtacctga 420

ctaagaagcc ccggctaact acgtgccagc agccgcggta atacgtaggg ggcaagcgtt 480

atccggattt actgggtgta aagggagcgc agacggccaa gcaagtctga agtgaaatgc 540

atgggctcaa cccatgaatt gctttggaaa ctgttggctt gagtgtcgga ggggtaagcg 600

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccgga ggcgaaggcg 660

gcttactgga cgacaactga cgttgaggct cgaaggcgtg gggagcaaac aggattagat 720

accctggtag tccacgcagt aaacgatgaa tacttggtgt cggggagata aactcttcgg 780

tgccgcaagc aaacgcatta agtattccac ctggggagta cgttcgcaag aatgaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 900

gaagaacctt accaaatctt gacatactct tgaatagttt tgtaatgaga ctagtctttc 960

gggacaaggg atacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1020

aagtcccgca acgagcgcaa cccttgtcgt cagtagccag cagtaagatg ggcactctga 1080

cgagacagcc ggagataatc cggaggaagg tggggatgac gtcaaatcat catgcccctt 1140

atgatttggg ctacacacgt gctacaatgg cgtaaacaaa gtgaagcaag accgcgaggt 1200

taagcaaatc acagaaataa cgtctcagtt cggattgtag tctgcaactc gactatatga 1260

agccggaatc gctagtaatc gcagatcaga atgctgcggt gaatacgttc ccgggtcttg 1320

tacacaccgc ccgtcacacc atgggagtca tcaatgcccg aagtcagtga cctanccgta 1380

agga 1384

<210> 859
<211> 1343
<212> DNA
<213> Eubacterium saphenum

<400> 859
gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc gagaaactac atgcagacac 60

ttcggtagaa gcgagtagcg gaaagcggcg gacgggtgag taacgcgtgg caacctgccc 120

ttcacagagg tatagcctcg ggaaaccggg attaaaacca cataaaatca taggttcgca 180

tgaaccaaag gtcaaagatt tatcggtgaa ggatgggcct gcgtctgatt agctggttgg 240

tagggtaaaa gcctaccaag gcgacgatca gtagccgacc tgagagggtg atcggccaca 300

ttggaactga gacacggtcc aaactctacg ggaggcagca gtgggggata ttgcacaatg 360

ggggaaaccc tgatgcagca acgccgcgtg aggtatgaag gcctttgggt tgtaagcctc 420

tgtcctaggg gaagaaaaaa atgacggtac ccgaggagga agccccggct aactacgtgc 480

cagcagccgc ggtaatacgt aggggcaag cgttatccgg aattattggg cgtaaagagt 540

gcgtaggtgg tctactaagc gcggggtgaa aggcaatggc tcaaccattg ttagccttgc 600

gaactggcag acttgagtgc aagagaggaa agcggaattc ctagtgtagc ggtgaaatgc 660

gcagatatta ggaggaacac cggcggcgaa ggcggctttc tggattgtaa ctgacactga 720

ggcacgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 780

cgagcactag gtgtcgggac atgagtctcg gtgccgcagt taacgcaata agtgtccgcc 840

tggggagtac gcacgcaagt gtaaaactca aaggaattga cggggacctg cgcaagcagc 900

ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaagacttg acatccctct 960

gacgtaccct taatcgggta tttcttcgga cagaggagac aggtggtgca tggttgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtctttagt 1080

tgccatcatt aagttgggca ctctaaagag actgccgggg aaactcggag gaaggtgggg 1140

atgacgtcaa atcatcatgc cccttatgtc ttgggctaca cacgtgctac aatggccggt 1200

acaaagagaa gcgataccgc aaggggggagc aaatcttaaa aaccggtccc agttcggatt 1260

gcaggctgca actcgcctgc atgaagtcgg agttgctagt aatcgcagat cagaatgctg 1320

cggtgaatgc gttcccgggt ctt 1343

<210> 860
<211> 1368
<212> DNA
<213> Eubacterium siraeum

<220>

<221> modified_base
<222> (901)..(901)
<223> a, c, t, g, unknown or other

<400> 860
gtcgaacggt gaagaggagc ttgctcctcg gaacagtggc ggacgggtga gtaacacgtg 60

agcaacctgg ctctaagagg gggacaacag ttggaaacga ctgctaatac cgcataacgt 120

atcgggatgg catcttcctg ataccaaaga ttttatcgct tagagatggg ctcgcgtctg 180

attagatagt tggcggggta acggcccacc aagtcgacga tcagtagccg gactgagagg 240

ttgaacggcc acattgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

gatattggac aatgggggca accctgatcc agcgacgccg cgtgagggaa gaaggttttc 360

ggattgtaaa cctctgttga cggagaaaaa aatgatggta tccgtttaga aagccacggc 420

taactacgtg ccagcagccg cggtaatacg taggtggcaa gcgttgtccg gaattactgg 480

gtgtaaaggg agtgtaggcg ggatatcaag tagaagtgaa aattacgggc tcaactcgta 540

acctgctttt gaaactgaca ttcttgagtg aagtagaggc aagcggaatt cctagtgtag 600

cggtgaaatg cgtagatatt aggaggaaca ccagtggcga aggcggcttg ctgggctttt 660

actgacgctg aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac 720

gccgtaaacg atgattacta ggtgtggggg gattgacccc ttccgtgccg gagtaaacac 780

aataagtaat ccacctgggg agtacgaccg caaggttgaa actcaaagga attgacgggg 840

gcccgcacaa gcagtggagt atgtggttta attcgacgca acgcgaagaa ccttaccagt 900

nataagtgaa aattaccggc tcaactcgta agcttttcct taaggggaca taattgaggg 960

aggtagaggc aagcggaaag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1020

caacccttat cattagttgc tacgcaagag cactctaatg agactgccgt tgacaaaacg 1080

gaggaaggtg gggatgacgt caaatcatca tgccctttat gacctgggct acacacgtac 1140

tacaatggcg tttaacaaag agaagcaaag ccgcgaggca gagcaaatct ccaaaaaacg 1200

tctcagttcg gattgtaggc tgcaactcgc ctacatgaag tcggaattgc tagtaatcgt 1260

aggtcagcat actacggtga atacgttccc gggccttgta cacaccgccc gtcaaaccat 1320

gagagttggc aacacccgaa gtcggtagtc taaccgcaag gaggacgc 1368

<210> 861
<211> 965
<212> DNA
<213> Eubacterium sp. 3_1_31

<220>
<221> modified_base
<222> (39)..(39)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (41)..(41)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (842)..(842)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (875)..(875)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (904)..(904)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (915)..(915)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (934)..(934)
<223> a, c, t, g, unknown or other

<400> 861
tttaggaagc ttgcttccaa agagacttag tggcgaacng ntgagtaaca cgtaggtaac 60

ctgcccatgt gcccgggata actgctggaa acggtagcta aaaccggata ggtatgaggg 120

aggcatcttc ctcatattaa agcaccttcg ggtgtgaaca tggatggacc tgcggcgcat 180

tagctggttg gtgaggtaac ggcccaccaa ggcgatgatg cgtagccgac ctgagagggt 240

gaacggccac attgggactg agacacggcc caaactccta cgggaggcag cagtagggaa 300

ttttcgtcaa tgggggggaac cctgaacgag caatgccgcg tgtgtgaaga aggtcttcgg 360

atcgtaaagc actgttgtaa gtgaagaatg ccatatagag gaaatgctat gtgggtgacg 420

gtagcttacc agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg 480

caagcgttat ccggaatcat tgggcgtaaa gggtgcgtag gtggcacgat aagtctgaag 540

taaaaggcaa cagctcaact gttgtatgct ttggaaactg tcgagctaga gtgcagaaga 600

gggcgatgga attccatgtg tagcggtaaa atgcgtagat atatggagga acaccagtgg 660

cgaaggcggt cgcctggtct gtaactgaca ctgatgcacg aaagcgtggg gagcaaatag 720

gattagatac cctagtagtc cacgccgtaa acgatgagaa ctaagtgttg gagagattca 780

gtgctgcagt taacgcaata agttctccgc ctggggagta tgcacgcaag tgtgaaactc 840

anaggaattg acgggggccc gcacaagcgg tggantatgt ggtttaattc gaagcaacgc 900

gaanaacctt accangcctt gacatggata taantgttct agagatagaa agatagctat 960

atatc 965

<210> 862
<211> 1229
<212> DNA
<213> Eubacterium sp. AS15b

<400> 862
tgagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

gagtggcgga cgggtgagta acgcgtaagt aatcaacctg tgacacacgg ataactgata 120

gaaatgtcag ctaatacgag atgaacaaag gcggtcacag acgagcttgc gtctgattag 180

ctagttggtg gggtaagagc ctaccaaggc gacgatcagt agccggcctg agagggtgaa 240

cggccacatt ggaactgaga cacggtccaa actcctacgg gaggcagcag tgggggatat 300

tgcacaatgg ggggaaccct gatgcagcaa cgccgcgtga gtgaagaagg ccctagggtc 360

gtaaagctct gtcgtatggg aagatgactg taccatacaa gaaagccccg gctaactacg 420

tgccagcagc cgcggtaata cgtagggggc aagcgttatc cggaattact gggcgtaaag 480

ggtgcgtagg cggctagtta agtcgaggtt aaaaggcagt agctcaacta ctgttgggcc 540

ttgaaactaa ttagcttgag tataggagag gaaagtggaa ttcccggtgt ggcggtgaaa 600

tgcgtagata tcgggaggaa taccggtggc gaaggcgact ttctggacta actgacgctg 660

aggcacgaaa gcgtgggtag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgaacacta ggtgtcggga tttcggtgcc ggcgcaaacg caataagtgt tccgcctggg 780

gagtacgttc gcaagaataa aactcaaagg aattgacggg gacccgcaca agtagcggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccta agcttgacat gcacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattga tagttgccag tgcgtaggca ctctatcaag acagttatgg ataacataaa 1020

ggaaggtggg gatgacgtca aatcatcatg ccccttatgc ttagggctac acacgtgcta 1080

caatggctgt caaagagaag caaggtcgca aggcggagca aacctgaagc agtccaagtt 1140

cggatgtggg ctgaaactcg cccacagaag tcggagttac tagtaatcgc gaatcagaat 1200

gtcgcggtga atgcgttccc gggtcttgt 1229

<210> 863
<211> 1253
<212> DNA
<213> Eubacterium sp. OBRC9

<220>
<221> modified_base
<222> (1234)..(1234)
<223> a, c, t, g, unknown or other

<400> 863
agtggcggac gggtgagtaa cgcgtaagta atcaacctgt gacacacgga taactgatag 60

aaatgtcagc taatacgaga tgaacaaagg cggtcacaga cgagcttgcg tctgattagc 120

tagttggtgg ggtaagagcc taccaaggcg acgatcagta gccggcctga gagggtgaac 180

ggccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt gggggatatt 240

gcacaatggg gggaaccctg atgcagcaac gccgcgtgag tgaagaaggc cctagggtcg 300

taaagctctg tcgtatggga agatgactgt accatacaag aaagccccgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggggca agcgttatcc ggaattactg ggcgtaaagg 420

gtgcgtaggc ggctagttaa gtcgaggtta aaaggcagtg gctcaactac tgttgggcct 480

tgaaactaat tagcttgagt ataggagagg aaagtggaat tcccggtgta gcggtgaaat 540

gcgtagatat cgggaggaat accggtggcg aaggcgactt tctggactaa ctgacgctga 600

ggcacgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 660

tgaacactag gtgtcgggat ttcggtgccg gcgcaaacgc aataagtgtt ccgcctgggg 720

agtacgttcg caagaataaa actcaaagga attgacgggg acccgcacaa gtagcggagc 780

atgtggttta attcgaagca acgcgaagaa ccttacctaa gcttgacatg cacaggtggt 840

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 900

ccctattgat agttgccagt acgtaggcac tctattaaga cagttatgga taacataaag 960

gaaggtgggg atgacgtcaa atcatcatgc cccttatgct tagggctaca cacgtgctac 1020

aatggctgtc aaagagaagc aaggtcgtaa ggcggagcaa acctgaagca gtccaagttc 1080

ggatgtgggc tgaaactcgc ccacagaagt cggagttact agtaatcgcg aatcagaatg 1140

tcgcggtgaa tgcgttcccg ggtcttgtac acaccgcccg tcacaccatg ggagctgagg 1200

gtacccaaag tcagtatcta agaagctgcc taangtaaac ttagtgactg ggg 1253

<210> 864
<211> 1371
<212> DNA
<213> Eubacterium sp. WAL 14571

<220>
<221> modified_base
<222> (925)..(925)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1268)..(1268)
<223> a, c, t, g, unknown or other

<400> 864
tcgagcgaga agccattgac tgaaacttcg gtagaaggat atggtggaaa gcggcggacg 60

ggtgagtaac gcgtaggcaa cctgcccctt acagagggat agccattgga aacgatgatt 120

aaaacctcat aacgcatccc ccccacatgg aggggaagcc aaagattcat cggtaaggga 180

tgggcctgcg tctgattagc ttgttggcgg ggtaacggcc caccaaggcg acgatcagta 240

gccgacctga gagggtgatc ggccacattg gaactgagac acggtccaaa ctcctacggg 300

aggcagcagt ggggaatatt gcacaatggg cgaaagcctg atgcagcaac gccgcgtgag 360

ggatgaaggc cttcgggtcg taaacctctg tccttgggga agaaacaaat gacggtaccc 420

atggaggaag ccccggctaa ctacgtgcca gcagccgcgg taatacgtag ggggcgagcg 480

ttatccggaa ttattgggcg taaagagtgc gtaggtggtt acctaagcgc agggtctaag 540

gcaatggctc aaccattgtt cgccctgcga actgggctac ttgagtgcag gagaggaaag 600

cggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg 660

cggctttctg gactgttact gacactgagg cacgaaagcg tggggagcaa acaggattag 720

ataccctggt agtccacgcc gtaaacgatg agcactaggt gtcggggccg caaggcttcg 780

gtgccgcagt taacgcatta agtgctccgc ctggggagta cgcacgcaag tgtgaaactc 840

aaaggaattg acggggaccc gcacaagcag cggagcatgt ggtttaattc gaagcaacgc 900

gaagaagctt aaccagtgtt cgccntccga actgggctac ctaaccggat ccttcttcgg 960

acagtggaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1020

tcccgcaacg agcgcaaccc ttgccattag ttgccatcat tcagttgggc actctaatgg 1080

gactgccggg gacaactcgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg 1140

ttctgggcta cacacgtgct acaatggccg gtacagcaag aagcaaaacc gcgaggtgga 1200

gcaaatctca aaaaccggtc ccagttcgga ctgcaggctg aaacccgcct gcacgaagcc 1260

ggagttgnta gtaatcgtgg atcagaatgc cacggtgaat gcgttcccgg gtcttgtaca 1320

caccgcccgt cacaccatgg aagttggggg tgcccgaagc cggcagggaa a 1371

<210> 865
<211> 1363
<212> DNA
<213> Eubacterium sp. oral clone GI038

<400> 865
gagtttgatt ctggctcagg atgaacgctg gcggcgtgcc taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa cgcgtgggca acctgcccca taccggggga tagcagttgg 120

aaacggctgg taaaaccgca taagaaaaag tggtatggga tgggcccgcg tctgattagc 180

cagttggtga ggtaacggct caccaaagcg acgatcagta gccggcctga gagggcggac 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt gggggatatt 300

gcacaatgga ggaaactctg atgcagcgac gccgcgtgag tgaagaagta tttcggtatg 360

taaagctcta tcagcaggga agatgacggt acctgagtaa gaagctccgg ctaaatacgt 420

gccagcagcc gcggtaatac gtatggagca agcgttatcc ggatttactg ggtgtaaagg 480

gagcgcagac ggatatgcaa gtctgaagtg aaaccccacg gctcaaccgt gggcttgctt 540

tggaaactgt agatctagag tactggagag gtaagcggaa ttcctggtgt agcggtgaaa 600

tgcgtagata tcaggaagaa catcggcggc gaaggcggct tactggacag actgacgttg 660

aggctcgaag gcgtggggag caaacaggat tagataccct ggtagcccac gcggtaaacg 720

atgaatacta ggtgttggga tttcagtgcc gaagcaaacg tgataagtat tccacctggg 780

gagtacgttc gcaagaatga aactcaaagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag accttgaatc gacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccttgcgtat agtagccagc aattgggaac tctatacgga ctgccgggga taacccggag 1020

gaaggtgggg atgacgtcaa atcatcatgc cccttatggt ctgggctaca cacgtgctac 1080

aatgtcgcag agggaagcga aagggtgacc tgaagcgaat ctcaaaacga cccagttcgg 1140

atgcaggctg caacccgcct gcagaagctg gaatcgctag taatcgcgaa tcagcatgtc 1200

gcggtgaata cgttcccggg tcttgtacac accgcccgtc acaccatggg agtcgggaat 1260

gcccgaagcc ggtacctaag gagccgtcga aggcaggccg gatgactggg gtgaagtcgt 1320

aacaaggtag ccgtaggaga acctgcggct ggaacacctc ctt 1363

<210> 866
<211> 1364
<212> DNA
<213> Eubacterium sp. oral clone IR009

<400> 866
gagtttgatc ctggctcagg atgaacgcgg gcggcatgct taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa cgcgtggata acctgcctta tacaggggga taacggagag 120

aaatttccgc taagaccgca taagaaaatt aggtataaga tggatccgcg tccgattagc 180

ttgttggtga ggtagaggct caccaaggcg acgatcggta gccggcccga gagggtgaac 240

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt ggggaatatt 300

ggacaatggg ggaaaccctg atccagcgac gccgcgtgag tgaagaagta tttcggtatg 360

taaagctcta tcagcaggga agatgacggt acctgactaa gaagccccgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggggggca agcgttatcc ggatttactg ggtgtaaagg 480

gagcgcagac ggccaagcaa gtctgaagtg aaatgcatgg gctcaaccca tgaattgctt 540

tggaaactgt taggcttgag tgtcggaggg gtaagcggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaggaa caccggaggc gaaggcggct tactggacga actgacgttg 660

aggctcgaag gcgtggggag caaacaggat tagataccct ggtagtccac gcagtaaacg 720

atgaatactt ggtgtcgggg cttcggtgcc gcagcaaacg cattaagtat tccacctggg 780

gagtacgttc gcaagaatga aactcaaagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccaa atcttgacat atacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtcgt cagtagccag catgggaact ctgacgagac agccggagat aatccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgatt tgggctacac acatgctaca 1080

atggcgtaca aagtgaagca agaccgcgag gttaagcaaa tcacagaacg tctcagttcg 1140

gatgtagtct gcaactcgac tatagaagcc ggaatcgcta gtaatcgcag atcagaatgc 1200

tgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccatgg gagtcatcaa 1260

tgcccgaagt cagtacctaa ggagctgccg aaggcaggga ggataactgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggt tggatcacct cctt 1364

<210> 867
<211> 1360
<212> DNA
<213> Eubacterium sp. oral clone JH012

<400> 867
ggagtttgat cctggctcag gaggaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gagcggcgga cgggtgagta acgcgtaggc aacctgccct ttgcacaggg atagcctcgg 120

gaaaccggga ttaaaacctg ataatcaaat taggcaaagg atgggcctgc gtctgattag 180

cttgttggtg aggtaacggc tcaccaaggc gacgatcagt agccgacctg agagggtaaa 240

cggccacatt ggaactgaga cacggtccaa actcctacgg gaggcagcag tggggaatat 300

tgcacaatgg gcgaaagcct gatgcagcaa cgccgcgtga gtgaagaagg cccttgggtc 360

gtaaaactct gttgagaggg aagatgacgg tacctcttga ggaagccccg gctaactacg 420

tgccagcagc cgcggtaata cgtagggggc gagcgttatc cggaattatt gggcgtaaag 480

agtgcgtagg tggttatcta agcgtggggt gaaaggcagt ggcttaacca ttgtaagcct 540

tgcgaactgg atagcttgag tgcaggaggg gaaagtggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaggaa caccggtggc gaaggcggct ttctggactg actgacactg 660

aggcacgaaa gcgtgggtag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagcacta ggtgttgggg cctcagtgcc gcagttaacg caataagtgc tccgcctggg 780

gagtacgcac gcaagtgtaa aactcaaagg aattgacggg gacccgcaca agcagcggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gacttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtcaa tagttgccag catgggcact ctattgagac tgccgtggat aacacggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgttt tgggctacac acgtgctaca 1080

atggccggca acgagaagca agaccgcaag gtggagcaaa acttaaccgg tcccagttcg 1140

gatgtaggct gcaactcgcc tacagaagat ggagttgcta gtaatcgcag atcagaatgc 1200

tgcggtgaat gcgttcccgg gtcttgtaca caccgcccgt cacaccatgg aagttggggg 1260

tgcccgaagt cggttaggag ctgccgaagg caaaaccaat gactggggtg aagtcgtaac 1320

aaggtagccg tatcggaagg tgcggctgga tcacctcctt 1360

<210> 868
<211> 1365
<212> DNA
<213> Eubacterium sp. oral clone JI012

<400> 868
ggagtttgat tctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagtggcgga cgggtgagta acgcgtgggc aacctgcctt atacaggggg ataacagaga 120

gaaatttccg ctaatacccc ataagaaaag ttggtataag atggacccgc gtctgattag 180

ctggttggtg aggtaaaggc tcaccaaggc gacgatcagt agccggcctg agagggtgaa 240

cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag tggggaatat 300

tggacaatgg ggggaaccct gatccagcga cgccgcgtga gtgaagaagt atttcggtat 360

gtaaagctct atcagcaggg aagatgacgg tacctgacta agaagccccg gctaactacg 420

tgccagcagc cgcggtaata cgtaggggc aagcgttatc cggatttact gggtgtaaag 480

ggagcgtaga cggtactgca agtctggagt gaaacccgcg ggctcaacct gcggcatgct 540

ttggaaactg tggtactgga gtgtcggaga ggtaagcgga attcccagtg tagcggtgaa 600

atgcgtagat attgggaaga acacctgggg cgaaggcggc ttactggacg aactgacgtt 660

gaggctcgaa ggcgtgggga gcaaacagga ttagataccc tggtagtcca cgcagtaaac 720

gatgaatact aggtgtcggg atttcggtgc cgtcgcaaac gcaataagta ttccacctgg 780

ggagtacgtt cgcaagaatg aaactcaaag gaattgacgg ggacccgcac aagcggtgga 840

gcatgtggtt taattcgaag caacgcgaag aaccttacca agtcttgaca tatacaggtg 900

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 960

acccttgtga tcagtagcca gcatggggac tctgatcaga cagccggaga taatccggag 1020

gaaggtgggg atgacgtcaa atcatcatgc cccttatgat ttgggctaca cacgtgctac 1080

aatggcggac aaagagaagc gagtgtgcga acataagcaa acctcaagcc gtctcagttc 1140

ggatgtagtc tgcaactcga ctatagaagc tggaatcgct agtaatcgca aatcagaatg 1200

ttgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccatg ggagtcatca 1260

atgcccgaag tcagtaccta aggagctgcc gaaggcaggg aggataactg gggtgaagtc 1320

gtaacaaggt agccgtatcg gaaggtgcgg ctggatcacc tcctt 1365

<210> 869
<211> 1364
<212> DNA
<213> Eubacterium sp. oral clone JN088

<400> 869
gagtttgatt ctggctcagg atgaacgctg gcggcgtgcc taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa cacgtgggta acctgcctta tggaggggga taacagagag 120

aaatcactgc taataccgca taagaaaagt cgccataaga tggacccgcg tctgattagc 180

cagttggcag ggtaaaagcc taccaaagca acgatcagta gccgatctga gaggatgacc 240

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg ggaaaccctg atgcagcgac gccgcgtgag tgaagaagta tttcggtatg 360

taaagctcta tcagcaggga agatgacagt acctgactaa taagccccgg ctaactacgt 420

gccagcagcc gcggtaatac gtatggggcg agcgttatcc ggatttactg ggtgtaaagg 480

gagcgtagac ggaatggcaa gtctgaagtg aaatacccgg gctcaacctg gggactgctt 540

tggaaactgt tgttctacag tgttggagag gtaagtggaa ttcctggtgt agcggtgaaa 600

tgcgtatata tcaagaagaa caccggaggc gaaggcggct tactggacaa actgacgttg 660

aggctcgaaa gcgtggggat caaacaggat tagataccct ggtattccac gctgtaaacg 720

atgaatacta ggtgtcgggg tctcggtgcc gtcgctaacg caataagtat tccacctggg 780

gagtacgttc gcaagaatga aactcatagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccaa gtcttgagat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctatagt tagtatccag catgggcact ctaactagac tgccagggat aacctggagg 1020

aaggcgggga tgacgtccaa tcatcatgcc ccttatgact tgggctacac acgtgctaca 1080

atggcgtaca aagggaagcg agagggtgac cttaagcaaa tctcaaaacg tctcagttcg 1140

gatgtagtct gcaacccgac tacagaagct ggaatcgcta gtaatcgcag atcagcatgc 1200

tgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccatgg gagttggtaa 1260

tgcccgaagt cagttcccag ggagctgccg aaggcaggac tgatgactgg ggtgaagtca 1320

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctt 1364

<210> 870
<211> 1354
<212> DNA
<213> Eubacterium sp. oral clone JS001

<400> 870
ggagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gagcggcgga cgggtgagta acgcgtaggc aacctaccct tcacccaggg acagcctccg 120

gaaacgggga ttaatacctg atgaccaaag ttggtgaggg atgggcctgc gtctgattag 180

ttagttggtg aggtaacggc tcaccaaggc gacgatcagt agccgacctg agagggtgac 240

cggccacatt ggaactgaga cacggtccag actcctgcgg gaggcagcag tggggaatat 300

tgcacaatgg gcgaaagcct gatgcagcaa cgccgcgtga aggatgaagg tccttggatt 360

gtaaacttct gtccataggg aagatgacgg tacctatgga ggaagccccg gctaactacg 420

tgccagcagc cgcggtaata cgtaggggggc aagcgttatc cggaattatt gggcgtaaag 480

cgtgcgtagg cggcttttta agcgtggggt ttaaggctat ggctcaacca tagtatgccc 540

tgcgaactgg aaggcttgag tacaggagag gaaagcggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaggaa caccagtggc gaaggcggct ttctggactg actgacgctg 660

aggtacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gctgtaaacg 720

atgagcacta ggtgtcgggg cttcggtgcc gcagttaacg caataagtgc tccgcctggg 780

gagtacgttc gcaagaatga aactcaaagg aattgacggg gacccgcaca agcagcggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gacttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgttac tagttgccat catgggcact ctagtgagac tgccggggac aactcggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgttc tgggctacac acgtgctaca 1080

atggctggca aagagaagcg agaccgtgag gtggagcaaa actcaccagc cccagttcgg 1140

atgcaggctg caactcgcct gcagaagccg gagttgctag taatcgcaga tcagaatgct 1200

gcggtgaatg cgttcccggg tcttgtacac accgcccgtc acaccatgga agttgggggc 1260

gcccgaagtt ggtattacct aaggcgaaac cgatgactgg ggtgaagtcg taacaaggta 1320

gccgtaggag aacctgcggc tggatcacct cctt 1354

<210> 871
<211> 1427
<212> DNA
<213> Eubacterium sp. oral clone OH3A

<220>
<221> modified_base
<222> (11)..(11)
<223> a, c, t, g, unknown or other

<400> 871
tcgacgaagg natatatagg aagtcttcgg atggaatatg tataacttag tggcggacgg 60

gtgagtaacg cgtaagtaat caacctgtga cacacggata actgatagaa atgtcagcta 120

atacgagatg aactgtttaa attgggaaat ggaaacagca aagcgaaagc ggtcacagac 180

gagcttgcgt ctgattagct agttggtggg gtaagagcct accaaggcga cgatcagtag 240

ccggcctgag agggtgaacg gccacattgg aactgagaca cggtccaaac tcctacggga 300

ggcagcagtg ggggatattg cacaatgggg ggaaccctga tgcagcaacg ccgcgtgagt 360

gaagaaggcc ctagggtcgt aaagctctgt cgtatgggaa gaaacaaatg actgtaccat 420

acaagaaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt 480

tatccggaat tactgggcgt aaagggtgcg taggcggcta gttaagtcga ggttaaaagg 540

cagtagctca actactgttg ggccttgaaa ctaattagct tgagtatagg agaggaaagt 600

ggaattcccg gtgtagcggt gaaatgcgta gatatcggga ggaataccgg tggcgaaggc 660

gactttctgg actataactg acgctgaggc acgaaagcgt gggtagcaaa caggattaga 720

taccctggta gtccacgccg taaacgatga acactaggtg tcgggaggaa tttcggtgcc 780

ggcgcaaacg caataagtgt tccgcctggg gagtacgttc gcaagaataa aactcaaagg 840

aattgacggg gacccgcaca agtagcggag catgtggttt aattcgaagc aacgcgaaga 900

accttaccta agcttgacat ggggatgaaa agcaatgtaa agttgtaatg atactttcgg 960

gtatacatcc cacacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt 1020

taagtcccgc aacgagcgca acccctattg atagttgcca gtgcgttaag ataggcactc 1080

tatcaagaca gttatggata acataaagga aggtggggat gacgtcaaat catcatgccc 1140

cttatgctta gggctacaca cgtgctacaa tggctgtaac aaagagaagc aaagtcgcaa 1200

ggcggagcaa acctgaaaaa agcagtccaa gttcggattg tgggctgaaa ctcgcccaca 1260

tgaagtcgga gttactagta atcgcgaatg agaatgtcgc ggtgaatgcg ttcccgggtc 1320

ttgtacacac cgcccgtcac accatgggag ctgagggtac ccaaagtcag tgatctaacg 1380

taagaagaag ctgcctaagg taaagttagt gactgggggg aagtcgt 1427

<210> 872
<211> 1356
<212> DNA
<213> Eubacterium tenue

<220>
<221> modified_base
<222> (1343)..(1343)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1349)..(1349)
<223> a, c, t, g, unknown or other

<400> 872
tcgagcgatt ctcttcggag aagagcggcg gacgggtgag taacgcgtgg gtaacctgcc 60

ctgtacacac ggataacata ccgaaaggta tgctaatacg agatgatata taattgttgc 120

atgattttta tatcaaagct tttgcggtac aggatggacc cgcgtctgat tatctagttg 180

gtaaggtaac ggcttaccag ggcgacgatc agtagccgac ctgagagggt gatcggccac 240

actggaactg agacacggtc cagactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggcgaaag cctgatgcag caacgccgcg tgagcgatga aggccttcgg gtcgtaaagc 360

tctgtcctca aggaagataa tgacggtact tgaggaggaa gccccggcta actacgtgcc 420

agcagccgcg gtaatacgta gggggctagc gttatccgga attactgggc gtaaagggtg 480

cgtaggcggt ctttcaagcc agaagtgaaa ggctacggct caaccgtagt aagcttttgg 540

aactgtagac ttgagtgcag gagaggagag tggaattcct agtgtagcgg tgaaatgcgt 600

agatattagg aggaacacca gtagcgaagc ggctctctgg actgtactga cgctgaggca 660

cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag 720

tactagtgtc gggggttacc cccctcggtg ccgcagctaa cgcattaagt actccgcctg 780

ggaagtacgc tcgcaagagt gaaactcaca ggaattgacg gggacccgca caagtagcgg 840

atcatgtggt ttaattcgaa gcaacgcgaa caaccttacc taaacttgac atccccttga 900

cctctcccgt atcggatatt tcccgtcggg gacagtggtg acaggtggtg catgattgcc 960

gtcagctcgt gtcgtgagat gatgggttaa gtcccgcaac gagcgcaacc cttgccttta 1020

gttgccagca ttaagttggg cactctagag ggactgccga ggataactcg gaggaaggtg 1080

gggatgacgt caaatcatca tgccccttat gcttagggct acacacgtgc tacaatgggt 1140

ggtacagagg gttgccaaac cgtgaggtgg agctaatccc ttaaagccat tctcagttcg 1200

gattgtaggc tgaaactcgc ctacatgaag ctggagttac tagtaatcgc agatcagaat 1260

gctgcggtga atgcgttccc gggtcttgta cacaccgccc gtcacaccat gggagttggg 1320

ggcgcccgaa gccggttagc tanccttttng gaagcg 1356

<210> 873
<211> 1486
<212> DNA
<213> Eubacterium tortuosum

<220>
<221> modified_base

<222> (1)..(1)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (123)..(123)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (347)..(347)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (970)..(970)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1026)..(1026)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1051)..(1051)
<223> a, c, t, g, unknown or other

<400> 873
ncaaatggag agtttgatcc tggctcagga tgaacgctgg cggcatgcct aatacatgca 60

agtcgaacga agtcaattga aagcttgctt ttaaaagact tagtggcgaa cgggtgagta 120

acncgtaggt aacctaccca tgtaactggg ataactgctg gaaacggtag ctaaaaccgg 180

ataggtaaga ttgaggcatc ttaatcttat gaaaaaagct ttcgggcttt gaacatggat 240

ggacctgcgg cgcattagct agttggtgag gtaacggctc accaaggcga tgatgcgtag 300

ccgacctgag agggtgaacg gccacattgg gactgagaca cggcccnaac tcctacggga 360

ggcagcagta gggaattttc gtcaatgggg ggaaccctga acgagcaatg ccgcgtgagt 420

gaagaaggtc ttcggatcgt aaagctctgt tgtaagtgaa gaaagatgta tataggaaat 480

gatatacaag tgacggtagc ttaccagaaa gccacggcta actacgtgcc agcagccgcg 540

gtaatacgta ggtggcaagc gttatccgga atcattgggc gtaaagggtg cgtaggtggt 600

acattaagtc tgaagtaaaa ggcatcagct caactgatgt tagctttgga aactgatgaa 660

ctagagtgca gaagagggca atggaattcc atgtgtagcg gtaaaatgcg tagatatatg 720

gaggaacacc agtggcgaag gcggttgcct ggtctgtaac tgacactgat gcacgaaagc 780

gtggggagca aataggatta gataccctag tagtccacgc cgtaaacgat gagaactaag 840

tgttggggaa actcagtgct gcagttaacg caataagttc tccgcctggg gagtatgcac 900

gcaagtgtga aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt 960

aattcgaagn aacgcgaaga accttaccag gccttgacat ggatgtaaaa gccctagaga 1020

tagggnaata ggtatacatc acacaggtgg ngcatggttg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgtcac atgttaccaa tattaagtta 1140

gggactcatg tgagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaaatcat 1200

catgcccctt atggcctggg ctacacacgt actacaatgg cgactacaaa gagcagcgaa 1260

cctgcgaagg caagcgaatc tcataaaggt cgtctcagtt cggattgaag tctgcaactc 1320

gacttcatga agtcggaatc gctagtaatc gcagatcagc atgctgcggt gaatacgttc 1380

tcgggccttg tacacaccgc ccgtcaaacc atgggagttg gtaatacccg aagccggtgg 1440

cataaccgca aggagtgagc cgtcgaaggt aggaccgatg actggg 1486

<210> 874
<211> 1378
<212> DNA
<213> Eubacterium ventriosum

<400> 874
caccttggac agaatccttc gggaggaaga ccattgtgac tgagtggcgg acgggtgagt 60

aacgcgtggg taacctgcct tgtacagggg gataacagtt ggaaacgact gctaataccg 120

cataagcgca cagtaccgca tggtacggtg tgaaaaactc cggtggtaca agatggaccc 180

gcgtctgatt agctagttgg tgaggtaacg gcccaccaag gcgacgatca gtagccgact 240

tgagagagtg atcggccaca ttgggactga gacacggccc aaactcctac gggaggcagc 300

agtagggaat attgcacaat gggggaaacc ctgatgcagc gacgccgcgt gaagaagaag 360

tatttcggta tgtaaacttc tatcagcaag gaagaaaatg acggtacttg actaagaagc 420

cccggctaaa tacgtgccag cagccgcggt aatacgtatg gggcaagcgt tatccggatt 480

tactgggtgt aaagggagcg taggcggcat ggcaagtcag aagtgaaagc ctggggctca 540

accccggaat tgcttttgaa actgtcaggc tagagtgtcg gaggggtaag cggaattcct 600

agtgtagcgg tgaaatgcgt agatattagg aggaacaccg gtggcgaagg cggcttactg 660

gacgattact gacgctgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt 720

agtccacgcc gtaaacgatg aatactacgt gtcgggggac aatagttcct cggtgccgaa 780

gcaaacgcat taagtattcc acctggggag tacgttcgca agaatgaaac tcaaaggaat 840

tgacggggac ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 900

ttacctgctc ttgacatccc actgacaggt cagtaatgtg acccttttcct cggaacagtg 960

gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1020

aacgagcgca acccttgtct ttagtagcca gcagtccggc tgggcactct agagagactg 1080

ccagggataa cctggaggaa ggcggggatg acgtcaaatc atcatgcccc ttacgagcag 1140

ggctacacac gtgctacaat ggcgtaaaca aagggaagcg accccgtgag ggcaagcaaa 1200

tctcaaaaat aacgtctcag ttcggattgt agtctgcaac tcgactacat gaagctggaa 1260

tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt tcccgggtct tgtacacacc 1320

gcccgtcaca ccatgggagt tggatatgcc cgaagtcagt gacccaaccg taaggagg 1378

<210> 875
<211> 1496
<212> DNA

<213> Eubacterium xylanophilum

<220>
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (267)..(267)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (366)..(366)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (551)..(552)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (618)..(618)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (634)..(635)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (854)..(854)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (972)..(973)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1201)..(1202)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1391)..(1392)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1409)..(1409)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1448)..(1448)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1456)..(1456)
<223> a, c, t, g, unknown or other

<400> 875
nnaatttgag agtttgatcc tggctcagga tgaacgctgg cggcgtgctt aacacatgca 60

agtcgaacga agcatctctc ccgaagattg aagtagcttg ctacagattg attcatttga 120

gatgacttag tggcggacgg gtgagtaacg cgtgggtaac ctgcctcata gaggggaca 180

acagttggaa acgactgcta ataccgcata acatgtgact gtcacatgac agacacatca 240

aagcttttgc gctatgagat ggacccncgt ctgattagct agttggtaag gtaacggctt 300

accaaggcga cgatcagtag ccggcttgag agagtgaacg gccacattgg gactgagaca 360

cggccnagac tcctacggga ggcagcagtg gggaatattg cacaatgggg gaaaccctga 420

tgcagcgacg ccgcgtgagt gaagaagtat ttcggtatgt aaagctctat cagcagggaa 480

gataatgacg gtacctgact aagaagcccc ggctaactac gtgccagcag ccgcggtaat 540

acgtaggggg nnagcgttat ccggatttac tgggtgtaaa gggagcgtag gtggcaaggc 600

aagtcagatg tgaaatgncg gggctcaacc ccgnnactgc atttgaaact gtctagctag 660

agtgcaggag aggtaagtgg aattcctagt gtagcggtga aatgcataga tattaggagg 720

aacaccagtg gcgaaggcgg cttactggac tgtaactgac actgaggctc gaaagcgtgg 780

ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgaat actaggtgtc 840

ggggcccaca gggnttcggt gccgcagcaa acgcattaag tattccacct ggggagtacg 900

ttcgcaagaa tgaaactcaa aggaattgac ggggacccgc acaagcggtg gagcatgtgg 960

attaattcga annaacgcga agaaccttac caagtcttga catcctgctg accgttcctt 1020

agtcggaact tctcttcgga gcagcagaga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttattcttag tagccagcat 1140

tttggatggg cactctaggg agactgccgg agacaatccg gaggaaggtg gggatgacgt 1200

nnaatcatca tgccccttat gacttgggct tcacacgtgc tacaatggtg actacaaagt 1260

gaagcgaccc tgtgaaggta agccaaccac aaaaaggtca tctcagttcg gattgtagtc 1320

tgcaactcga ctacatgaag ctggaatcgc tagtaatcgc aaatcagcat gttgcggtga 1380

atacgttccc nngtcttgta cacaccgcnc gtcacaccat gggagttgga tatgcccgaa 1440

gccggtgncc caaccntaag gagggagccg tcgaaggtgg agccaatgac tggggt 1496

<210> 876
<211> 1536
<212> DNA
<213> Eubacterium yurii

<400> 876
ttttaattga gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taacacatgc 60

aagtcgaacg aagtatatat atgaagtctt cggatggaat ataaataact tagtggcgga 120

cgggtgagta acgcgtaagt aatcaacctg tgacacacgg ataactgata gaaatgtcag 180

ctaatacgag atgaactgtt tagattggga aatggaaaca gcaaagcgaa agcggtcaca 240

gacgagcttg cgtctgatta gctagttggt ggggtaagag cctaccaagg cgacgatcag 300

tagccggcct gagagggtga acggccacat tggaactgag acacggtcca aactcctacg 360

ggaggcagca gtgggggata ttgcacaatg gggggaaccc tgatgcagca acgccgcgtg 420

agtgaagaag gccctagggt cgtaaagctc tgtcgtatgg gaagaaacaa atgactgtac 480

catacaagaa agccccggct aactacgtgc cagcagccgc ggtaatacgt aggggcaag 540

cgttatccgg aattactggg cgtaaagggt gcgtaggcgg ctagttaagt cgaggttaaa 600

aggcagtagc tcaactactg ttgggccttg aaactaatta gcttgagtat aggagaggaa 660

agtggaattc ccggtgtagc ggtgaaatgc gtagatatcg ggaggaatac cggtggcgaa 720

ggcgactttc tggactataa ctgacgctga ggcacgaaag cgtgggtagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgaacactag gtgtcgggag gaatttcggt 840

gccggcgcaa acgcaataag tgttccgcct ggggagtacg ttcgcaagaa taaaactcaa 900

aggaattgac ggggacccgc acaagtagcg gagcatgtgg tttaattcga agcaacgcga 960

agaaccttac ctaagcttga catggggatg aaaagcaatg taaagttgta atgatacttt 1020

cgggtataca tcccacacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaaccccta ttgatagttg ccagtgcgtt atggtaggca 1140

ctctatcaag acagttatgg ataacataaa ggaaggtggg gatgacgtca aatcatcatg 1200

ccccttatgc ttagggctac acacgtgcta caatggctgt aacaaagaga agcaaggtcg 1260

caaggcggag caaacctgaa aaaagcagtc caagttcgga ttgtgggctg aaactcgccc 1320

acatgaagtc ggagttacta gtaatcgcga atcagaatgt cgcggtgaat gcgttcccgg 1380

gtcttgtaca caccgcccgt cacaccatgg gagctgaggg tacccaaagt cagtgatcta 1440

acgaaagaag aagctgccta aggtaaactt agtgactggg gtgaagtcgt aacaaggtag 1500

ccgtatcgga aggtgcggct ggatcacctc ctttct 1536

<210> 877
<211> 1534
<212> DNA
<213> Ewingella americana

<400> 877
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggcagcggga agtagcttgc tactttgccg gcgagcggcg gacgggtgag taatgtctgg 120

gaaactgcct gatggagggg gataactact ggaaacggta gctaataccg catgacctcg 180

aaagagcaaa gtgggggacc ttcgggcctc acgccatcgg atgtgcccag atgggattag 240

ctagtaggtg aggtaatggc tcacctaggc gacgatccct agctggtctg agaggatgac 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt gtgaagaagg ccttcgggtt 420

gtaaagcact ttcagcgagg aggaaggcgt taaggttaat aaccttagcg attgacgtta 480

ctcgcagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga 600

aatccccgag cttaacttgg gaactgcatt tgaaactggc aagctagagt cttgtagagg 660

ggggtagaat tccaggtgta gcggtgaaat gcgtagagat ctggaggaat accggtggcg 720

aaggcggccc cctggacaaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgctgtaaac gatgtcgatt tggaggttgt gggcttgacc 840

cgtggcttcc ggagctaacg cgttaaatcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat ccagagaatt cgctagagat agcttagtgc 1020

cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcgagta atgtcgggaa 1140

ctcaaaggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcata tacaaagaga agcgaactcg 1260

cgagagcaag cggacctcat aaagtatgtc gtagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgtag atcagaatgc tacggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt aggtagctta 1440

accttcggga gggcgcttac cactttgtga ttcatgactg gggtgaagtc gtaacaaggt 1500

aaccgtaggg gaacctgcgg ttggatcacc tcct 1534

<210> 878
<211> 1412
<212> DNA
<213> Exiguobacterium acetylicum

<220>
<221> modified_base
<222> (1360)..(1362)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1364)..(1365)
<223> a, c, t, g, unknown or other

<400> 878
gcgcaggaag ctgacggaac tcttcggagg gaaggcagtg gaatgagcgg cggacgggtg 60

agtaacacgt aaggaacctg cctcaaggat tgggataact ccgagaaatc ggagctaata 120

ccggatagtt caacggaccg catggtccgc tgatgaaagg cgctccggcg tcaccttgag 180

atggccttgc ggtgcattag ctagttggtg gggtaacggc ccaccaaggc gacgatgcat 240

agccgacctg agagggtgat cggccacact gggactgaga cacggcccag actcctacgg 300

gaggcagcag tagggaatct tccacaatgg acgaaagtct gatggagcaa cgccgcgtga 360

gtgatgaagg ttttcggatc gtaaaactct gttgtaaggg aagaacacgt acgagaggga 420

atgctcgtac cttgacggta ccttacgaga aagccacggc taactacgtg ccagcagccg 480

cggtaatacg taggtggcaa gcgttgtccg gaattattgg gcgtaaagcg cgcgcaggcg 540

gccttttaag tctgatgtga aagcccccgg ctcaaccggg gagggccatt ggaaactgga 600

aggcttgagt acagaagaga agagtggaat tccacgtgta gcggtgaaat gcgtagagat 660

gtggaggaac accagtggcg aaggcgactc tttggtctgt aactgacgct gaggcgcgaa 720

agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct 780

aggtgttggg gggtttccgc ccctcagtgc tgaagctaac gcattaagca ctccgcctgg 840

ggagtacggc cgcaaggctg aaactcaaag gaattgacgg ggacccgcac aagcggtgga 900

gcatgtggtt taattcgaag caacgcgaag aaccttacca actcttgaca tcccattgac 960

cgcttgagag atcaagtttt cccttcgggg acaatggtga caggtggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctatccttag 1080

ttgccagcat tcagttgggc actctaggga gactgccggt gacaaaccgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccccttatg agttgggcta cacacgtgct acaatggacg 1200

gtacaaaggg cagcgagacc gcgaggtgga gccaatccca taaagccgtt cccagttcgg 1260

attgcaggct gcaactcgcc tgcatgaagt cggaatcgct agtaatcgca ggtcagcata 1320

ctgcggtgaa tacgttcccg ggtcttgtac acaccgcccn nnannccacg agagtttgca 1380

acacccgaag ccggtgaggt aaccgcaagg ag 1412

<210> 879
<211> 1505
<212> DNA
<213> Facklamia hominis

<220>
<221> modified_base
<222> (344)..(344)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (364)..(365)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (638)..(638)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (652)..(652)
<223> a, c, t, g, unknown or other

<400> 879
cgaacgctgg cggcgtgcct aatacatgca agtcgaacga acggagctag gaactgaacc 60

cggcaaagtt agtggcgcac gggtgagtaa cacgtggaga acctaccctt ttgcggggga 120

taaccattgg aaacgatgac taataccgca tagaatcgca gatcgcatga tcaacgaagg 180

aaagacggct tcggctgtcg caaaaggatg gctccgcggt gcattagcta gatggtgggg 240

taacggccta ccatggcaat gatgcatagc cgacctgaga gggtgatcgg ccacattggg 300

actgagacac ggcccaaact cctacgggag gcagcagtag ggantcttcc gcaatgggcg 360

caannctgac ggagcaacgc cgcgtgtgtg aagaaggtct tcggatcgta aagcactgtt 420

gttagagaag aacgaccgct agagtaactg ttagcggagt gacggtatct aaccagaaag 480

ccacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg ttgtccggat 540

ttattgggcg taaagggagc gcaggcggtg acttaagtct gatgtgaaag cccacggctc 600

aaccgtggag ggtcattgga aactgggtca cttgagtnca gaagaggaaa gnggaattcc 660

atgtgtagcg gtgaaatgcg tagatatatg gaggaacacc agtggcgaag gcgactttct 720

ggtctgtaac tgacgctgag gctcgaaagc gtggggagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gagtgctaag tgttggaggg tttccaccct tcagtgctgg 840

agttaacgca ataagcactc cgcctgggga gtacggccgc aaggctgaaa ctcaaaggaa 900

ttgacgggga cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaggt cttgacatct cttgcatagc ctagagatag gtgaagccct tcggggcaag 1020

aagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccttatca ctagttgcca gcattcagat ggggactcta gtgagactgc 1140

cggtgacaaa ccggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg 1200

gctacacacg tgctacaatg gatggtacaa cgagcagcga actcgcaagg gcaagcgaat 1260

ctcttaaagc cattctcagt tcggattgtt ctctgcaact cgagaacatg aagccggaat 1320

cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt cccgggtctt gtacacaccg 1380

cccgtcacac cacgagagtt tgtaacaccc gaagccggtg gcctaacttt atgaagccgt 1440

cgaaggtggg acagatgatt ggggtgaagt cgtaacaagg tagccgtatc ggaaggtgcg 1500

gctgg 1505

<210> 880
<211> 1367
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 880
tcgaacgagc gagagagagc ttgctttctc agagcgagtg gcgaacgggt gagtaacgcg 60

tgaggaacct gcctcaaaga gggggacaac agttggaaac gactgctaat accgcataag 120

cccacaggtc ggcatcgagc agagggaaaa ggagcaatcc gctttgagat ggcctcgcgt 180

ccgattagct agttggtgag gtaacggccc accaaggcaa cgatcggtag ccggactgag 240

aggttgaacg gccacattgg gactgagaca cggcccagac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggg gaaaccctga tgcagcgacg ccgcgtggag gaagaaggtc 360

ttcggattgt aaactcctgt tgttgaggaa gataatgacg gtactcaaca aggaagtgac 420

ggctaactac gtgccagcag ccgcggtaaa acgtaggtca caagcgttgt ccggaattac 480

tgggtgtaaa gggagcgcag gcgggaagac aagttggaag tgaaatctat gggctcaacc 540

cataaactgc tttcaaaact gtttttcttg agtagtgcag aggtaggcgg aattcccggt 600

gtagcggtgg aatgcgtaga tatcgggagg aacaccagtg gcgaaggcgg cctactgggc 660

accaactgac gctgaggctc gaaagtgtgg gtagcaaaca ggattagata ccctggtagt 720

ccacaccgta aacgatgatt actaggtgtt ggaggattga ccccttcagt gccgcagtta 780

acacaataag taatccacct ggggagtacg accgcaaggt tgaaactcaa aggaattgac 840

gggggcccgc acaagcagtg gagtatgtgg tttaattcga cgcaacgcga agaaccttac 900

caagtcttga catcctgcga cgatgctgga aacagtattt tccttcggga cgcagagaca 960

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1020

cgcaaccctt actgtcagtt actacgcaag aggactctgg caggactgcc gttgacaaaa 1080

cggaggaagg tggggatgac gtcaaatcat catgcccttt atgacttggg ctacacacgt 1140

actacaatgg cgttaaacaa agagaagcaa gaccgcgagg tggagcaaaa ctcagaaaca 1200

acgtcccagt tcggactgca ggctgcaact cgcctgcacg aagtcggaat tgctagtaat 1260

cgtggatcag catgccacgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac 1320

catgagagcc ggggggaccc gaagtcggta gtctaaccgc aaggagg 1367

<210> 881
<211> 1530
<212> DNA
<213> Filifactor alocis

<400> 881
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gaacgactat taacagaacc tttcggggcg aagaatatag aagttagtgg cggacgggtg 120

cgtaacgcgt gggtaatctg cctttgtcaa aggaataact attcgaaaga atagctaaaa 180

ccgtataaca tattaatagg gcatcctaat aatatcaaaa ctgaggtgga caaagatgag 240

cccgcgtctg attagctagt tggtgagata aaagcccacc aaggcaacga tcagtagccg 300

acctgagagg gtgaacggcc acattggaac tgagacacgg tccaaactcc tacgggaggc 360

agcagtgggg aatattgcac aatgggggga accctgatgc agcaacgccg cgtgagtgaa 420

gaaggcattc gtgtcgtaaa actctgtagt aggggaagaa agaaatgaca gtaccctaaa 480

agaaagcccc ggctaactac gtgccagcag ccgcggtaat acgtaggggg caagcgttat 540

ccggaataac tgggcgtaaa gggtgcgcag gtggtttaac aagttagtgg tgaaaggcat 600

aggctcaacc aatgtaagcc attaaaactg tttaacttga gtgcaggaga ggaaagtgga 660

attcctagtg tagcggcgaa atgcgtagat attaggagga ataccagtgg cgaaggcgac 720

tttctggact gcaactgact ctgaggcacg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgccgtaa acgatgagta ctaggtgtcg agtgaagaac tcggtgccga 840

agttaacaca ttaagtactc cgcctgggga gtacgctcgc aagagtaaaa ctcaaaggaa 900

ttgacgggga cccgcacaag cagcggagca tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttacctaaa cttgacatac caatgacagc cttttaatcg aggactttta ccttcgggta 1020

gacaatggat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttgtcgata gttaccagca gtaagatggg gactctatcg 1140

agacagctaa ggacaactta gaggaaggtg gggatgacgt caaatcatca tgcccccttat 1200

gtttagggct acacacgtgc tacaatggtc attacagaga gaagcgaaac tgcgaagtca 1260

agcaaacctc aaaaagatga tccaagttcg gattgtaggc tgaaactcgc ctacatgaag 1320

ttggagttgc tagtaatcgc gaatcagaat gtcgcggtga atgcgttccc gggtcttgta 1380

cacaccgccc gtcacaccat gggagtttgg ggggcccaaa gtcagcgact caaccgcaag 1440

gagagagctg cccaaggcaa aacaaatgac tggggtgaag tcgtaacaag gtagccgtat 1500

cggaaggtgc ggctggatca cctcctttct 1530

<210> 882
<211> 1450
<212> DNA
<213> Filifactor villosus

<400> 882
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac gggcgaatta tatcggaggt 60

cttcgggcca aagagataat aagctagtgg cggacgggtg cgtaacgtgt gggtaatctg 120

cctttgtcat aggaataact gcttgaaaaa gtagctaata ccaaataaca tatcgtatag 180

gcatctataa gatatcaaag agaaatcgga caaagatgag cccgcatctg attagctggt 240

tggtagggta aaagcctacc aaggcgacga tcagtagccg gcctgagagg gtgaacggcc 300

acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggggga accctgatgc agcaacgccg cgtgagtgaa gaaggctttc gagtcgtaaa 420

actctgttgt aagggaagat aatgacggta ccttaaaaga aagccccggc taactacgtg 480

ccagcagccg cggtaatacg taggggcaa gcgttatccg gaataactgg gcgtaaaggg 540

tgcgcaggtg gtctgtcaag ttagtggtga aaggcatagg ctcaaccaat gtaagccatt 600

aaaactgacg gacttgagtg caggagagga aagtggaatt cctagtgtag cggtgaaatg 660

cgtagatatt aggaggaata ccggtggcga aggcgacttt ctggactgta actgacactg 720

aggcacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 780

atgagtacta ggtgtcggga ggaatctcgg tgccgaagtt aacacattaa gtactccgcc 840

tggggagtac gctcgcaaga gtaaaactca aaggaattga cggggacccg cacaagcagc 900

ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctaaacttg acataccgat 960

gccgattcgg taatgcgaat tttcctttcg gggacattgg atacaggtgg tgcatggttg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtcaa 1080

tagttgccag catataaggt ggggactcta ttgagacagc taaggacaac ttagaggaag 1140

gtggggatga cgtcaaatca tcatgcccct tatgtttagg gctacacacg tgctacaatg 1200

gtcattacag agggaagcga gattgtgaaa tggagcaaac cccaaaaaga tgatctaagt 1260

tcggattgta ggctgaaact cgcctacatg aagttggagt tgctagtaat cgcaaatcaa 1320

aatgttgcgg tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac catgggagtt 1380

cgggggggccc aaagtcagtg agcaaaccgc gagggtgcag ctgcctaagg caaaacgaat 1440

gactggggtg 1450

<210> 883
<211> 1525
<212> DNA
<213> Finegoldia magna

<400> 883
ttaaattgag agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca 60

agtcgaacgg gatttagtaa acagaagctt cggtggaaga ttactaatga gagtggcgaa 120

cgggtgagta acgcgtgagc aacctgccta tgacagtggg atagcctcgg gaaaccggga 180

ttaataccgc ataaaatcgt agaaacacat gttttaacgg tcaaagattt atcggtcata 240

gatgggctcg cgtctgatta gctagttggt gagataacag cccaccaagg cgacgatcag 300

tagccggtct gagaggatga acggccacat tggaactgag acacggtcca aactcctacg 360

ggaggcagca gtggggaata ttgcacaatg gggaaaccc tgatgcagcg acgccgcgtg 420

aacgaagaag gtattcgtat cgtaaagttc tgtcctatgg gaagataatg acagtaccat 480

agaagaaagc tccggctaaa tacgtgccag cagccgcggt aatacgtatg gagcgagcgt 540

tgtccggaat tattgggcgt aaagggtacg caggcggttt aataagtcga atgttaaaga 600

tcggggctca accccgtaaa gcattggaaa ctgataaact tgagtagtgg agaggaaagt 660

ggaattccta gtgtagtggt gaaatacgta gatattagga ggaataccag tagcgaaggc 720

gactttctgg acacaaactg acgctgaggt acgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga atgctaggtg ttgggggtca aacctcggtg 840

ccgaagttaa cacattaagc attccgcctg gggagtacgc acgcaagtgt gaaactcaaa 900

ggaattgacg gggacccgca caagcagcgg agcatgtggt ttaattcgat gcaacgcgaa 960

gaaccttacc agggcttgac atgtgggtga aaggtataga gatatacccc tctctttatg 1020

agacatccat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cctatactta gttaccagcg agtaatgtcg gggactctaa 1140

gtagactgcc gatgacaaat cggaggaagg tggggatgac gtcaaatcat catgcccttt 1200

atgtcctggg ctacacacgt gctacaatgg ttggtacaga gggaagctat atagtgatat 1260

aatgcaaaac tccaaagcca atcccagttc ggattgtagg ctgcaactcg cctacatgaa 1320

gtcggagttg ctagtaatcg cggatcagaa tgtcgcggtg aatgcgttcc cgggtcttgt 1380

acacaccgcc cgtcacacca tgggagttga taatacccga agcctgtgac ctaattgagg 1440

agcagtcgaa ggtaggattg atgactgggg tgaagtcgta acaaggtagc cgtatcggaa 1500

ggtgcggctg gatcacctcc tttct 1525

<210> 884
<211> 1291
<212> DNA
<213> Flavobacteriaceae genomosp. C1

<400> 884
gatgaacgct agcgggaggc ctaacacatg caagctgagc gagcggcgta cgggtgcgga 60

acacgtgtgc gacctgcctt tatctggggg atagcctttc gaaaggaaga ttaatactcc 120

ataatgaaag gcggatagag atgggcacgc gcaagattag ctagttggtg aggtaacggc 180

tcaccaaggc aatgatcttt agggggcctg agagggtgat cccccacact ggtactgaga 240

cacggaccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg gtgcaagcct 300

gaaccagcca tcccgcgtga aggacgactg cctatgggtt gtaaacttct tttgtatagg 360

gatatgaagg tactatacga ataagcaccg gctaactccg tgccagcagc cgcggtaata 420

cggagggtgc aagcgttatc cggatttatt gggtttaaag ggtccgtagg cggacttata 480

agtcagtggt gaaatcctgt cgcttaacga tagaactgcc attgatactg taagtcttga 540

gtatatttga ggtagctgga ataagtagtg tagcggtgaa atgcatagat attacttaga 600

acaccaattg cgaaggcagg ttaccaagat aactgacgct gagggacgaa agcgtgggga 660

gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatgctaact cgtttttgga 720

gcttcagaga ccaagcgaaa gtgataagtt agccacctgg ggagtacgct cgcaagagtg 780

aaactcaaag gagttgacgg gggcccgcac aagcggtgga ttatgtggtt taattcgatg 840

atacgcgagg aaccttacca agacttaaat ggtcaaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgttaggt taagtcctgc aacgagcgca acccctgtca ctagttgcca 960

tcatggggac tctagtgaga ctgcctacgc aagtaggagg aaggtgggga tgacgtcaaa 1020

tcatcacggc ccttacgtct tgggccacac acgtaataca atggccggca gagggcagct 1080

acacagcgat gtgatgcaaa tctcgccggt ctcagttcgg atggagtctg caactcgact 1140

ctagaagctg gaatcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt caagccatgg aagctggggg tacctgaagt cggtaccagg 1260

agctgcctag ggtaaaacta gtaactaggg c 1291

<210> 885
<211> 1480
<212> DNA
<213> Flavobacterium sp. NF2-1

<400> 885
agagtttgat cctggctcag gatgaacgct agcggcaggc ttaacacatg caagtcgagg 60

ggtaggagaa gcttgctttt ctgagaccgg cgcacgggtg cgtaacgcgt atgcaatcta 120

cctttcacag agggatagcc cagagaaatt tggattaata ccttatagta ttatagaatg 180

gcatcatttt ataattaaag atttatcggt gaaagatgag catgcgtccc attagctagt 240

tggtatggta acggcatacc aaggcaacga tgggtagggg tcctgagagg gagatccccc 300

acactggtac tgagacacgg accagactcc tacgggaggc agcagtgagg aatattggac 360

aatgggcgca agcctgatcc agccatgccg cgtgcaggat gacggtccta tggattgtaa 420

actgctttta tacaggaaga aacccctcta cgtgtagaga cttgacggta ctgtaagaat 480

aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccaa gcgttatccg 540

gaatcattgg gtttaaaggg tccgtaggcg gtcagataag tcagtggtga aagcccatcg 600

ctcaacggtg gaacggccat tgatactgtc tgacttgaat tattaggaag taactagaat 660

atgtagtgta gcggtgaaat gcttagagat tacatggaat accaattgcg aaggcaggtt 720

actactaata tattgacgct gatggacgaa agcgtgggta gcgaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatggatact agctgttggg cgcaagttca gtggctaagc 840

gaaagtgata agtatcccac ctggggagta cgaacgcaag tttgaaactc aaaggaattg 900

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgatacgc gaggaacctt 960

accaaggctt aaatgtagat tgaccggttt ggaaacagat ctttcgcaag acaatttaca 1020

aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt caggttaagt cctataacga 1080

gcgcaacccc tgttgttagt tgccagcgag tcatgtcggg aactctaacg agactgccag 1140

tgcaaactgt gaggaaggtg gggatgacgt caaatcatca cggcccttac gccttgggct 1200

acacacgtgc tacaatggcc ggtacagaga gcagccactg ggtgaccagg agcgaatcta 1260

taaaaccggt cacagttcgg atcggagtct gcaactcgac tccgtgaagc tggaatcgct 1320

agtaatcgga tatcagccat gatccggtga atacgttccc gggccttgta cacaccgccc 1380

gtcaagccat ggaagctggg ggtgcctgaa gtcggtgacc gcaaggagct gcctagggta 1440

aaactggtaa ctagggctaa gtcgtaacaa ggtagccgta 1480

<210> 886
<211> 1465
<212> DNA
<213> Flavonifractor plautii

<400> 886
cgctggcggc gtgcttaaca catgcaagtc gaacggggtg ctcatgacgg aggattcgtc 60

caatggattg agttacctag tggcggacgg gtgagtaacg cgtgaggaac ctgccttgga 120

gaggggaata acactccgaa aggagtgcta ataccgcatg aagcagttgg gtcgcatggc 180

tctgactgcc aaagatttat cgctctgaga tggcctcgcg tctgattagc tagtaggcgg 240

ggtaacggcc cacctaggcg acgatcagta gccggactga gaggttgacc ggccacattg 300

ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt gggcaatggg 360

cgcaagcctg acccagcaac gccgcgtgaa ggaagaaggc tttcgggttg taaacttctt 420

ttgtcgggga cgaaacaaat gacggtaccc gacgaataag ccacggctaa ctacgtgcca 480

gcagccgcgg taatacgtag gtggcaagcg ttatccggat ttactgggtg taaagggcgt 540

gtaggcggga ttgcaagtca gatgtgaaaa ctgggggctc aacctccagc ctgcatttga 600

aactgtagtt cttgagtgct ggagaggcaa tcggaattcc gtgtgtagcg gtgaaatgcg 660

tagatatacg gaggaacacc agtggcgaag gcggattgct ggacagtaac tgacgctgag 720

gcgcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 780

ggatactagg tgtgggggt ctgaccccct ccgtgccgca gttaacacaa taagtatccc 840

acctggggag tacgatcgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc 900

ggtggagtat gtggtttaat tcgaagcaac gcgaagaacc ttaccagggc ttgacatccc 960

actaacgagg cagagatgcg ttaggtgccc ttcggggaaa gtggagacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta 1080

ttgttagttg ctacgcaaga gcactctagc gagactgccg ttgacaaaac ggaggaaggt 1140

ggggacgacg tcaaatcatc atgcccctta tgtcctgggc cacacacgta ctacaatggt 1200

ggttaacaga gggaggcaat accgcgaggt ggagcaaatc cctaaaagcc atcccagttc 1260

ggattgcagg ctgaaacccg cctgtatgaa gttggaatcg ctagtaatcg cggatcagca 1320

tgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgagagtcgg 1380

gaacacccga agtccgtagc ctaaccgcaa ggagggcgcg gccgaaggtg ggttcgataa 1440

ttggggtgaa gtcgtaacaa ggtag 1465

<210> 887
<211> 1467
<212> DNA
<213> Flexispira rappini

<220>
<221> modified_base
<222> (1062)..(1062)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1075)..(1075)
<223> a, c, t, g, unknown or other

<400> 887
agagtttgat cctggctcag agtgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gatgaagctt ctagcttgct agaagtggat tagtggcgca cgggtgagta atgcataggt 120

tatgtgccct ttagtctggg atagccactg gaaacggtga ttaatactgg atactcccta 180

cgggggaaag gtttttcgct aaaggatcag cctatgtcct atcagcttgt tggtgaggta 240

atggctcacc aaggctatga cgggtatccg gcctgagagg gtgatcggac acactggaac 300

tgagacacgg tccagactcc tacgggaggc agcagtaggg aatattgctc aatgggggaa 360

accctgaagc agcaacgccg cgtggaggat gaaggtttta ggattgtaaa ctccttttgt 420

aagagaagat tatgacggta tcttacgaat aagcgccggc taactccgtg ccagcagccg 480

cggtaatacg gagggtgcaa gcgttactcg gaatcactgg gcgtaaagag cgcgtaggcg 540

ggtggtcaag tcagatgtga aatcctgtag cttaactaca gaactgcatt tgaaactgac 600

catctagagt atgggagagg taggtggaat tcttggtgta ggggtaaaat ccgtagagat 660

caagaggaat actcattgcg aaggcgacct gctggaacat tactgacgct gatgcgcgaa 720

agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccctaaac gatgaatgct 780

agttgttgcc ctgcttgtca gggcagtaat gcagctaacg cattaagcat tccgcctggg 840

gagtacggtc gcaagattaa aactcaaagg aatagacggg gacccgcaca agcggtggag 900

catgtggttt aattcgaagc tacgcgaaga actcttacct aggcttgaca ttgatagaat 960

ccgctagaga tagtggagtg ctggcttgcc agagcttgaa aacaggtgct gcacggctgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cngagcgcaa ccctnggtcc 1080

cttagttgct agcagttcgg ctgagcactc taaggagact gccttcgtaa ggaggaggaa 1140

ggtgaggacg acgtcaagtc atcatggccc ttacgcctag ggctacacac gtgctacaat 1200

gggacataca aaaagatgca ataccgcgag gtggagcaaa tctctaaaat gtctctcagt 1260

tcggattgta gtctgcaact cgactacata aagctggaat cgctagtaat cgtgaatcag 1320

caatgtcacg gtgaatacgt tcccgggtct tgtactcacc gcccgtcaca ccatgggagt 1380

tgtattcgcc ttaagtcggg atactaaatt ggttaccgcc cacggcggat gcagcgactg 1440

gggtgaagtc gtaacaaggt aaccgta 1467

<210> 888
<211> 1541
<212> DNA
<213> Flexistipes sinusarabici

<400> 888
agagtttgat cctggctcag aacgaacgct ggcggcgtgc ttaacacatg caagtcaggg 60

ggaatcctcc cttcggggag gtagtacacc ggcgcacggg tgagtaacgc gtgagtgacc 120

tacccattag acctggataa cccggcgaaa gttgggctaa gacaggatgt gttaatacac 180

ttcatggtgt attgataaag gcaggtttcg gcttgtgcta atggatgggc tcgcgtctga 240

ttagctagtt ggtaaggtaa aggcttacca aggcgacgat cattaggcgg cctgagaggg 300

tggtcgccca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 360

attttgcgca atgggcgaga gcctgacgca gcgacgccgc gtggacgagg aaggccttcg 420

ggtcgtaaag tccttttta cgggaagaaa gttattaaca gtaactggtt aatatttgac 480

ggtaccgtaa gaataagccc cggctaactc cgtgccagca gccgcggtaa tacggagggg 540

gcgagcgttg ttcggaatta ctgggcgtaa agcgtacgta ggcggcgtgg taagtcggag 600

gttaaaggct acggctcaac cgtagtaggg cctttgatac tatcatgcta gagtgtcgga 660

gggggtagcg gaattccctg tgtagcggtg aaatgcgtag atatagggaa gaacaccagt 720

agcgaaggcg gctacctggc cgatcactga cgctgaggta cgagagcgtg ggtagcaaac 780

aggattagat accctggtag tccacgctgt aaacgatgga cgctaggtgt tggaggaacc 840

gacccttca gtgccgaagc caacgcgtta agcgtcccgc ctggggagta cgaccgcaag 900

gttaaaactc aaaggaattg acgggggccc gcacaagcgg tggagcacgt ggtttaattc 960

gatgctaacc gaagaacctt acctggtctt gacatcctcc ggagggacta gagatagttc 1020

tgtgcccgcc tttggcggga gcggagagac aggtgctgca tggctgtcgt cagctcgtgc 1080

cgtgaggtgt tgggttaagt cccgcaacga gcgcaacccc tattcatagt tgccatcggt 1140

aaggccgggc actctatgga tactgcccgt gataaacggg aggaaggtgg ggacgacgtc 1200

aagtcatcat ggcctttatg accagggcta cacacgtgct acaatggtac gtacagaggg 1260

cagcgaagcc gcgaggtgta gcgaatccct aaaagcgtgc cttagttcgg attgtagtct 1320

gcaattcgac tacatgaagg cggaatcgct agtaatcgca ggtcagcaaa actgcggtga 1380

atacgttccc gggccttgta cacaccgccc gtcacaccac gggagttggt tgtacctgaa 1440

gccggtggcc caactgcgga gggagccgtt tatggtatga ctggcaactg gggtgaagtc 1500

gtaacaaggt agccgtaccg gaaggtgtgg ctggatcacc t 1541

<210> 889
<211> 1530
<212> DNA
<213> Francisella novicida

<400> 889
ttaaactgaa gagtttgatc ctggctcaga ttgaacgctg gtggcatgct taacacatgc 60

aagtcgaacg gtaacaggtc ttcggatgct gacgagtggc ggacgggtga gtaacgcgta 120

ggaatctgcc catttgaggg ggataccagt tggaaacgac tgttaatacc gcataatatc 180

tgtggattaa aggtggcttt cgggctgtcg cagatggatg agcctgcgtt ggattagcta 240

gttggtgggg taagggccca ccaaggctac gatccatagc tgatttgaga ggatgatcag 300

ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtgg ggaatattgg 360

acaatggggg caaccctgat ccagcaatgc catgtgtgtg aagaaggccc tagggttgta 420

aagcacttta gttggggagg aaagcctcaa ggttaatagc cttgggggag gacgttaccc 480

aaagaataag caccggctaa ctccgtgcca gcagccgcgg taatacgggg ggtgcaagcg 540

ttaatcggaa ttactgggcg taaagggtct gtaggtggtt tgttaagtca gatgtgaaag 600

cccagggctc aaccttggaa ctgcatttga tactggcaaa ctagagtacg gtagaggaat 660

ggggaatttc tggtgtagcg gtgaaatgcg tagagatcag aaggaacacc aatggcgaag 720

gcaacattct ggaccgatac tgacactgag ggacgaaagc gtggggatca aacaggatta 780

gataccctgg tagtccacgc tgtaaacgat gagtactagc tgttggagtc ggtgtaaagg 840

ctctagtggc gcagctaacg cgataagtac tccgcctggg gactacggcc gcaaggctaa 900

aactcaaagg aattgacggg gacccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttacctg gtcttgacat cctgcgaact ttctagagat agattggtgc 1020

cttcgggaac gcagtgacag gtgctgcacg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccccta ttgatagtta ccatcattaa gttgggtact 1140

ctattgagac tgccgctgac aaggcggagg aaggtgggga cgacgtcaag tcatcatggc 1200

ccttacgacc agggctacac acgtgctaca atgggtatta cagagggctg cgaaggtgcg 1260

agctggagcg aaactcaaaa aggtactctt agtccggatt gcagtctgca actcgactgc 1320

atgaagtcgg aatcgctagt aatcgcaggt cagaatactg cggtgaatac gttcccgggt 1380

cttgtacaca ccgcccgtca caccatggga gtgggttgct ccagaagtag atagcttaac 1440

gaatgggcgt ttaccacgga gtgattcatg actggggtga agtcgtaaca aggtagccgt 1500

aggggaacct gcggctggat cacctcctta 1530

<210> 890
<211> 1518
<212> DNA
<213> Francisella philomiragia

<400> 890
agagtttgat catggctcag attgaacgct ggtggcatgc ttaacacatg caagtcgaac 60

ggtaacaggt cttcggatgc tgacgagtgg cggacgggtg agtaacgcgt aggaatctgc 120

ccatttgagg gggataccag ttggaaacga ctgttaatac cgcataatat ctgtggatta 180

aaggtggctt aggctgccgc agatggatga gcctgcgttg gattagctag ttggtggggt 240

aagggcctac caaggctacg atccatagct gatttgagag gatgatcagc cacattggga 300

ctgagacacg gcccaaactc ctacgggagg cagcagtggg gaatattgga caatggggga 360

aaccctgatc cagcaatgcc atgtgtgtga agaaggctct agggttgtaa agcactttag 420

ttggggagga aagcctataa gttaatagct tgtaggaagg acgttaccca aagaataagg 480

accggctaac tccgtgccag cagccgcggt aatacggggg gtccgagcgt taatcggaat 540

tactgggcgt aaagggtctg taggtggttt gttaagtcag atgtgaaagc ccagggctca 600

accttggaac tgcatttgat actggcaaac tagagtatgg tagaggaatg gggaatttct 660

ggtgtagcgg tgaaatgcgt agagatcaga aggaacacca atggcgaagg caacattctg 720

gaccaatact gacactgagg gacgaaagcg tggggatcaa acaggattag ataccctggt 780

agtccacgct gtaaacgatg agtactagct gttggattcg gtgtaaagga tctagtggcg 840

cagctaacgc gttaagtact ccgcctgggg actacggccg caaggctaaa actcaaagga 900

attgacgggg acccgcacaa gcggtggagc atgtggttta attcgatgca acgcgaagaa 960

ccttacctgg tcttgacatc ctgcgaactt tctagagata gattggtgcc ttcgggaacg 1020

cagtgacagg tgctgcacgg ctgtcgtcag ctcgtgttgt gaaatgttgg gttaagtccc 1080

gcaacgagcg caacccctat tgatagttac catcattaag ttgggtactc tattgagact 1140

gccgctgaca aggcggagga aggtggggac gacgtcaagt catcatggcc cttacgacca 1200

gggctacaca cgtgctacaa tgggtattac agagggctgc gaaggtgcga gctggagcga 1260

aactcagaaa ggtactctta gtccggattg cagtctgcaa ctcgactgca tgaagtcgga 1320

atcgctagta atcgcaggtc agaatactgc ggtgaatacg ttcccgggtc ttgtacacac 1380

cgcccgtcac accatgggag tgggttgctc cagaagtaga tagcttaacg aatgggcgtt 1440

taccacggag tgattcatga ctggggtgaa gtcgtaacaa ggtagccgta ggggaacctg 1500

cggctggatc acctcctt 1518

<210> 891
<211> 1530
<212> DNA
<213> Francisella tularensis

<400> 891
ttaaactgaa gagtttgatc ctggctcaga ttgaacgctg gtggcatgct taacacatgc 60

aagtcgaacg gtaacaggtc ttaggatgct gacgagtggc ggacgggtga gtaacgcgta 120

ggaatctgcc catttgaggg ggataccagt tggaaacgac tgttaatacc gcataatatc 180

tgtggattaa aggtggcttt cgggctgtcg cagatggatg agcctgcgtt ggattagcta 240

gttggtgggg taagggccca ccaaggctac gatccatagc tgatttgaga ggatgatcag 300

ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtgg ggaatattgg 360

acaatggggg caaccctgat ccagcaatgc catgtgtgtg aagaaggccc tagggttgta 420

aagcacttta gttggggagg aaagcctcaa ggttaatagc cttgggggag gacgttaccc 480

aaagaataag caccggctaa ctccgtgcca gcagccgcgg taatacgggg ggtgcaagcg 540

ttaatcggaa ttactgggcg taaagggtct gtaggtggtt tgttaagtca gatgtgaaag 600

cccagggctc aaccttggaa ctgcatttga tactggcaaa ctagagtacg gtagaggaat 660

ggggaatttc tggtgtagcg gtgaaatgcg tagagatcag aaggaacacc aatggcgaag 720

gcaacattct ggaccgatac tgacactgag ggacgaaagc gtggggatca aacaggatta 780

gataccctgg tagtccacgc tgtaaacgat gagtactagc tgttggagtc ggtgtaaagg 840

ctctagtggc gcagctaacg cgataagtac tccgcctggg gactacggcc gcaaggctaa 900

aactcaaagg aattgacggg gacccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttacctg gtcttgacat cctgcgaact ttctagagat agattggtgc 1020

cttcgggaac gcagtgacag gtgctgcacg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccccta ttgatagtta ccatcattaa gttgggtact 1140

ctattaagac tgccgctgac aaggcggagg aaggtgggga cgacgtcaag tcatcatggc 1200

ccttacgacc agggctacac acgtgctaca atgggtatta cagagggctg cgaaggtgcg 1260

agctggagcg aaactcaaaa aggtactctt agtccggatt gcagtctgca actcgactgc 1320

atgaagtcgg aatcgctagt aatcgcaggt cagaatactg cggtgaatac gttcccgggt 1380

cttgtacaca ccgcccgtca caccatggga gtgggttgct ccagaagtag atagcttaac 1440

gaatgggcgt ttaccacgga gtgattcatg actggggtga agtcgtaaca aggtagccgt 1500

aggggaacct gcggctggat cacctcctta 1530

<210> 892
<211> 1445
<212> DNA
<213> Fulvimonas sp. NML 060897

<400> 892
gcctaacaca tgcaagtcga acggcagcac agtggagctt gctccatggg tggcgagtgg 60

cggacgggtg agtaaggcat cgggatctac ccagacgtgg gggataacgt agggaaactt 120

acgctaatac cgcatacgtc ctacgggaga aagcggggga ccttcgggcc tcgcgcggct 180

ggacgaaccg atgtgcgatt agctagttgg tggggtaaag gctcaccaag gcgacgatcg 240

ctagctggtc tgagaggatg atcagccaca ctgggactga gacacggccc agactcctac 300

gggaggcagc agtggggaat attggacaat gggcgcaagc ctgatccagc aatgccgcgt 360

gtgtgaagaa ggccttcggg ttgtaaagca cttttatcag gagcgaaata ctgccggcta 420

atacccggcg gggctgacgg tacctgagga ataagcaccg gctaacttcg tgccagcagc 480

cgcggtaata cgaagggtgc aagcgttaat cggaattact gggcgtaaag cgtgcgtagg 540

cggttcttta agtctgctgt gaaatccccg ggctcaacct gggaatggca gtggatactg 600

gggagctaga gtgtgataga ggatggtgga attcccggtg tagcggtgaa atgcgtagag 660

atcgggagga acatcagtgg cgaaggcggc catctggatc aacactgacg ctgaggcacg 720

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccctaa acgatgcgaa 780

ctggatgttg gtctcaactc ggagatcagt gtcgaagcta acgcgttaag ttcgccgcct 840

ggggagtacg gtcgcaagac tgaaactcaa aggaattgac gggggcccgc acaagcggtg 900

gagtatgtgg tttaattcga tgcaacgcga agaaccttac ctggccttga catgtccgga 960

atcctgcaga gatgcgggag tgccttcggg aatcggaaca caggtgctgc atggctgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgtccttag 1080

ttgccagcac gtaatggtgg gaactctaag gagactgccg gtgacaaacc ggaggaaggt 1140

ggggatgacg tcaagtcatc atggcccttа cggccagggc tacacacgta ctacaatggt 1200

cggtacagag ggttgcaata ccgcgaggtg gagccaatcc cagaaagccg atcccagtcc 1260

ggatcggagt ctgcaactcg actccgtgaa gtcggaatcg ctagtaatcg cagatcagct 1320

atgctgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgggagtga 1380

gctgctccag aagccgttag tctaaccgca agggggacga cgaccacgga gtggttcatg 1440

actgg 1445

<210> 893
<211> 1308
<212> DNA
<213> Fusobacterium canifelinum

<400> 893
tggctcagga tgaacgctga cagaatgctt aacacatgca agtctactgt ggcggacggg 60

tgagtaacgc gtaaagaact tgcctcacag ctagggacaa catttggaaa cgaatgctaa 120

tacctaatat tgaaaggcgc tgtgagagag ctttgcgtcc cattagctag ttggagaggt 180

aacggctcac caaggcgatg atgggtagcc ggcctgagag ggtgatcggc cacaagggga 240

ctgagacacg gcccttactc ctacgggagg cagcagtggg gaatattgga caatggacca 300

agtctgatcc agcaattctg tgtgcacgat gaagtttttc ggaatgtaaa gtgctttcag 360

ttgggaagat gacggtacca acagaagaag tgacggctaa atacgtgcca gcagccgcgg 420

taatacgtat gtcacaagcg ttatccggat ttattgggcg taaagcgcgt ctaggtggtt 480

atgtaagtct gatgtgaaaa tgcagggctc aactctgtat tgcgttggaa actgtgtaac 540

tagagtactg gagaggtaag cggaactaca agtgtagagg tgaaattcgt agatatttgt 600

aggaatgccg atggggaagc cagcttactg gacagactga cgctgaagcg cgaaagcgtg 660

ggtagcaaac aggattagat accctggtag tccacgccgt aaacgatgat tactaggtgt 720

tggggcctca gcgcccaagc aaacgcgata agtaatccgc ctggggagta cgtacgcaag 780

tatgaaactc aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc 840

gacgcaacgc gaggaacctt accagcgttt gacatcgaca ggtggtgcat ggctgtcgtc 900

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct ttcgtatgtt 960

accatcatgg ggactcatgc gatactgcct acgatgagta ggaggaaggt ggggatgacg 1020

tcaagtcatc atgccccttа tacgctgggc tacacacgtg ctacaatggg tagcagagag 1080

ctgcaaagcc gtgaggtgga gctaatctca gctattctta gttcggatgt actctgcaac 1140

tcgagtacag aagttggaat cgctagtaat cgcgaatcag caatgtcgcg gtgaatacgt 1200

tctcgggtct tgtacacacc gcccgtcaca ccacgagagt tggttgcacc tgaagtagca 1260

gcctagggat gctccgaggg tgtgattagc gattggggtg aagtcgta 1308

<210> 894
<211> 1294
<212> DNA
<213> Fusobacterium genomosp. C1

<400> 894
gatgaacgct gacagaatgc ttaacacatg caagtcaacg agtggcggac gggtgagtaa 60

cgcgtaaaga acttgcctca cagctaggga caacatttag aaatgaatgc taatacctga 120

tattgaaagg cactgtgaga gagctttgcg tcccattagc tagttggaga ggtaacagct 180

caccaaggcg atgatgggta gccggcctga gagggtgaac ggccacaagg ggactgagac 240

acggccctta ctcctacggg aggcagcagt ggggaatatt ggacaatgga cgagagtctg 300

atccagcaat tccgtgtgca cgatgaagtt tttcggaatg taaagtgctt tcagttggga 360

agatgacggt accaacagaa gaagtgacgg ctaaatacgt gccaacagcc gcggtaatac 420

gtatgtcacg agcgttatcc ggatttattg ggcgtaaagc gcgcctaggt ggttatgtaa 480

gtctgatgtg aaaatgcagg gctcaactct gtattgcgtt ggaaactgta taactagagt 540

actggagagg taagcggaac tacaagtgta gaggtgaaat tcgtagatat ttgtaggaat 600

gccgatgggg aagccagctt actggacaga ctgacgctaa agcgcgagag cgtgggtagc 660

aaacaggatt agataccctg gtagtccacg ctgtaaacga tgattactag gtgttggggc 720

ctcagcgccc aagcaaacgc gataagtaat ccgcctgggg agtacgtacg caagtatgaa 780

actcaaagga attgacgtgg acccgcacaa gcggtggagc atgtggttta attcgacgca 840

acgcgaggaa ccttaccagc gtttgacatc gacaggtggt gcatggctgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctttcgta tgttaccatc 960

atggggactc acgcgatact gcctacgatg agtaggagga aggtggggat gacgtcaagt 1020

cattatgccc cttatacgct gggctacaca cgtgctacaa tgggtagcag agagttgcaa 1080

agccgtgagg tgaagctaat ctcagctatt tttagttcgg atgtactctg caactcgagt 1140

acagaagttg gaatcgctag taatcgcgaa tcagcaatgt cgcggtgaat acgttctcgg 1200

gtcttgtaca caccgcccgt cacaccacga gagttggttg cacctgaagt agcggcctag 1260

ggatgctccg agggtgtgat tagcgattgg ggtg 1294

<210> 895
<211> 1294
<212> DNA
<213> Fusobacterium genomosp. C2

<400> 895
gatgaacgct gacagaatgc ttaacacatg caagtcaact ggtggcggac gggtgagtaa 60

cgcgtaaaga acttgcctca cagctaggga caacatttag aaatgaatgc taatacctga 120

tattgaaagg cactgtgaga gagctttgcg tcccattagc tagttggaga ggtaacagct 180

caccaaggcg atgatgggta gccggcctga gagggtgaac ggccacaagg ggactgagac 240

acggccctta ctcctacggg aggcagcagt ggggaatatt ggacaatgga cgagagtctg 300

atccagcaat tctgtgtgca cgatgaagtt tttcggaatg caaagtgctt tcagttggga 360

agatgacggt accaacagaa gaagtgacgg ctaaatacgt gccagcagcc gcggtaatat 420

gtatgtcacg agcgttatcc ggatttattg ggcgtaaagc gcgtctaggt ggttatgtaa 480

gtctgatgtg aaaatgcagg gctcaactct gtattgcgtt ggaaactgtg taactagagt 540

actggagagg taagcggaac tacaagtgta gaggtgaaat tcgtagatat ttgtaggaat 600

gccgatgggg aagccagctt actggacaga ctgacgctaa agcgcgaaag cgtgggtagc 660

aaacaggatt agataccctg gtagtccacg ctgtaaacga tgattactag gtgttggggc 720

ctcagcgccc aagcaaacgc gataagtaat ccgcctgggg agtacgtacg caagtatgaa 780

actcaaagga attgacgggg acccgcacaa gcggtggagc atgtggttta attcgacgca 840

acgcgaggaa ccttaccagc gtttgacatc gacaggtggt gcatggctgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctttcgta tgttaccatc 960

atggggactc atgcgatact gcctacgatg agtaggagga aggtggggat gacgtcaagt 1020

catcatgccc cttatacact gggctacaca cgtgctacaa tgggtagcag agggttgcaa 1080

agccgtgagg tgaagctaat ctcggctatt cttagttcgg atgtactctg caactcgagt 1140

acagaagttg gaatcgctag taatcgcgaa tcagcaatgt cgcggtgaat acgttctcgg 1200

gtcttgtaca caccgcccgt cacaccacga gagttggttg cacctgaagt agcagcctag 1260

ggatgctccg agggtgtgat tagcgattgg ggtg 1294

<210> 896

<211> 1509
<212> DNA
<213> Fusobacterium gonidiaformans

<400> 896
gaacgaagag tttgatcctg gctcaggatg aacgctgaca gaatgcttaa cacatgcaag 60

tcgactcgag tcttcggact tgggtggcgg acgggtgagt aacgcgtaaa gaacttgcct 120

catagtctgg gacaacatct ggaaacggat gctaataccg gatattatgc tttcttcgca 180

tggaggaagt atgaaagcta tatgcgctat gagagagctt tgcgtcccat tagctagttg 240

gtgaggtaac ggcccaccaa ggcgatgatg ggtagccggc ctgagagggt gaacggccac 300

aaggggactg agacacggcc cttactccta cgggaggcag cagtggggaa tattggacaa 360

tggaccaaaa gtctgatcca gcaattctgt gtgcacgatg acgtttttcg gaatgtaaag 420

tgctttcagt cgggaagaag caagtgacgg taccgacaga agaagcgacg gctaaatacg 480

tgccagcagc cgcggtaata cgtatgtcgc aagcgttatc cggatttatt gggcgtaaag 540

cgcgtctagg cggcaaggaa agtctgatgt gaaaatgcgg ggctcaactc cgtattgcgt 600

tggaaactgc cttactagag tactggagag gtaggcggaa ctacaagtgt agaggtgaaa 660

ttcgtagata tttgtaggaa tgccgatggg gaagccagcc tactggacag atactgacgc 720

taaagcgcga aagcgtgggt agcaaacagg attagatacc ctggtagtcc acgctgtaaa 780

cgatgattac taggtgttgg gggtcaaacc tcagcgccca agctaacgcg ataagtaatc 840

cgcctgggga gtacgtacgc aagtatgaaa ctcaaaggaa ttgacgggga cccgcacaag 900

cggtggagca tgtggtttaa ttcgacgcaa cgcgaggaac cttaccagcg tttgacatcc 960

tacaaagagt gcagagatgc gcttgtgctt cttcggaaga atgtagtgac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 1080

tatcgtatgt taccagcctt tagttgggga ctcatgcgat actgcctgcg acgagcagga 1140

ggaaggtggg gatgacgtca agtcatcatg ccccttatac gctgggctac acacgtgcta 1200

caatgggtag tacagagagc ggcgaacccg cgaggggggag caaatctcag aaaactattc 1260

ttagttcgga ttgtactctg caactcgagt acatgaagtt ggaatcgcta gtaatcgcaa 1320

atcagcaatg ttgcggtgaa tacgttctcg ggtcttgtac acaccgcccg tcacaccacg 1380

agagttggtt gcacctgaag tagcaggcct aaccgtaagg aaggatgctc cgagggtgtg 1440

gttagcgatt ggggtgaagt cgtaacaagg tatccgtacg ggaacgtgcg gatggatcac 1500

ctccttttct 1509

<210> 897
<211> 1671
<212> DNA
<213> Fusobacterium mortiferum

<400> 897
aaaaaagtat tgacgaaaaa tattatttgt ggtaatatat accttgtccg cgagagagcg 60

gaactgatga ataaggacat tagcaacaga atagagaaag acaattaatg caaacacaac 120

aataaattgg tgtaaaacaa tcagtaaatt ttactgagtt atatagattg aacgaagagt 180

ttgatcctgg ctcaggatga acgctgacag aatgcttaac acatgcaagt ctacttgatc 240

cttcgggtga tggtggcgga cgggtgagta acgcgtaaag aacttgccct gcagtctggg 300

acaacatttg gaaacgaatg ctaataccgg atattatgtg agtttcgcat gaaattcata 360

tgaaagctat atgcgctgca ggagagcttt gcgtcctatt agctagttgg tgaggtaacg 420

gctcaccaag gcgatgatag gtagccggcc tgagagggtg aacggccaca aggggactga 480

gacacggccc ttactcctac gggaggcagc agtggggaat attggacaat ggaccaaaag 540

tctgatccag caattctgtg tgcacgatga agtttttcgg aatgtaaagt gctttcagtt 600

gggacgaagt aagtgacggt accaacagaa gaagcgacgg ctaaatacgt gccagcagcc 660

gcggtaatac gtatgtcgca agcgttatcc ggatttattg ggcgtaaagc gcgtctaggc 720

ggtttggtaa gtctgatgtg aaaatgcggg gctcaactcc gtattgcgtt ggaaactgtc 780

aaactagagt actggagagg tgggcggaac tacaagtgta gaggtgaaat tcgtagatat 840

ttgtaggaat gccgatgggg aagccagccc actggacaga tactgacgct aaagcgcgaa 900

agcgtgggta gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgattact 960

aggtgttggg ggtcgaacct cagcgcccaa gctaacgcga taagtaatcc gcctggggag 1020

tacgtacgca agtatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 1080

gtggtttaat tcgacgcaac gcgaggaacc ttaccagcgt ttgacatcct aagaaattag 1140

cagagatgct tttgtgcccc ttcgggggaa cttagtgaca ggtggtgcat ggctgtcgtc 1200

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct ttcgtatgtt 1260

gccatcatta agttgggcac tcatgcgata ctgcctgcga tgagcaggag gaaggtgggg 1320

atgacgtcaa gtcatcatgc cccttatacg ctgggctaca cacgtgctac aatgggtagt 1380

acagagagtc gcaaacctgc gaggggggagc taatctcaga aaactattct cagttcggat 1440

tgtactctgc aactcgagta catgaagttg gaatcgctag taatcgcaaa tcagctatgt 1500

tgcggtgaat acgttctcgg gtcttgtaca caccgcccgt cacaccacga gagttggttg 1560

cacctgaagt agcaggccta accgcaagga gggatgctcc gagggtgtga ttagcgattg 1620

gggtgaagtc gtaacaaggt atccgtacgg gaacgtgcgg atggatcacc t 1671

<210> 898
<211> 1473
<212> DNA
<213> Fusobacterium naviforme

<400> 898
tagagtttga tcatggctca ggatgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cgagagctac aggaggaagt tttcggatgg aatccggtag atcgagtggc ggacgggtga 120

gtaacgcgtg gggaacctgc ctcatacagg gggataacag ttggaaacga ctgttaatac 180

cgcataagac cacagagtcg catgactcag gggtaaaaac tccggtggta tgagatggac 240

ccgcgttcga ttagccagtt ggcggggtaa cggcccacca aagcgacgat cgatagccga 300

tttgagagaa tgaccggcca cattgggact gagacacggc ccaaactcct acgggaggca 360

gcagtgggga atattgcaca atgggggaa ccctgatgca gcgacgccgc gtgagtgaag 420

aagtatttcg gtatgtaaag ctctatcagc agggaagaag atgacggtac ctgagtaaga 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt agggggcaag cgttatccgg 540

atttactggg tgtaaaggga gcgcagacgg ctatgcaagt ctgaagtgaa agcccggggc 600

tcaaccccgg gactgctttg gaaactgtgy agctagagtg tcggagaggt agcagaattc 660

ccagtgtagc ggtgaaatgc gtagatattg ggaagaatac cggtggcgaa ggcgcttact 720

ggacgataac tgacgttcag gctcgaaggc gtggggagca aacaggatta gataccctgg 780

tagtccacgc ggtaaacgat gaatactagg tgttggcatc caaaggatgt cggtgccgtc 840

gcaaacgcaa taagtattcc acctggggag tacgttcgca agaatgaaac tcaaaggaat 900

tgacggggac ccgcacaagc agtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttaccaagtc ttgacatccc gatgaccggc ctgtaaagag gccttctctt cggagcattg 1020

gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccctattg ccagtagcca gcaggtaaag ctgggcactc tggcgagact 1140

gcctgggata accaggagga aggtggggat gacgtcaaat catcatgccc cttatgattt 1200

gggcaacaca cgtgctacaa tggcgtaaac agagagaagc gaaggagcga tccggagcga 1260

atctaaaaat aacgtctcag ttcggactgc agtctgcaac tcgactgcac gaagctggaa 1320

ttgctagtaa tcgcgaatca gcatgtcgcg gtgaatacgt tcccgggtct tgtacacacc 1380

gcccgtcaca ccatgggagt cagcaacgcc cgaagtcagt gacccaacct tagggaggga 1440

gctgccgaag gcggggcgga taactggggt gaa 1473

<210> 899
<211> 1330
<212> DNA
<213> Fusobacterium necrogenes

<220>
<221> modified_base
<222> (43)..(43)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (167)..(167)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (189)..(189)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (243)..(243)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (258)..(258)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (261)..(261)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (302)..(302)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (314)..(314)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (361)..(361)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (632)..(632)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (846)..(846)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (887)..(887)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (900)..(900)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (902)..(902)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (914)..(914)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (997)..(997)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1074)..(1074)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1091)..(1091)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1139)..(1139)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1172)..(1172)
<223> a, c, t, g, unknown or other

<400> 899
tggtggcgga cgggtgagta acgcgtaaag aacttgccct gcngtctggg acaacatttg 60

gaaacgaatg ctaataccgg atattatgtg agtttcgcat gaaattcata tgaaagctat 120

atgcgctgtg ggagagcttt gcgtcctatt agctagttgg tgaggtnacg gctcaccaag 180

gcgatgatng gtagccggcc tgagagggtg aacggccaca aggggactga gacacggccc 240

ttnctcctac gggaggcngc ngtggggaat attggacaat ggaccaaaag tctgatccag 300

cnattctgtg tgcncgatga agtttttcgg aatgtaaagt gctttcagtt gggacgaagt 360

nagtgacggt accaacagaa gaagcgacgg ctaaatacgt gccagcagcc gcggtaatac 420

gtatgtcgca agcgttatcc ggatttattg ggcgtaaagc gcgtctaggc ggtttggtaa 480

gtctgatgtg aaaatgcggg gctcaactcc gtattgcgtt ggaaactgcc aaactagagt 540

actggagagg tgggcggaac tacaagtgta gaggtgaaat tcgtagatat ttgtaggaat 600

gccgatgggg aagccagccc actggacaga tnctgacgct aaagcgcgaa agcgtgggta 660

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgattact aggtgttggg 720

ggtcgaacct cagcgcccaa gctaacgcga taagtaatcc gcctggggag tacgtacgca 780

agtatgaaac tcaaaggaat tgacggggac cgcacaagcg gtggagcatg tggtttaatt 840

cgacgnaacg cgaggaacct taccagcgtt tgacatccta agaaatnagc agagatgctn 900

tngtgcttcg gggnaactta gtgacaggtg gtgcatggct gtcgtcagct cgtgtcgtga 960

gatgttgggt taagtcccgc aacgagcgca acccctntcg tatgttgcca tcattaagtt 1020

gggcactcat gcgatactgc ctgcgatgag caggaggaag gtggggatga cgtnaagtca 1080

tcatgcccct natacgctgg gctacacacg tgctacaatg ggtagtacag agagtcgcna 1140

acctgcgagg gggagctaat ctcagaaaac tnttctcagt tcggattgta ctctgcaact 1200

cgagtacatg aagttggaat cgctagtaat cgcaaatcag ctatgttgcg gtgaatacgt 1260

tctcgggtct tgtacacacc gcccgtcaca ccacgagagt tggttgcacc tgaagtagca 1320

ggcctaaccg 1330

<210> 900
<211> 1487
<212> DNA
<213> Fusobacterium necrophorum

<400> 900
tttgatcctg gctcaggatg aacgctgaca gaatgcttaa cacatgcaag tcgactcgag 60

tcttcggact tgggtggcgc acgggtgagt aacgcgtaaa gaacttgcct cttagaccgg 120

gacaacatct ggaaacggat gctaataccg gatattatgg ttttttcgca tggaggaatc 180

atgaaagcta gatgcgctaa gagagagctt tgcgtcccat tagctagttg gtgaggtaac 240

ggcccaccaa ggcaatgatg ggtagccggc ctgagagggt gaacggccac aaggggactg 300

agacacggcc cttactccta cgggaggcag cagtggggaa tattggacaa tggaccacaa 360

gtctgatcca gcaattctgt gtgcacgatg acgtttttcg gaatgtaaag tgctttcagt 420

cgggaagaag tcagtgacgg taccgacaga agaagcgacg gctaaatacg tgccagcagc 480

cgcggtaata cgtatgtcgc aagcgttatc cggatttatt gggcgtaaag cgcgtctagg 540

cggcaaggaa agtctgatgt gaaaatgcgg agctcaactc cgtatggcgt tggaaactgc 600

cttactagag tactggagag gtaggcggaa ctacaagtgt agaggtgaaa ttcgtagata 660

tttgtaggaa tgccgatggg gaagccagcc tactggacag atactgacgc taaagcgcga 720

aagcgtgggt agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgatgattac 780

taggtgttgg gggtcaaacc tcagcgccca agctaacgcg ataagtaatc cgcctgggga 840

gtacgtacgc aagtatgaaa ctcaaaggaa ttgacgggga ccgcacaagc ggtggagcat 900

gtggtttaat tcgacgcaac gcgaggaacc ttaccagcgt ttgacatcct acgaacggag 960

cagagatgcg ccggtgccct ttcgggggaa cgtagtgaca ggtggtgcat ggctgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct atcgtatgtt 1080

accatccttc agttggggac tcatgcgata ctgcctgcga cgagcaggag gaaggtgggg 1140

atgacgtcaa gtcatcatgc cccttatacg ctgggctaca cacgtgctac aatgggtagt 1200

acagagagcg gcaaacccgc gaggggggagc aaatctcaga aaactattct tagttcggat 1260

ggtactctgc aactcgagta catgaagttg gaatcgctag taatcgcaaa tcagcaatgt 1320

tgcggtgaat acgttctcgg gtcttgtaca caccgcccgt cacaccacga gagtgggttg 1380

caactgaagt agcaggccta accttaggga aggatgctcc gagggtgtgg ttagcgattg 1440

gggtgaagtc gtaacaaggt atccgtacgg gaacgtgcgg ctggatc 1487

<210> 901
<211> 1523
<212> DNA
<213> Fusobacterium nucleatum

<400> 901
ttgaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtctacttg aatttgggtt ttttaacttc gatttgggtg gcggacgggt gagtaacgcg 120

taaagaactt gcctcacagc tagggacaac atttggaaac gaatgctaat acctgatatt 180

atgattatag ggcatcctag aattatgaaa gctatatgcg ctgtgagaga gctttgcgtc 240

ccattagcta gttggagagg taacggctca ccaaggcgat gatgggtagc cggcctgaga 300

gggtgaacgg ccacaagggg actgagacac ggcccttact cctacgggag gcagcagtgg 360

ggaatattgg acaatggacc gagagtctga tccagcaatt ctgtgtgcac gatgacgttt 420

ttcggaatgt aaagtgcttt cagttgggaa gaaaaaaatg acggtaccaa cagaagaagt 480

gacggctaaa tacgtgccag cagccgcggt aatacgtatg tcacgagcgt tatccggatt 540

tattgggcgt aaagcgcgtc taggtggtta tgtaagtctg atgtgaaaat gcagggctca 600

actctgtatt gcgttggaaa ctgtgtaact agagtactgg agaggtaagc ggaactacaa 660

gtgtagaggt gaaattcgta gatatttgta ggaatgccga tggggaagcc agcttactgg 720

acagatactg acgctgaagc gcgaaagcgt gggtagcaaa caggattaga taccctggta 780

gtccacgccg taaacgatga ttactaggtg ttgggggtcg aacctcagcg cccaagcaaa 840

cgcgataagt aatccgcctg gggagtacgt acgcaagtat gaaactcaaa ggaattgacg 900

gggacccgca caagcggtgg agcatgtggt ttaattcgac gcaacgcgag gaaccttacc 960

agcgtttgac atcttaggaa tgagacagag atgtttcagt gtcccttcgg ggaaacctaa 1020

agacaggtgg tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa ccccttтcgt atgttaccat cattaagttg gggactcatg cgatactgcc 1140

tacgatgagt aggaggaagg tggggatgac gtcaagtcat catgcccctt atacgctggg 1200

ctacacacgt gctacaatgg gtagaacaga gagttgcaaa gccgtgaggt ggagctaatc 1260

tcagaaaact attcttagtt cggattgtac tctgcaactc gagtacatga agttggaatc 1320

gctagtaatc gcgaatcagc aatgtcgcgg tgaatacgtt ctcgggtctt gtacacaccg 1380

cccgtcacac cacgagagtt ggttgcacct gaagtagcag gcctaaccgt aaggagggat 1440

gttccgaggg tgtgattagc gattggggtg aagtcgtaac aaggtatccg tacgggaacg 1500

tgcggatgga tcacctcctt tct 1523

<210> 902
<211> 1509
<212> DNA
<213> Fusobacterium periodonticum

<400> 902
ttgaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtctacttg aacttcggtt tgggtggcgg acgggtgagt aacgcgtaaa gaacttgcct 120

cacagttagg gacaacattt ggaaacgaat gctaatacct gatattatga ttttagggca 180

tcctaagatt atgaaagcta tatgcgctgt gagagagctt tgcgtcccat tagctagttg 240

gagaggtaac ggctcaccaa ggcgatgatg ggtagccggc ctgagagggt gaacggccac 300

aaggggactg agacacggcc cttactccta cgggaggcag cagtggggaa tattggacaa 360

tggaccaaga gtctgatcca gcaattctgt gtgcacgatg acgtttttcg gaatgtaaag 420

tgctttcagt tgggaagaaa aaaatgacgg taccaacaga agaagtgacg gctaaatacg 480

tgccagcagc cgcggtaata cgtatgtcac aagcgttatc cggatttatt gggcgtaaag 540

cgcgtctagg tggttatgta agtctgatgt gaaaatgcag ggctcaactc tgtattgcgt 600

tggaaactgc atgactagag tactggagag gtaagcggaa ctacaagtgt agaggtgaaa 660

ttcgtagata tttgtaggaa tgccgatggg gaagccagct tactggacag atactgacgc 720

taaagcgcga aagcgtgggt agcaaacagg attagatacc ctggtagtcc acgccgtaaa 780

cgatgattac taggtgttgg gggtcgaacc tcagcgccca agctaacgcg ataagtaatc 840

cgcctgggga gtacgtacgc aagtatgaaa ctcaaaggaa ttgacgggga cccgcacaag 900

cggtggagca tgtggtttaa ttcgacgcaa cgcgaggaac cttaccagcg tttgacatct 960

taggaatgag acagagatgt ttcagtgtcc cttcggggaa acctaaagac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 1080

tttcgtatgt taccatcatt aagttgggga ctcatgcgat actgcctgcg atgagcagga 1140

ggaaggtggg gatgacgtca agtcatcatg ccccttatac gctgggctac acacgtgcta 1200

caatgggtag tacagagagt cgcaaagccg cgaggtggag ctaatctcag aaaactattc 1260

ttagttcgga ttgtactctg caactcgagt acatgaagtt ggaatcgcta gtaatcgcga 1320

atcagcaatg tcgcggtgaa tacgttctcg ggtcttgtac acaccgcccg tcacaccacg 1380

agagttggtt gcacctgaag tagcaggcct aaccgtaagg agggatgctc cgagggtgtg 1440

attagcgatt ggggtgaagt cgtaacaagg tatccgtacg ggaacgtgcg gatggatcac 1500

ctcctttct 1509

<210> 903
<211> 1453
<212> DNA
<213> Fusobacterium russii

<220>
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (298)..(298)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (321)..(322)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (511)..(511)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (885)..(885)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (893)..(893)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (895)..(895)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (901)..(901)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (926)..(928)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1159)..(1160)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1375)..(1375)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1449)..(1450)
<223> a, c, t, g, unknown or other

<400> 903
nngaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtcaacttg aacttcggtt tgggtggcgg acgggtgagt aacgcgtaaa gaacttgcct 120

cacagactgg gacaacattt ggaaacgaat gctaagaccg gatattatga attcattgca 180

tgatgaagtc atgaaagcta taagcgctgt gagagagctt tgcgtcccat tagctagttg 240

gagaggtaac ggctcaccaa ggcgatgatg ggtagccggc ctgagagggt gaacggcnac 300

aaggggactg agacacggcc nntactccta cgggaggcag cagtggggaa tattggacaa 360

tggaccaaga gtctgatcca gcaattctgt gtgcacgatg aagtttttcg gaatgtaaag 420

tgctttcagt tgggaagaag aaagtgacgg taccaacaga agaagcgacg gctaaatacg 480

tgccagcagc cgcggtaata cgtatgctgc nagcgttatc cggatttatt gggcgtaaag 540

cgcgtctagg cggctagata agtctgatgt gaaaatgcgg ggctcaactc cgtattgcgt 600

tggaaactgt atagctagag tactggagag gtaagcggaa ctacaagtgt agaggtgaaa 660

ttcgtagata tttgtaggaa tgccgatggg gaagccagct tactggacag atactgacgc 720

tgaagcgcga aagcgtgggt agcaaacagg attagatacc ctggtagtcc acgccgtaaa 780

cgatgattac taggtgttgg gggtcgaacc tcagcgccca agcaaacgcg ataagtaatc 840

cgcctgggga gtacgtacgc aagtatgaaa ctcaaaggaa ttgangggga ccngnacaag 900

nggtggagca tgtggtttaa ttcgannnaa cgcgaggaac cttaccagcg tttgacatcc 960

tactaagggc tcagagatga gcttgtgctc cttcgggaga aagtagagac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 1080

tttcgtatgt taccatcatt aagttgggga ctcatgcgat actgcctgcg atgagcagga 1140

ggaaggtggg gatgacgtnn agtcatcatg ccccttatac gctgggctac acacgtgcta 1200

caatgggtag aacagagagt ggcgaagctg tgaagtggag caaatctcag aaaactattc 1260

ttagttcgga ttgtactctg caactcgagt acatgaagtt ggaatcgcta gtaatcgcaa 1320

atcagcaatg ttgcggtgaa tacgttctcg ggtcttgtac acaccgcccg tcacnccacg 1380

agagttggtt gcacctgaag taacaggcct aaccgaaagg agggatgttc cgagggtgtg 1440

attagcgann ggg 1453

<210> 904
<211> 1522
<212> DNA
<213> Fusobacterium sp. 11_3_2

<400> 904
ttgaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtcaacttg aatttgggtt tttaacttag atttgggtgg cggacgggtg agtaacgcgt 120

aaagaacttg cctcacagct agggacaaca tttagaaatg aatgctaata cctgatatta 180

tgattttaag gcatcttaga attatgaaag ctataagcac tgtgagagag ctttgcgtcc 240

cattagctag ttggagaggt aacagctcac caaggcgatg atgggtagcc ggcctgagag 300

ggtgaacggc cacaagggga ctgagacacg gcccttactc ctacgggagg cagcagtggg 360

gaatattgga caatggaccg agagtctgat ccagcaattc tgtgtgcacg atgaagtttt 420

tcggaatgta aagtgctttc agttgggaag aaagaaatga cggtaccaac agaagaagtg 480

acggctaaat acgtgccagc agccgcggta atacgtatgt cacgagcgtt atccggattt 540

attgggcgta aagcgcgtct aggtggttat gtaagtctga tgtgaaaatg cagggctcaa 600

ctctgtattg cgttggaaac tgtataacta gagtactgga gaggtaagcg gaactacaag 660

tgtagaggtg aaattcgtag atatttgtag gaatgccgat ggggaagcca gcttactgga 720

cagatactga cgctaaagcg cgaaagcgtg ggtagcaaac aggattagat accctggtag 780

tccacgctgt aaacgatgat tactaggtgt tgggggtcga acctcagcgc ccaagcaaac 840

gcgataagta atccgcctgg ggagtacgta cgcaagtatg aaactcaaag gaattgacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgacg caacgcgagg aaccttacca 960

gcgtttgaca tcttaggaat gagatagaga tatttcagtg tcccttcggg gaaacctaaa 1020

gacaggtggt gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccctttcgta tgttaccatc attaagttgg ggactcatgc gatactgcct 1140

acgatgagta ggaggaaggt ggggatgacg tcaagtcatc atgccccttа tacgctgggc 1200

tacacacgtg ctacaatggg tagaacagag agttgcaaag ccgtgaggtg aagctaatct 1260

cagaaaacta ttcttagttc ggattgtact ctgcaactcg agtacatgaa gttggaatcg 1320

ctagtaatcg cgaatcagca atgtcgcggt gaatacgttc tcgggtcttg tacacaccgc 1380

ccgtcacacc acgagagttg gttgcacctg aagtagcagg cctaaccgta aggagggatg 1440

ctccgagggt gtgattagcg attggggtga agtcgtaaca aggtatccgt acgggaacgt 1500

gcggatggat cacctccttt ct 1522

<210> 905
<211> 1496
<212> DNA
<213> Fusobacterium sp. 12_1B

<400> 905
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caagtctact 60

tgatccttcg ggtgaaggtg gcggacgggt gagtaacgcg taaagaactt gccttacaga 120

ctgggacaac atttggaaac gaatgctaat accggatatt atgattgggt cgcatgatct 180

ggttatgaaa gctatatgcg ctgtgagaga gctttgcgtc ccattagtta gttggtgagg 240

taacggctca ccaagacgat gatgggtagc cggcctgaga gggtgaacgg ccacaaggga 300

actgagacac ggcccttact cctacgggag gcagcagtgg ggaatattgg acaatggacc 360

aaaagtctga tccagcaatt ctgtgtgcac gatgaagttt ttcggaatgt aaagtgcttt 420

cagttgggaa gaagtcagtg acggtaccaa cagaagaagc gacggctaaa tacgtgccag 480

cagccgcggt aatacgtatg tcgcaagcgt tatccggatt tattgggcgt aaagcgcgtc 540

taggcggctt agtaagtctg atgtgaaaat gcggggctca accccgtatt gcgttggaaa 600

ctgctaaact agagtactgg agaggtaggc ggaactacaa gtgtagaggt gaaattcgta 660

gatatttgta ggaatgccga tggggaagcc agcctactgg acagatactg acgctaaagc 720

gcgaaagcgt gggtagcaaa caggattaga taccctggta gtccacgccg taaacgatga 780

ttactaggtg ttgggggtcg aacctcagcg cccaagctaa cgcgataagt aatccgcctg 840

gggagtacgt acgcaagtat gaaactcaaa ggaattgacg gggacccgca caagcggtgg 900

agcatgtggt ttaattcgac gcaacgcgag gaaccttacc agcgtttgac atcccaagaa 960

gttaacagag atgttttcgt gcctcttcgg aggaacttgg tgacaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccccttcgt 1080

atgttaccat cattaagttg gggactcatg cgagactgcc tgcgatgagc aggaggaagg 1140

tggggatgac gtcaagtcat catgcccctt atacgctggg ctacacacgt gctacaatgg 1200

gtagtacaga gagctgcaaa cctgcgaggg taagctaatc tcataaaact attcttagtt 1260

cggattgtac tctgcaactc gagtacatga agttggaatc gctagtaatc gcaaatcagc 1320

tatgttgcgg tgaatacgtt ctcgggtctt gtacacaccg cccgtcacac cacgagagtt 1380

ggttgcacct gaagtaacag gcctaaccgt aaggagggat gttccgaggg tgtgattagc 1440

gattggggtg aagtcgtaac aaggtatccg tacgggaacg tgcggatgga tcacct 1496

<210> 906
<211> 1509
<212> DNA
<213> Fusobacterium sp. 1_1_41FAA

<400> 906
ttgaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtctacttg aacttcggtt tgggtggcgg acgggtgagt aacgcgtaaa gaacttgcct 120

cacagttagg gacaacattt ggaaacgaat gctaatacct gatattatga ttttagggca 180

tcctaagatt atgaaagcta tatgcgctgt gagagagctt tgcgtcccat tagctagttg 240

gagaggtaac ggctcaccaa ggcgatgatg ggtagccggc ctgagagggt gaacggccac 300

aaggggactg agacacggcc cttactccta cgggaggcag cagtggggaa tattggacaa 360

tggaccaaaa gtctgatcca gcaattctgt gtgcacgatg acgtttttcg gaatgtaaag 420

tgctttcagt tgggaagaaa aaaatgacgg taccaacaga agaagtgacg gctaaatacg 480

tgccagcagc cgcggtaata cgtatgtcac aagcgttatc cggatttatt gggcgtaaag 540

cgcgtctagg tggttatgta agtctgatgt gaaaatgcag ggctcaactc tgtattgcgt 600

tggaaactgc atgactagag tactggagag gtaagcggaa ctacaagtgt agaggtgaaa 660

ttcgtagata tttgtaggaa tgccgatggg gaagccagct tactggacag atactgacgc 720

taaagcgcga aagcgtgggt agcaaacagg attagatacc ctggtagtcc acgccgtaaa 780

cgatgattac taggtgttgg gggtcgaacc tcagcgccca agctaacgcg ataagtaatc 840

cgcctgggga gtacgtacgc aagtatgaaa ctcaaaggaa ttgacgggga cccgcacaag 900

cggtggagca tgtggtttaa ttcgacgcaa cgcgaggaac cttaccagcg tttgacatct 960

taggaatgag acagagatgt ttcagtgtca cttcggtgaa acctaaagac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 1080

tttcgtatgt taccatcatt aagttgggga ctcatgcgat actgcctgcg atgagcagga 1140

ggaaggtggg gatgacgtca agtcatcatg ccccttatac gctgggctac acacgtgcta 1200

caatgggtag tacagagagt cgcaaagccg cgaggtggag ctaatctcag aaaactattc 1260

ttagttcgga ttgtactctg caactcgagt acatgaagtt ggaatcgcta gtaatcgcga 1320

atcagcaatg tcgcggtgaa tacgttctcg ggtcttgtac acaccgcccg tcacaccacg 1380

agagttggtt gcacctgaag tagcaggcct aaccgcaagg agggatgctc cgagggtgtg 1440

attagcgatt ggggtgaagt cgtaacaagg tatccgtacg ggaacgtgcg gatggatcac 1500

ctcctttct 1509

<210> 907
<211> 1494
<212> DNA
<213> Fusobacterium sp. 2_1_31

<400> 907
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caagtctact 60

tgaacttcgg tttgggtggc ggacgggtga gtaacgcgta aagaacttgc ctcacagtta 120

gggacaacat ttggaaacga atgctaatac ctgatattat gattttaggg catcctaaga 180

ttatgaaagc tatatgcgct gtgagagagc tttgcgtccc attagctagt tggagaggta 240

acggctcacc aaggcgatga tgggtagccg gcctgagagg gtgaacggcc acaaggggac 300

tgagacacgg cccttactcc tacgggaggc agcagtgggg aatattggac aatggaccaa 360

aagtctgatc cagcaattct gtgtgcacga tgacgttttt cggaatgtaa agtgctttca 420

gttgggaaga aaaaaatgac ggtaccaaca gaagaagtga cggctaaata cgtgccagca 480

gccgcggtaa tacgtatgtc acaagcgtta tccggattta ttgggcgtaa agcgcgtcta 540

ggtggttatg taagtctgat gtgaaaatgc agggctcaac tctgtattgc gttggaaact 600

gcatgactag agtactggag aggtaagcgg aactacaagt gtagaggtga aattcgtaga 660

tatttgtagg aatgccgatg gggaagccag cttactggac agatactgac gctaaagcgc 720

gaaagcgtgg gtagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgatt 780

actaggtgtt gggggtcgaa cctcagcgcc caagctaacg cgataagtaa tccgcctggg 840

gagtacgtac gcaagtatga aactcaaagg aattgacggg gacccgcaca agcggtggag 900

catgtggttt aattcgacgc aacgcgagga accttaccag cgtttgacat cttaggaatg 960

agacagagat gtttcagtgt cacttcggtg aaacctaaag acaggtggtg catggctgtc 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctttcgtat 1080

gttaccatca ttaagttggg gactcatgcg atactgccta cgatgagtag gaggaaggtg 1140

gggatgacgt caagtcatca tgccccttat acgctgggct acacacgtgc tacaatgggt 1200

agtacagaga gtcgcaaagc cgcgaggtgg agctaatctc agaaaactat tcttagttcg 1260

gattgtactc tgcaactcga gtacatgaag ttggaatcgc tagtaatcgc gaatcagcaa 1320

tgtcgcggtg aatacgttct cgggtcttgt acacaccgcc cgtcacacca cgagagttgg 1380

ttgcacctga agtagcaggc ctaaccgtaa ggagggatgc tccgagggtg tgattagcga 1440

ttggggtgaa gtcgtaacaa ggtatccgta cgggaacgtg cggatggatc acct 1494

<210> 908
<211> 1522
<212> DNA
<213> Fusobacterium sp. 3_1_27

<400> 908
ttgaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtcaacttg aatttgggtt tttaacttag gtttgggtgg cggacgggtg agtaacgcgt 120

aaagaacttg cctcacagct agggacaaca tttggaaacg aatgctaata cctaatatta 180

tgataatagg gcatcctata attatgaaag ctataagcgc tgtgagagag ctttgcgtcc 240

cattagctag ttggagaggt aacggctcac caaggcgatg atgggtagcc ggcctgagag 300

ggtgatcggc cacaagggga ctgagacacg gcccttactc ctacgggagg cagcagtggg 360

gaatattgga caatggacca agagtctgat ccagcaattc tgtgtgcacg atgaagtttt 420

tcggaatgta aagtgctttc agttgggaag aaaaaaatga cggtaccaac agaagaagtg 480

acggctaaat acgtgccagc agccgcggta atacgtatgt cacgagcgtt atccggattt 540

attgggcgta aagcgcgtct aggtggttat gtaagtctga tgtgaaaatg cagggctcaa 600

ctctgtattg cgttggaaac tgtataacta gagtactgga gaggtaagcg gaactacaag 660

tgtagaggtg aaattcgtag atatttgtag gaatgccgat ggggaagcca gcttactgga 720

cagatactga cgctgaagcg cgaaagcgtg ggtagcaaac aggattagat accctggtag 780

tccacgccgt aaacgatgat tactaggtgt tgggggtcga acctcagcgc ccaagcaaac 840

gcgataagta atccgcctgg ggagtacgta cgcaagtatg aaactcaaag gaattgacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgacg caacgcgagg aaccttacca 960

gcgtttgaca tcttaggagt gagatagaga tatttcagtg tcccttcggg gaaacctaaa 1020

gacaggtggt gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccctttcgta tgttaccatc attaagttgg ggactcatgc gatactgcct 1140

acgatgagta ggaggaaggt ggggatgacg tcaagtcatc atgccccttа tacgctgggc 1200

tacacacgtg ctacaatggg tagaacagag agttgcaaag ctgtgaagtg gagctaatct 1260

cagaaaacta ttcttagttc ggattgtact ctgcaactcg agtacatgaa gttggaatcg 1320

ctagtaatcg cgaatcagca atgtcgcggt gaatacgttc tcgggtcttg tacacaccgc 1380

ccgtcacacc acgagagttg gttgcacctg aagtagcagg cctaaccgta aggagggatg 1440

ctccgagggt gtgattagcg attggggtga agtcgtaaca aggtatccgt acgggaacgt 1500

gcggatggat cacctccttt ct 1522

<210> 909
<211> 1522
<212> DNA
<213> Fusobacterium sp. 3_1_33

<400> 909
ttgaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtcaacttg aatttgggtt tttaacttag atttgggtgg cggacgggtg agtaacgcgt 120

aaagaacttg cctcacagct agggacaaca tttagaaatg aatgctaata cctgatatta 180

tgattttaag gcatcttaga attatgaaag ctataagcac tgtgagagag ctttgcgtcc 240

cattagctag ttggagaggt aacagctcac caaggcgatg atgggtagcc ggcctgagag 300

ggtgaacggc cacaagggga ctgagacacg gcccttactc ctacgggagg cagcagtggg 360

gaatattgga caatggaccg agagtctgat ccagcaattc tgtgtgcacg atgaagtttt 420

tcggaatgta aagtgctttc agttgggaag aaaaaaatga cggtaccaac agaagaagtg 480

acggctaaat acgtgccagc agccgcggta atacgtatgt cacgagcgtt atccggattt 540

attgggcgta aagcgcgtct aggtggttat gtaagtctga tgtgaaaatg cagggctcaa 600

ctctgtattg cgttggaaac tgtataacta gagtactgga gaggtaagcg gaactacaag 660

tgtagaggtg aaattcgtag atatttgtag gaatgccgat ggggaagcca gcttactgga 720

cagatactga cgctaaagcg cgaaagcgtg ggtagcaaac aggattagat accctggtag 780

tccacgctgt aaacgatgat tactaggtgt tgggggtcga acctcagcgc ccaagcaaac 840

gcgataagta atccgcctgg ggagtacgta cgcaagtatg aaactcaaag gaattgacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgacg caacgcgagg aaccttacca 960

gcgtttgaca tcttaggaat gagatagaga tatttcagtg tcccttcggg gaaacctaaa 1020

gacaggtggt gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccctttcgta tgttaccatc attaagttgg ggactcatgc gatactgcct 1140

acgatgagta ggaggaaggt ggggatgacg tcaagtcatc atgcccctta tacgctgggc 1200

tacacacgtg ctacaatggg tagaacagag agttgcaaag ccgtgaggtg aagctaatct 1260

cagaaaacta ttcttagttc ggattgtact ctgcaactcg agtacatgaa gttggaatcg 1320

ctagtaatcg cgaatcagca atgtcgcggt gaatacgttc tcgggtcttg tacacaccgc 1380

ccgtcacacc acgagagttg gttgcacctg aagtagcagg cctaaccgta aggagggatg 1440

ctccgagggt gtgattagcg attggggtga agtcgtaaca aggtatccgt acgggaacgt 1500

gcggatggat cacctccttt ct 1522

<210> 910
<211> 1513
<212> DNA
<213> Fusobacterium sp. 3_1_36A2

<400> 910
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caagtcaact 60

tgaatttggg tttttaactt aggtttgggt ggcggacggg tgagtaacgc gtaaagaact 120

tgcctcacag ctagggacaa catttggaaa cgaatgctaa tacctaatat tatgataata 180

gggcatccta taattatgaa agctataagc gctgtgagag agctttgcgt cccattagct 240

agttggagag gtaacggctc accaaggcga tgatgggtag ccggcctgag agggtgatcg 300

gccacaaggg gactgagaca cggcccttac tcctacggga ggcagcagtg gggaatattg 360

gacaatggac caagagtctg atccagcaat tctgtgtgca cgatgaagtt tttcggaatg 420

taaagtgctt tcagttggga agaaagaaat gacggtacca acagaagaag tgacggctaa 480

atacgtgcca gcagccgcgg taatacgtat gtcacgagcg ttatccggat ttattgggcg 540

taaagcgcgt ctaggtggtt atgtaagtct gatgtgaaaa tgcagggctc aactctgtat 600

tgcgttggaa actgtataac tagagtactg gagaggtaag cggaactaca agtgtagagg 660

tgaaattcgt agatatttgt aggaatgccg atggggaagc cagcttactg gacagatact 720

gacgctgaag cgcgaaagcg tgggtagcaa acaggattag ataccctggt agtccacgcc 780

gtaaacgatg attactaggt gttgggggtc gaacctcagc gcccaagcaa acgcgataag 840

taatccgcct ggggagtacg tacgcaagta tgaaactcaa aggaattgac ggggacccgc 900

acaagcggtg gagcatgtgg tttaattcga cgcaacgcga ggaaccttac cagcgtttga 960

catcttagga tgagatagag atatttcagt gtcccttcgg ggaaacctaa agacaggtgg 1020

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

ccccttttcgt atgttaccat cattaagttg gggactcatg cgatactgcc tacgatgagt 1140

aggaggaagg tggggatgac gtcaagtcat catgcccctt atacgctggg ctacacacgt 1200

gctacaatgg gtagaacaga gagtcgcaaa gctgtgaagt ggagctaatc tcagaaaact 1260

attcttagtt cggattgtac tctgcaactc gagtacatga agttggaatc gctagtaatc 1320

gcgaatcagc aatgtcgcgg tgaatacgtt ctcgggtctt gtacacaccg cccgtcacac 1380

cacgagagtt ggttgcacct gaagtagcag gcctaaccgt aaggagggat gctccgaggg 1440

tgtgattagc gattggggtg aagtcgtaac aaggtatccg tacgggaacg tgcggatgga 1500

tcacctcctt tct 1513

<210> 911
<211> 1369
<212> DNA
<213> Fusobacterium sp. 3_1_5R

<400> 911
ggaaacggat gctaataccg gatattatgc tttcttcgca tggaggaagt atgaaagcta 60

tatgcgctat gagagagctt tgcgtcccat tagctagttg gtgaggtaac ggcccaccaa 120

ggcgatgatg ggtagccggc ctgagagggt gaacggccac aaggggactg agacacggcc 180

cttactccta cgggaggcag cagtggggaa tattggacaa tggaccaaaa gtctgatcca 240

gcaattctgt gtgcacgatg acgtttttcg gaatgtaaag tgctttcagt cgggaagaag 300

caagtgacgg taccgacaga agaagcgacg gctaaatacg tgccagcagc cgcggtaata 360

cgtatgtcgc aagcgttatc cggatttatt gggcgtaaag cgcgtctagg cggcaaggaa 420

agtctgatgt gaaaatgcgg ggctcaactc cgtattgcgt tggaaactgc cttactagag 480

tactggagag gtaggcggaa ctacaagtgt agaggtgaaa ttcgtagata tttgtaggaa 540

tgccgatggg gaagccagcc tactggacag atactgacgc taaagcgcga aagcgtgggt 600

agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgatgattac taggtgttgg 660

gggtcaaacc tcagcgccca agctaacgcg ataagtaatc cgcctgggga gtacgtacgc 720

aagtatgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca tgtggtttaa 780

ttcgacgcaa cgcgaggaac cttaccagcg tttgacatcc tacaaagagt gcagagatgc 840

gcttgtgctt cttcggaaga atgtagtgac aggtggtgca tggctgtcgt cagctcgtgt 900

cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc tatcgtatgt taccagcctt 960

tagttgggga ctcatgcgat actgcctgcg acgagcagga ggaaggtggg gatgacgtca 1020

agtcatcatg ccccttatac gctgggctac acacgtgcta caatgggtag tacagagagc 1080

ggcgaacccg cgaggggggag caaatctcag aaaactattc ttagttcgga ttgtactctg 1140

caactcgagt acatgaagtt ggaatcgcta gtaatcgcaa atcagcaatg ttgcggtgaa 1200

tacgttctcg ggtcttgtac acaccgcccg tcacaccacg agagttggtt gcacctgaag 1260

tagcaggcct aaccgtaagg aaggatgctc cgagggtgtg gttagcgatt ggggtgaagt 1320

cgtaacaagg tatccgtacg ggaacgtgcg gatggatcac ctcctttct 1369

<210> 912

<211> 1301
<212> DNA
<213> Fusobacterium sp. AC18

<400> 912
tcaggatgaa cgctgacaga atgcttaaca catgcaagtc aactggtggc ggacgggtga 60

gtaacgcgta aagaacttgc ctcacagata gggacaacat ttggaaacga atgctaatac 120

ctgatattga aaggcgctgt gagagagctt tgcgtcccat tagctagttg gagaggtaac 180

ggctcaccaa ggcgatgatg ggtagccggc ctgagagggt gatcggccac aaggggactg 240

agacacggcc cttactccta cgggaggcag cagtggggaa tattggacaa tggaccaagt 300

ctgatccagc aattctgtgt gcacgatgaa gtttttcgga atgtaaagtg ctttcagttg 360

ggaagatgac ggtaccaaca gaagaagtga cggctaaata cgtgccagca gccgcggtaa 420

tacgtatgtc acaagcgtta tccggattta ttgggcgtaa agcgcgtcta ggtggttatg 480

taagtctgat gtgaaaatgc agggctcaac tctgtattgc gttggaaact gtgtaactag 540

agtactggag aggtaagcgg aactacaagt gtagaggtga aattcgtaga tatttgtagg 600

aatgccgatg gggaagccag cttactggac agactgacgc tgaagcgcga aagcgtgggt 660

agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgattac taggtgttgg 720

ggcctcagcg cccaagcaaa cgcgataagt aatccgcctg gggagtacgt acgcaagtat 780

gaaactcaaa ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgac 840

gcaacgcgag gaaccttacc agcgtttgac atcgacaggt ggtgcatggc tgtcgtcagc 900

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccccttc gtatgttacc 960

atcatgggga ctcatgcgat actgcctgcg atgagcagga ggaaggtggg gatgacgtca 1020

agtcatcatg ccccttatac gctgggctac acacgtgcta caatgggtag cagagagtcg 1080

caaagccgtg aggtggagct aatctcagct attcttagtt cggatgtact ctgcaactcg 1140

agtacagaag ttggaatcgc tagtaatcgc gaatcagcaa tgtcgcggtg aatacgttct 1200

cgggtcttgt acacaccgcc cgtcacacca cgagagttgg ttgcacctga agtagcagcc 1260

tagggatgct ccgagggtgt gattagcgat ggggtgaagt c 1301

<210> 913
<211> 1300
<212> DNA
<213> Fusobacterium sp. ACB2

<400> 913
tggctcagga tgaacgctga cagaatgctt aacacatgca agtcaactgg tggcggacgg 60

gtgagtaacg cgtaaagaac ttgcctcaca gctagggaca acatttagaa atgaatgcta 120

atacctgata ttgaaaggca ctgtgagaga gctttgcgtc ccattagcta gttggagagg 180

taacagctca ccaaggcgat gatgggtagc cggcctgaga gggtgaacgg ccacaaggg 240

actgagacac ggcccttact cctacgggag gcagcagtgg ggaatattgg acaatggacg 300

agagtctgat ccagcaattc tgtgtgcacg atgaagtttt tcggaatgta aagtgctttc 360

agttgggaag atgacggtac caacagaaga agtgacggct aaatacgtgc cagcagccgc 420

ggtaatacgt atgtcacgag cgttatccgg atttattggg cgtaaagcgc gtctaggtgg 480

ttatgtaagt ctgatgtgaa aatgcagggc tcaactctgt attgcgttgg aaactgtata 540

actagagtac tggagaggta agcggaacta caagtgtaga ggtgaaattc gtagatattt 600

gtaggaatgc cgatggggaa gccagcttac tggacagact gacgctaaag cgcgaaagcg 660

tgggtagcaa acaggattag ataccctggt agtccacgct gtaaacgatg attactaggt 720

gttggggcct cagcgcccaa gcaaacgcga taagtaatcc gcctggggag tacgtacgca 780

agtatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat 840

tcgacgcaac gcgaggaacc ttaccagcgt ttgacatcga caggtggtgc atggctgtcg 900

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctttcgtatg 960

ttaccatcat ggggactcat gcgatactgc ctacgatgag taggaggaag gtggggatga 1020

cgtcaagtca tcatgcccct tatacgctgg gctacacacg tgctacaatg ggtagcagag 1080

agttgcaaag ccgtgaggtg aagctaatct cagctattct tagttcggat gtactctgca 1140

actcgagtac agaagttgga atcgctagta atcgcgaatc agcaatgtcg cggtgaatac 1200

gttctcgggt cttgtacaca ccgcccgtca caccacgaga gttggttgca cctgaagtag 1260

cagcctaggg atgctccgag ggtgtgatta gcgattgggg 1300

<210> 914
<211> 1364
<212> DNA
<213> Fusobacterium sp. AS2

<400> 914
ggctcaggat gaacgctgac agaatgctta acacatgcaa gtcaacttga acttcggttt 60

gggtggcgga cgggtgagta acgcgtaaag aacttgcctc acagataggg acaacatttg 120

gaaacgaatg ctaatacctg atattatgat tttagggcat cctaggatta tgaaagctat 180

atgcgctgtg agagagcttt gcgtcccatt agctagttgg agaggtaacg gctcaccaag 240

gcgatgatgg gtagccggcc tgagagggtg atcggccaca aggggactga gacacggccc 300

ttactcctac gggaggcagc agtggggaat attggacaat ggaccaagag tctgatccag 360

caattctgtg tgcacgatga agtttttcgg aatgtaaagt gctttcagtt gggaagaaaa 420

aaatgacggt accaacagaa gaagtgacgg ctaaatacgt gccagcagcc gcggtaatac 480

gtatgtcaca agcgttatcc ggatttattg ggcgtaaagc gcgtctaggt ggttatataa 540

gtctgatgtg aaaatgcagg gctcaactct gtattgcgtt ggaaactgtg taactagagt 600

actggagagg taagcggaac tacaagtgta gaggtgaaat tcgtagatat ttgtaggaat 660

gccgatgggg aagccagctt actggacaga tactgacgct gaagcgcgaa agcgtgggta 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgattact aggtgttggg 780

ggtcgaacct cagcgcccaa gcaaacgcga taagtaatcc gcctggggag tacgtacgca 840

agtatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat 900

tcgacgcaac gcgaggaacc ttaccagcgt ttgacatctt aggaatgaga cagagatgtt 960

tcagtgtccc ttcggggaaa cctaaagaca ggtggtgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct ttcgtatgtt accatcatta 1080

agttggggac tcatgcgata ctgcctgcga tgagcaggag gaaggtgggg atgacgtcaa 1140

gtcatcatgc cccttatacg ctgggctaca cacgtgctac aatgggtagt acagagagtc 1200

gcaaagccgt gaggtggagc taatctcaga aaactattct tagttcggat tgtactctgc 1260

aactcgagta catgaagttg gaatcgctag taatcgcgaa tcagcaatgt cgcggtgaat 1320

acgttctcgg gtcttgtaca caccgcccgt cacaccacga gagt 1364

<210> 915
<211> 1387
<212> DNA
<213> Fusobacterium sp. CM1

<400> 915
gaacgctgac agaatgctta acacatgcaa gtcaacttga atttgggttt ttaacttaga 60

tttgggtggc ggacgggtga gtaacgcgta aagaacttgc ctcacagcta gggacaacat 120

ttagaaatga atgctaatac ctgatattat gattttaagg catcttagaa ttatgaaagc 180

tatatgcact gtgagagagc tttgcgtccc attagctagt tggagaggta acagctcacc 240

aaggcgatga tgggtagccg gcctgagagg gtgaacggcc acaaggggac tgagacacgg 300

cccttactcc tacgggaggc agcagtgggg aatattggac aatggaccga gagtctgatc 360

cagcaattct gtgtgcacga tgaagttttt cggaatgtaa agtgctttca gttgggaaga 420

aagaaatgac ggtaccaaca gaagaagtga cggctaaata cgtgccagca gccgcggtaa 480

tacgtatgtc acgagcgtta tccggattta ttgggcgtaa agcgcgtcta ggtggttatg 540

taagtctgat gtgaaaatgc agggctcaac tctgtattgc gttggaaact gtgtaactag 600

agtactggag aggtaagcgg aactacaagt gtagaggtga attcgtaga tatttgtagg 660

aatgccgatg gggaagccag cttactggac agatactgac gctaaagcgc gaaagcgtgg 720

gtagcaaaca ggattagata ccctggtagt ccacgctgta aacgatgatt actaggtgtt 780

gggggtcgaa cctcagcgcc caagcaaacg cgataagtaa tccgcctggg gagtacgtac 840

gcaagtatga aactcaaagg aattgacggg gacccgcaca agcggtggag catgtggttt 900

aattcgacgc aacgcgagga accttaccag cgtttgacat cttaggaatg agatagagat 960

atttcagtgt cccttcgggg aaacctaaag acaggtggtg catggctgtc gtcagctcgt 1020

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctttcgtat gttaccatca 1080

ttaagttggg gactcatgcg atactgccta cgatgagtag gaggaaggtg gggatgacgt 1140

caagtcatca tgcccttat acgctgggct acacacgtgc tacaatgggt agaacagaga 1200

gttgcaaagc cgtgaggtga agctaatctc agaaaactat tcttagttcg gattgtactc 1260

tgcaactcga gtacatgaag ttggaatcgc tagtaatcgc gaatcagcaa tgtcgcggtg 1320

aatacgttct cgggtcttgt acacaccgcc cgtcacacca cgagagttgg ttgcacctga 1380

agtagca 1387

<210> 916
<211> 1385
<212> DNA
<213> Fusobacterium sp. CM21

<400> 916
cgctgacaga atgcttaaca catgcaagtc aacttgaatt tgggttttta acttaggttt 60

gggtggcgga cgggtgagta acgcgtaaag aacttgcctc acaggtaggg acaacatttg 120

gaaacgaatg ctaataccta atattatgat aatagggcat cctataatta tgaaagctat 180

aagcgctgtg agagagcttt gcgtcccatt agctagttgg agaggtaacg gctcaccaag 240

gcgatgatgg gtagccggcc tgagagggtg atcggccaca aggggactga gacacggccc 300

ttactcctac gggaggcagc agtggggaat attggacaat ggaccgagag tctgatccag 360

caattctgtg tgcacgatga agtttttcgg aatgtaaagt gctttcagtt gggaagaaac 420

aaatgacggt accaacagaa gaagtgacgg ctaaatacgt gccagcagcc gcggtaatac 480

gtatgtcacg agcgttatcc ggatttattg ggcgtaaagc gcgtctaggt ggttatgtaa 540

gtctgatgtg aaaatgcagg gctcaactct gtattgcgtt ggaaactgta taactagagt 600

actggagagg taagcggaac tacaagtgta gaggtgaaat tcgtagatat ttgtaggaat 660

gccgatgggg aagccagctt actggacaga tactgacgct gaagcgcgaa agcgtgggta 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgattact aggtgttggg 780

ggtcgaacct cagcgcccaa gcaaacgcga taagtaatcc gcctggggag tacgtacgca 840

agtatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat 900

tcgacgcaac gcgaggaacc ttaccagcgt ttgacatctt aggaatgaga cagagatgtt 960

tcagtgtccc ttcggggaaa cctaaagaca ggtggtgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct ttcgtatgtt accatcatta 1080

agttggggac tcatgcgata ctgcctacga tgagtaggag gaagggtggg ggatgacgtc 1140

aagtcatcat gccccttata cgctgggcta cacacgtgct acaatgggta gaacagagag 1200

tcgcaaagct gtgaagtgga gctaatctca gaaaactatt cttagttcgg attgtactct 1260

gcaactcgag tacatgaagt tggaatcgct agtaatcgcg aatcagcaat gtcgcggtga 1320

atacgttctc gggtcttgta cacaccgccc gtcacaccac gagagttggt tgcacctgaa 1380

gtagc 1385

<210> 917
<211> 1210
<212> DNA
<213> Fusobacterium sp. CM22

<220>
<221> modified_base

<222> (975)..(975)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1090)..(1090)
<223> a, c, t, g, unknown or other

<400> 917
gtggcggacg ggtgagtaac gcgtaaagaa cttgcctcac agatagggac aacatttgga 60

aacgaatgct aatacctgat attgaaaggc actgtgagag agctttgcgt cccattagct 120

agttggagag gtaacggctc accaaggcga tgatgggtag ccggcctgag agggtgatcg 180

gccacaaggg gactgagaca cggcccttac tcctacggga ggcagcagtg gggaatattg 240

gacaatggac caagtctgat ccagcaattc tgtgtgcacg atgaagtttt tcggaatgta 300

aagtgctttc agttgggaag atgacggtac caacagaaga agtgacggct aaatacgtgc 360

cagcagccgc ggtaatacgt atgtcacaag cgttatccgg atttattggg cgtaaagcgc 420

gtctaggtgg ttatgtaagt ctgatgtgaa aatgcagggc tcaactctgt attgcgttgg 480

aaactgtgta actagagtac tggagaggta agcggaacta caagtgtaga ggtgaaattc 540

gtagatattt gtaggaatgc cgatggggaa gccagcttac tggacagact gacgctgaag 600

cgcgaaagcg tgggtagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 660

attactaggt gttggggcct cagcgcccaa gcaaacgcga taagtaatcc gcctggggag 720

tacgtacgca agtatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 780

gtggtttaat tcgacgcaac gcgaggaacc ttaccagcgt ttgacatcga caggtggtgc 840

atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 900

ctttcgtatg ttaccatcat ggggactcat gcgatactgc ctgcgatgag caggaggaag 960

gtggggatga cgtcnagtca tcatgcccct tatacgctgg gctacacacg tgctacaatg 1020

ggtagcagag agtcgcaaag ccgtgaggtg aagctaatct cagctattct tagttcggat 1080

gtactctgcn actcgagtac agaagttgga atcgctagta atcgcgaatc agcaatgtcg 1140

cggtgaatac gttctcgggt cttgtacaca ccgcccgtca caccacgaga gttggttgca 1200

cctgaagtag 1210

<210> 918
<211> 1496
<212> DNA
<213> Fusobacterium sp. D12

<400> 918
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caagtcgact 60

cgagtcttcg gacttgggtg gcgcacgggt gagtaacgcg taaagaactt gcctcttaga 120

ccgggacaac atctggaaac ggatgctaat accggatatt atggtttttt cgcatggagg 180

aatcatgaaa gctagatgcg ctaagagaga gctttgcgtc ccattagcta gttggtgagg 240

taacggccca ccaaggcaat gatgggtagc cggcctgaga gggtgaacgg ccacaagggg 300

actgagacac ggcccttact cctacgggag gcagcagtgg ggaatattgg acaatggacc 360

gcaagtctga tccagcaatt ctgtgtgcac gatgacgttt ttcggaatgt aaagtgcttt 420

cagtcgggaa gaagtcagtg acggtaccga cagaagaagc gacggctaaa tacgtgccag 480

cagccgcggt aatacgtatg tcgcaagcgt tatccggatt tattgggcgt aaagcgcgtc 540

taggcggcaa ggaaagtctg atgtgaaaat gcggagctca actccgtatg gcgttggaaa 600

ctgccttact agagtactgg agaggtaggc ggaactacaa gtgtagaggt gaaattcgta 660

gatatttgta ggaatgccga tggggaagcc agcctactgg acagatactg acgctaaagc 720

gcgaaagcgt gggtagcaaa caggattaga taccctggta gtccacgctg taaacgatga 780

ttactaggtg ttgggggtca aacctcagcg cccaagctaa cgcgataagt aatccgcctg 840

gggagtacgt acgcaagtat gaaactcaaa ggaattgacg gggacccgca caagcggtgg 900

agcatgtggt ttaattcgac gcaacgcgag gaaccttacc agcgtttgac atcctacgaa 960

cggagcagag atgcgccggt gccctttcgg gggaacgtag tgacaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatcgt 1080

atgttaccat ccttcagttg gggactcatg cgatactgcc tgcgacgagc aggaggaagg 1140

tggggatgac gtcaagtcat catgcccctt atacgctggg ctacacacgt gctacaatgg 1200

gtagtacaga gagcagcaaa cccgcgaggg ggagcaaatc tcagaaaact attcttagtt 1260

cggattgtac tctgcaactc gagtacatga agttggaatc gctagtaatc gcaaatcagc 1320

aatgttgcgg tgaatacgtt ctcgggtctt gtacacaccg cccgtcacac cacgagagtt 1380

ggttgcacct gaagtagcag gcctaacctt agggaaggat gctccgaggg tgtggttagc 1440

gattggggtg aagtcgtaac aaggtatccg tacgggaacg tgcggatgga tcacct 1496

<210> 919
<211> 1362
<212> DNA
<213> Fusobacterium sp. oral clone ASCF06

<220>
<221> modified_base
<222> (16)..(16)
<223> a, c, t, g, unknown or other

<400> 919
gagtttgatt ttggcncagg attaacgctg acgaatgctt aacacatgca agtctactgg 60

tggcggacgg gtgagtaacg cgtaaagaac ttgcctcaca gttagggaca acatttggaa 120

acgaatgcta atacctgata ttgaaaggcg ctgtgagaga gctttgcgtc ccattagcta 180

gttggagagg taacggctca ccaaggcgat gatgggtagc cggcctgaga gggtgaacgg 240

ccacaagggg actgagacac ggcccttact cctacgggag gcagcagtgg ggaatattgg 300

acactggaca aagtctgatc cagcaattcg tgtgcacgat gacgtttttc ggaatgtaaa 360

gtgctttcag ttgggaagat gacggtacca acagaagaag tgacggctaa atacgtgcca 420

gcagccgcgg taatacgtat gtcacaagcg ttatccggat ttattgggcg taaagcgcgt 480

ctaggtggtt atgtaagtct gatgtgaaaa tgcagggctc aactctgtat tgcgttggaa 540

actgcatgac tagagtactg gagaggtaag cggaactaca agtgtagagg tgaaattcgt 600

agatatttgt aggaatgccg atggggaagc cagcttactg gacagactga cgctaaagcg 660

cgaaagcgtg ggtagcaaac aggattagat accctggtag tccacgccgt acacgatgat 720

tactaggtgt tggggactca gcgcccaagc taacgcgata agtaatccgc ctggggagta 780

cgtacgcaag tatgaaactc aaaggaattg acggggaccc gcacaagcgg tggagcatgt 840

ggtttaattc gacgcaacgc gaggaacctt accagcgttt gacatcgaca ggtggtgcat 900

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct 960

tttgtatgtt accatcagtt ggggactcat gcgatactgc ctgcgatgag caggaggaag 1020

gtggggatga cgtcaagtca tcatgcccct tatacgctgg gctacacacg tgctacaatg 1080

ggtagcagag agtcgcaaag ccgcgaggtg gagctaatct cagctattct tagttcggat 1140

gtactctgca actcgagtac agaagttgga atcgctagta atcgcgaatc agcaatgtcg 1200

cggtgaatac gttctcgggt cttgtacaca ccgcccgtca caccacgaga gttggttgca 1260

cctgaagtag cagcctaggg atgctccgag ggtgtgatta gcgattgggg tgaagtcgta 1320

acaaggtatc cgtacgggaa cgtgcggctg gaacacctcc tt 1362

<210> 920
<211> 1558
<212> DNA
<213> Fusobacterium sp. oral clone ASCF11

<220>
<221> modified_base
<222> (623)..(623)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (852)..(852)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (884)..(884)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (947)..(947)
<223> a, c, t, g, unknown or other

<400> 920
gagagtttga ttctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgaa 60

cgagagcgac cggtgcttgc actgatcaat ctagtggcga acgggtgagt aacacgtggg 120

taacctgccc atcagagggg gataacattc ggaaacggat gctaaaaccg cataggttct 180

ttagtcgcat gactgaagaa ggaaaagagg cttcggcttc tgctgatgga tggacccgcg 240

gtgcattagc tagttggtga ggtaacggct caccaaggcg atgatgcata gccgacctga 300

gagggtgatc ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt 360

agggaatctt ccgcaatgga cgcaagtctg acggagcaac gccgcgtgag tgaagaagga 420

tttcggttcg taaaactctg ttgttagaga agaacagcgc atagagtaac tgttatgcgt 480

gtgacggtat ctaaccagaa agccacggct aaatacgtgc cagcagcccg cggtaatacc 540

gtatgtcaca agcgttatcc ggatttattg ggcgtaaagc gcgtctaggt ggttatgtaa 600

cgtctgatgt gaaaatgcag ggnctcaact ctgtattgcg ttggaaactg catgactaga 660

gtactggaga ggtaagcgga actacaagtg tcagaggtga aattcgtaga tatttgtagg 720

aatgccgatg gggaaagccc agcttactgg acagatactg acgctaaagc gcgaaagcgt 780

gggtagcaaa caggattaga taccctgggt agtccacccc gtaaacgatg attactaggt 840

gttgggggtc gnacctcagc gcccaagcta acgcgataag taanaccgcc tggggagtac 900

gtacgcaagt atgaaactca aaggaattga ccggggaccc gcacaangcg gtggagcatg 960

tggtttaatt cgacgcaacg cgaggaacct taccagcgtt tgacatctta ggaatgagac 1020

agagatgttt cagtgtcact tcggtgaaac gctaaagacc aggtggtgca tggctggtcg 1080

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctttcgtatg 1140

ttaccatcat taagttgggg actcatgcga tactgcctac gatgagtagg aggaaggtgg 1200

ggatgacgtc aagtcatcat gccccttata cgctgggcta cacacgtgct acaatgggta 1260

gtacagagag tcgcaaagcc gtgaggtgga gctaatctca gaaaactatt cttagttcgg 1320

attgtactct gcaactcgag tacatgaagt tggaatcgct agtaatcgcg aatcagcaat 1380

gtcgcggtga atacgttctc gggtcttgta cacaccgccc gtcacaccac gagagttggt 1440

tgcacctgaa gtagcaggcc taaccgtaag gagggatgct ccgagggtgt gattagcgat 1500

tggggtgaag tcgtaacaag gtatccgtac gggaacgtgc ggctggatca cctccttc 1558

<210> 921
<211> 1511
<212> DNA
<213> Fusobacterium ulcerans

<400> 921
ttgaacgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtctacttg atccttcggg tgaaggtggc ggacgggtga gtaacgcgta aagaacttgc 120

cttacagact gggacaacat ttggaaacga atgctaatac cggatattat gattgggtcg 180

catgatctgg ttatgaaagc tatatgcgct gtgagagagc tttgcgtccc attagttagt 240

tggtgaggta acggctcacc aagacgatga tgggtagccg gcctgagagg gtgaacggcc 300

acaaggggac tgagacacgg cccttactcc tacgggaggc agcagtgggg aatattggac 360

aatggaccaa aagtctgatc cagcaattct gtgtgcacga tgaagttttt cggaatgtaa 420

agtgctttca gttgggaaga agtcagtgac ggtaccaaca gaagaagcga cggctaaata 480

cgtgccagca gccgcggtaa tacgtatgtc gcaagcgtta tccggattta ttgggcgtaa 540

agcgcgtcta ggcggcttag taagtctgat gtgaaaatgc ggggctcaac cccgtattgc 600

gttggaaact gctaaactag agtactggag aggtaggcgg aactacaagt gtagaggtga 660

aattcgtaga tatttgtagg aatgccgatg gggaagccag cctactggac agatactgac 720

gctaaagcgc gaaagcgtgg gtagcaaaca ggattagata ccctggtagt ccacgccgta 780

aacgatgatt actaggtgtt gggggtcgaa cctcagcgcc caagctaacg cgataagtaa 840

tccgcctggg gagtacgtac gcaagtatga aactcaaagg aattgacggg gacccgcaca 900

agcggtggag catgtggttt aattcgacgc aacgcgagga accttaccag cgtttgacat 960

cccaagaagt taacagagat gttttcgtgc ctcttcggag gaacttggtg acaggtggtg 1020

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cctttcgtat gttaccatca ttaagttggg gactcatgcg agactgcctg cgatgagcag 1140

gaggaaggtg gggatgacgt caagtcatca tgccccttat acgctgggct acacacgtgc 1200

tacaatgggt agtacagaga gctgcaaacc tgcgagggta agctaatctc ataaaactat 1260

tcttagttcg gattgtactc tgcaactcga gtacatgaag ttggaatcgc tagtaatcgc 1320

aaatcagcta tgttgcggtg aatacgttct cgggtcttgt acacaccgcc cgtcacacca 1380

cgagagttgg ttgcacctga agtaacaggc ctaaccgtaa ggagggatgt tccgagggtg 1440

tgattagcga ttggggtgaa gtcgtaacaa ggtatccgta cgggaacgtg cggatggatc 1500

acctcctttc t 1511

<210> 922
<211> 1503
<212> DNA
<213> Fusobacterium varium

<400> 922
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caagtctact 60

tgatccttcg ggtgaaggtg gcggacgggt gagtaacgcg taaagaactt gccttacaga 120

ctgggacaac atttggaaac gaatgctaat accggatatt atgactgagt cgcatgattt 180

ggttatgaaa gctatatgcg ctgtgagaga gctttgcgtc ccattagtta gttggtgagg 240

taacggctca ccaagacgat gatgggtagc cggcctgaga gggtgaacgg ccacaagggg 300

actgagacac ggcccttact cctacgggag gcagcagtgg ggaatattgg acaatggacc 360

aaaagtctga tccagcaatt ctgtgtgcac gatgaagttt ttcggaatgt aaagtgcttt 420

cagttgggaa gaagtcagtg acggtaccaa cagaagaagc gacggctaaa tacgtgccag 480

cagccgcggt aatacgtatg tcgcaagcgt tatccggatt tattgggcgt aaagcgcgtc 540

taggcggttt agtaagtctg atgtgaaaat gcggggctca accccgtatt gcgttggaaa 600

ctgctaaact agagtactgg agaggtaggc ggaactacaa gtgtagaggt gaaattcgta 660

gatatttgta ggaatgccga tggggaagcc agcctactgg acagatactg acgctaaagc 720

gcgaaagcgt gggtagcaaa caggattaga taccctggta gtccacgccg taaacgatga 780

ttactaggtg ttgggggtcg aacctcagcg cccaagctaa cgcgataagt aatccgcctg 840

gggagtacgt acgcaagtat gaaactcaaa ggaattgacg gggacccgca caagcggtgg 900

agcatgtggt ttaattcgac gcaacgcgag gaaccttacc agcgtttgac atcccaagaa 960

gttaacagag atgttttcgt gcctcttcgg aggaacttgg tgacaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccccttttcgt 1080

atgttaccat cattaagttg gggactcatg cgagactgcc tgcgatgagc aggaggaagg 1140

tggggatgac gtcaagtcat catgcccctt atacgctggg ctacacacgt gctacaatgg 1200

gtagtacaga gagctgcaaa cctgcgaggg taagctaatc tcataaaact attcttagtt 1260

cggattgtac tctgcaactc gagtacatga agttggaatc gctagtaatc gcaaatcagc 1320

tatgttgcgg tgaatacgtt ctcgggtctt gtacacaccg cccgtcacac cacgagagtt 1380

ggttgcacct gaagtaacag gcctaaccgt aaggagggat gttccgaggg tgtgattagc 1440

gattggggtg aagtcgtaac aaggtatccg tacgggaacg tgcggatgga tcacctcctt 1500

tct 1503

<210> 923
<211> 1535
<212> DNA
<213> Gardnerella vaginalis

<400> 923
ttttcgtgga gggttcgatt ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ggatctgacc agcttgctgg ttggtgagag tggcgaacgg gtgagtaatg 120

cgtgaccaac ctgccccatg ctccagaata gctcttggaa acgggtggta atgctggatg 180

ctccaacttg acgcatgtct tgttgggaaa gtgtttagtg gcatgggatg gggtcgcgtc 240

ctatcagctt gtaggcgggg taatggccca cctaggcttc gacgggtagc cggcctgaga 300

gggcggacgg ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc gcaatggggg aaaccctgac gcagcgacgc cgcgtgcggg atgaaggcct 420

tcgggttgta aaccgctttt gattgggagc aagctttcgg gtgagtgtac ctttcgaata 480

agcgccggct aactacgtgc cagcagccgc ggtaatacgt agggcgcaag cgttatccgg 540

aattattggg cgtaaagagc ttgtaggcgg ttcgtcgcgt ctggtgtgaa agcccatcgc 600

ttaacggtgg gtctgcgccg ggtacgggcg ggctagagtg cagtagggga gactggaatt 660

cccggtgtaa cggtggaatg tgtagatatc gggaagaaca ccaatggcga aggcaggtct 720

ctgggctgtt actgacgctg agaagcgaaa gcgtggggag cgaacaggat tagataccct 780

ggtagtccac gccgtaaacg gtggacgctg gatgtggggc ccattccacg ggttccgtgt 840

cggagctaac gcgttaagcg tcccgcctgg ggagtacggc cgcaaggcta aaactcaaag 900

aaattgacgg gggcccgcac aagcggcgga gcatgcggat taattcgatg caacgcgaag 960

aaccttacct gggcttgaca tgtgcctgtc gactgcagag atgtggtttc ccttcggggc 1020

aggttcacag gtggtgcatg gtcgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaaccctcg ccctgtgttg ccagcgggtt atgccgggaa ctcacggggg 1140

accgccgggg ttaactcgga ggaaggtggg gatgacgtca gatcatcatg ccccttacgt 1200

ccagggcttc acgcatgcta caatggccgg tacaacggga tgcgacatgg tgacatggag 1260

cggatccctt aaaaccggtc tcagttcgga tcgtagtctg caactcgact acgtgaaggc 1320

ggagtcgcta gtaatcgcga atcagcaacg tcgcggtgaa tgcgttcccg ggccttgtac 1380

acaccgcccg tcaagtcatg aaagtgggca gcacccgaag ccggtggcct aacccttttg 1440

ggatggagcc gtctaaggtg aggctcgtga ttgggactaa gtcgtaacaa ggtagccgta 1500

ccggaaggtg cggctggatc acctcctttc tacgg 1535

<210> 924
<211> 1557
<212> DNA
<213> Gemella haemolysans

<400> 924
ttggagagtt tgatcctggc tcaggacgaa cgctggcggc gtgcctaata catgcaagtc 60

gagcgaggtt tttctggtgc ttgcaccgga aaaacttagc ggcgaacggg tgagtaacac 120

gtaaagaacc tgcctcatag actgggacaa ctattggaaa cgatagctaa taccggataa 180

cagcattaac tgcatggttg atgtttaaaa gttggttttg ctaacactat gagatggctt 240

tgcggtgcat tagctagttg gtggggtaaa ggcctaccaa ggcgacgatg catagccgac 300

ctgagagggt agatcggcca cactgggact gagacacggc ccagactcct acgggaggca 360

gcagtaggga atcttccgca atgggcgaaa gcctgacgga gcaacgccgc gtgagtgaag 420

aaggatttcg gttcgtaaag ctctgttgtt agggaagaat gattgtgtag taactataca 480

cagtagagac ggtacctaac cagaaagcca cggctaacta cgtgccagca gccgcggtaa 540

tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca ggtggtttaa 600

taagtctgat gtgaaagccc acggctcaac cgtggagggt cattggaaac tgttaaactt 660

gagtgcagga gagaaaagtg gaattcctag tgtagcggtg aaatgcgtag agattaggag 720

gaacaccagt ggcgaaggcg gcttttttggc ctgtaactga cactgaggcg cgaaagcgtg 780

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaagtgt 840

tggtctcata agagatcagt gctgcagcta acgcattaag cactccgcct ggggagtacg 900

accgcaaggt tgaaactcaa aggaattgac ggggacccgc acaagcggtg gagcatgtgg 960

tttaattcga agcaacgcga agaaccttac caagtcttga catactgtga ggacacaaga 1020

gattgtgttg ttctgacctt tggttagaca cagatacagg tggtgcatgg ttgtcgtcag 1080

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat atctagttgc 1140

cagcagtaag atggggactc tagatagact gccagtgata aactggagga aggtggggat 1200

gacgtcaaat catcatgccc cttatgactt gggctacaca cgtgctacaa tggataggaa 1260

caaagagaag cgagctcgcg agagtaagca aacctcacaa aactattctc agttcggatt 1320

gtagtctgca actcgactac atgaagctgg aatcgctagt aatcgcgaat cagaatgtcg 1380

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccacgaga gtttgtaaca 1440

cccgaagacg gtggcctaac cttttaggag ggagccggtc acggtgggac agatgattgg 1500

ggtgaagtcg taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctttct 1557

<210> 925
<211> 1560
<212> DNA
<213> Gemella morbillorum

<400> 925
tttatttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgagcg aagtttttct ggtgcttgca ctagaaaaac ttagcggcga acgggtgagt 120

aacacgtaaa gaacctgcct catagactgg gacaactatt ggaaacgata gctaataccg 180

gataacagta tttctcgcat gagagatatt taaaagttgg ttatgctaac actatgagat 240

ggctttgcgg tgcattagct agttggtggg taaaggccta ccaaggcgac gatgcatagc 300

cgacctgaga gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag 360

gcagcagtag ggaatcttcc gcaatgggcg aaagcctgac ggagcaacgc cgcgtgagtg 420

aagaaggatt tcggttcgta aagctctgtt gttagggaag aatggatatg tagtaactat 480

acatgtaaga gacggtacct aaccagaaag ccacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggtggtt 600

taataagtct gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactgttaaa 660

cttgagtgca ggagagaaaa gtggaattcc tagtgtagcg gtgaaatgcg tagagattag 720

gaggaacacc agtggcgaag gcggcttttt ggcctgtaac tgacactgag gcgcgaaagc 780

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag 840

tgttggtctc ataagagatc agtgctgcag ctaacgcatt aagcactccg cctggggagt 900

acgaccgcaa ggttgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaagtct tgacatactg tgaggacaca 1020

agagattgtg ttgttctgac ctatggttag acacagatac aggtggtgca tggttgtcgt 1080

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tatatctagt 1140

tgccagcagt aagatgggga ctctagatag actgccagtg ataaactgga ggaaggtggg 1200

gatgacgtca aatcatcatg ccccttatga cttgggctac acacgtgcta caatggatag 1260

gaacaaagag aagcgagctc gcgagagtca gccaacctca taaaactatt ctcagttcgg 1320

attgtagtct gcaactcgac tacatgaagc tggaatcgct agtaatcgcg aatcagaatg 1380

tcgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta 1440

acacccgaag acggtggcct aacctttaag gagggagccg gtcacggtgg gacagatgat 1500

tggggtgaag tcgtaacaag gtagccgtat cggaaggtgc ggctggatca cctcctttct 1560

<210> 926

<211> 1560
<212> DNA
<213> Gemella morbillorum

<400> 926
tttatttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgagcg aagtttttct ggtgcttgca ctagaaaaac ttagcggcga acgggtgagt 120

aacacgtaaa gaacctgcct catagactgg gacaactatt ggaaacgata gctaataccg 180

gataacagta tttctcgcat gagagatatt taaaagttgg ttatgctaac actatgagat 240

ggctttgcgg tgcattagct agttggtggg taaaggccta ccaaggcgac gatgcatagc 300

cgacctgaga gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag 360

gcagcagtag ggaatcttcc gcaatgggcg aaagcctgac ggagcaacgc cgcgtgagtg 420

aagaaggatt tcggttcgta aagctctgtt gttagggaag aatggatatg tagtaactat 480

acatgtaaga gacggtacct aaccagaaag ccacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggtggtt 600

taataagtct gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactgttaaa 660

cttgagtgca ggagagaaaa gtggaattcc tagtgtagcg gtgaaatgcg tagagattag 720

gaggaacacc agtggcgaag gcggcttttt ggcctgtaac tgacactgag gcgcgaaagc 780

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag 840

tgttggtctc ataagagatc agtgctgcag ctaacgcatt aagcactccg cctggggagt 900

acgaccgcaa ggttgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaagtct tgacatactg tgaggacaca 1020

agagattgtg ttgttctgac ctatggttag acacagatac aggtggtgca tggttgtcgt 1080

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tatatctagt 1140

tgccagcagt aagatgggga ctctagatag actgccagtg ataaactgga ggaaggtggg 1200

gatgacgtca aatcatcatg ccccttatga cttgggctac acacgtgcta caatggatag 1260

gaacaaagag aagcgagctc gcgagagtca gccaacctca taaaactatt ctcagttcgg 1320

attgtagtct gcaactcgac tacatgaagc tggaatcgct agtaatcgcg aatcagaatg 1380

tcgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta 1440

acacccgaag acggtggcct aacctttaag gagggagccg gtcacggtgg gacagatgat 1500

tggggtgaag tcgtaacaag gtagccgtat cggaaggtgc ggctggatca cctcctttct 1560

<210> 927
<211> 1557
<212> DNA
<213> Gemella sanguinis

<400> 927
ttggagagtt tgatcctggc tcaggacgaa cgctggcggc gtgcctaata catgcaagtc 60

gagcgaagtt tttctggtgc ttgcactaga aaaacttagc ggcgaacggg tgagtaacac 120

gtaaagaacc tgcctcatag acggggacaa ctattggaaa cgatagctaa taccggataa 180

cagcataaat cgcatgatat atgtttaaaa gttggtttcg gctaacacta tgagatggct 240

ttgcggtgca ttagctagtt ggtggggtaa aggcctacca aggcgacgat gcatagccga 300

cctgagaggg tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca 360

gcagtaggga atcttccgca atgggcgaaa gcctgacgga gcaacgccgc gtgagtgaag 420

aaggatttcg gttcgtaaag ctctgttgtt agggaagaat gattgtgtag taactataca 480

cagtagagac ggtacctaac cagaaagcca cggctaacta cgtgccagca gccgcggtaa 540

tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca ggtggtttaa 600

taagtctgat gtgaaagccc acggctcaac cgtggagggt cattggaaac tgttaaactt 660

gagtgcagga gagaaaagtg gaattcctag tgtagcggtg aaatgcgtag agattaggag 720

gaacaccagt ggcgaaggcg gctttttggc ctgtaactga cactgaggcg cgaaagcgtg 780

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaagtgt 840

tggtctcata agagatcagt gctgcagcta acgcattaag cactccgcct ggggagtacg 900

accgcaaggt tgaaactcaa aggaattgac ggggacccgc acaagcggtg gagcatgtgg 960

tttaattcga agcaacgcga agaaccttac caagtcttga catactgtga ggacacaaga 1020

gattgtgttg ttctgacctt tggttagaca cagatacagg tggtgcatgg ttgtcgtcag 1080

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccctat gtctagttgc 1140

cagcagtaag atggggactc tagacagact gccagtgata aactggagga aggcggggat 1200

gacgtcaaat catcatgccc cttatgactt gggctacaca cgtgctacaa tggataggaa 1260

caaagagaag ctaactcgcg agagcaagca aacctcataa aactattctc agttcggatt 1320

gtagtctgca actcgactac atgaagctgg aatcgctagt aatcgcgaat cagaatgtcg 1380

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccacgaga gtttgtaaca 1440

cccgaagacg gtggcctaac ctttaaggag ggagccggtc acggtgggac agatgattgg 1500

ggtgaagtcg taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctttct 1557

<210> 928
<211> 1403
<212> DNA
<213> Gemella sp. WAL 1945J

<400> 928
cgaactttaa gagtgcttgc acacttaaag ttagcggcga acgggtgagt aacacgtaaa 60

gaacctacct tatagacagg gacaactatt ggaaacgata gctaatacct gataagaaag 120

aaactcgcat gagagaagtt cgaaagtcgg agcaatctga cactataaga tggctttgcg 180

gtgcattagc tagttggtag ggtaaaagcc taccaaggcg acgatgcata gccgacctga 240

gagggtgatc ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

agggaatctt ccgcaatgga cgcaagtctg acggagcaac gccgcgtgag tgaagaagga 360

tttcggttcg taaaactctg ttgttaggga agaaaaaatg tataataact atatacaaaa 420

gagacggtac ctaaccagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt 480

aggtggcaag cgttgtccgg aattattggg cgtaaagcgc gcgcaggtgg tttagaaagt 540

ctgatgtgaa agcccacggc tcaaccgtgg agggtcattg gaaactaata aacttgagtg 600

caggagagaa aagtggaatt cctagtgtag cggtgaaatg cgtagagatt aggaggaaca 660

ccggtggcga aagcggcttt ttggcctgca actgacactg aggcgcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttggag 780

tcaaaagact tcagtgctgc cagcaaacgc attaagcact ccgcctgggg agtacgatcg 840

caagattgaa actcaaagga attgacgggg acccgcacaa gcggtggagt atgtggttta 900

attcgaagca acgcgaagaa ccttaccaag tcttgacata cagtgaagat ataagaaatt 960

atattgtttt aatgtttaca ttaaacactg atacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttatatc tagttaccag 1080

cagtaagatg gggactctag atagactgcc agtgacaaac tggaggaagg tggggatgac 1140

gtcaaatcat catgcccctt atgacttggg ctacacacgt actacaatgg ataggaacaa 1200

agagaagcga cctcgcaaga gcaagccaac ctcagaaaac tattctcagt tcggattgta 1260

ggctgcaact cgcctacatg aagctggaat cgctagtaat cgcgaatcag aatgtcgcgg 1320

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac cacgagagtt tgtaacacct 1380

gaagacggtg gcctaaccgt aag 1403

<210> 929
<211> 1364
<212> DNA
<213> Gemella sp. oral clone ASCE02

<220>
<221> modified_base
<222> (221)..(221)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (729)..(729)
<223> a, c, t, g, unknown or other

<400> 929
gagtttgatc ttggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtcgagcg 60

agcggcgaac aggtgagtaa cacgtaaaga aagtgcctca tagactggga caactattgg 120

aaacgatagc taataccgga taacaaaaga cactatgaga tggctttgcg gtgcattagc 180

tagttggtgg ggtaaaggct taccaaggcg acgatgcata nccgacctga gagggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

ccgcaatggg cgaaagcctg acggagcaac gccgcgtgag tgaagaagga tttcggttcg 360

taaagctctg ttgttaggga agaagacggt acctaaccag aaagtcacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc 480

gcgcgcaggt ggtttaataa gtctgatgtg aaagcccacg gctcaaccgt ggagggtcat 540

tggaaactgt taaacttgag tgcaggagag aaaagtggaa ttcctagtgt agcggtgaaa 600

tgcgtagaga ttaggaggaa caccagtggc gaaggcggct ttttggcctg actgacactg 660

aggcgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcnt agtgttggtc gatcagtgct gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccaa gtcttgacat atacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttatatc tagttgccag catggggact ctagatagac tgccagtgat aaactggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgact tgggctacac acgtgctaca 1080

atggatagca aagagaagcg agctcgcgag agtaagcaaa cctcacctat tctcagttcg 1140

gatgtagtct gcaactcgac tacagaagct ggaatcgcta gtaatcgcga atcagaatgt 1200

cgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaaga cggtgcctag ggagccggtc acggtgggac agatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggc tggaacacct cctt 1364

<210> 930
<211> 1362
<212> DNA
<213> Gemella sp. oral clone ASCF04

<220>
<221> modified_base
<222> (823)..(823)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (837)..(837)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (845)..(845)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (849)..(849)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1001)..(1001)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1059)..(1059)
<223> a, c, t, g, unknown or other

<400> 930
gagtttgatt atggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtcgagcg 60

agcggcgaac gggtgagtaa cacgtaaaga acctgcctca tagactggga caactattgg 120

aaacgatagc taataccgga taacaaaaga cactatgaga tggctttgcg gtgcattagc 180

tagttggtgg ggtaaaggcc taccaaggcg acgatgcata gccgacctga gagggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

ccgcaatggg cgaaagcctg acggagcaac gccgcgtgag tgaagaagga tttcggttcg 360

taaagctctg ttgttaggga agaagacggt acctaaccag aaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc 480

gcgcgcaggt ggtttaataa gtctgatgtg aaagcccacg gctcaaccgt ggagggtcat 540

tggaaactgt taaacttgag tgcaggagag aaaagtggaa ttcctagtgt agcggtgaaa 600

tgcgtagaga ttaggaggaa caccagtggc gaaggcggct tgttggcctg actgacactg 660

aggcgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta agtgttggtc gatcagtgct gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gccaggttga aactgaaagg aattcccggg ganccgcacg cggtggngca 840

tgtgntttna ttcgaagcaa cgcgaagaac cttaccaagt cttgacatat gcaggtggtg 900

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cttatatcta gttgccagca tggggactct agatagactg ncagtgataa actggaggaa 1020

ggtggggatg acgtcaaatc atcatgcccc ttatgactng ggctacacac gtgctacaat 1080

ggatagcaaa gagaagcgag ctcgcgagag taagcaaacc tcacctattc tcagttcgga 1140

tgtagtctgc aactcgacta cagaagctgg aatcgctagt aatcgcgaat cagaatgtcg 1200

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccacgaga gtttgtaaca 1260

cccgaagacg gtgcctaggg atccggtcac ggtgggacag atgattgggg tgaagtcgta 1320

acaaggtagc cgtatcggaa ggtgcggctg gaacacctcc tt 1362

<210> 931
<211> 1340
<212> DNA
<213> Gemella sp. oral clone ASCF12

<220>
<221> modified_base
<222> (140)..(140)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (161)..(161)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (331)..(331)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (693)..(693)
<223> a, c, t, g, unknown or other

<400> 931
acgctggcgg cgtgcctaat acatgcaagt cgagcgagcg gcgaacgggt gagtaacacg 60

taaagaacct gcctcataga cggggacaac tattggaaac gatagctaat accggataac 120

aaaagacact atgagatggn tttgcggtgc attagctagt nggtggggta aaggcctacc 180

aaggcgacga tgcatagccg acctgagagg gtgatcggcc acactgggac tgagacacgg 240

cccagactcc tacgggaggc agcagtaggg aatcttccgc aatgggcgaa agcctgacgg 300

agccacgccg tgtgagtgaa gaaggatttc nggtcgtaaa gctctgttgt tagggaagaa 360

gacggtacct aaccagaaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 420

gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggtggtt taataagtct 480

gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactgttaaa cttgagtgca 540

ggagagaaaa gtggaattcc tagtgtagcg gtgaaatgcg tagagattag gaggaacacc 600

agtggcgaag gcggcttttt ggcctgactg acactgaggc gcgaaagcgt ggggagcaaa 660

caggattaga taccctggta gtccacgccg tanacgatga gtgctaagtg ttggtcgatc 720

agtgctgcag ctaacgcatt aagcactccg cctggggagt acgaccggaa ggttgaaact 780

caaaggaatt gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 840

cgaagaacct taccaagtct tgacatatac aggtggtgca tggttgtcgt cagctcgtgt 900

cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc tatgtctagt tgccagcatg 960

gggactctag acagactgcc agtgataaac tggaggaagg cggggatgac gtcaaatcat 1020

catgcccctt atgacttggg ctacacacgt gctacaatgg atagcaaaga gaagctaact 1080

cgcgagagca agcaaacctc atctattctc agttcggatg tagtctgcaa ctcgactaca 1140

gaagctggaa tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt tcccgggtct 1200

tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagacggt gcctagggag 1260

ccggtcacgg tgggacagac gattggggtg aagtcgtaac aaggtagccg tatcggaagg 1320

tgcggctgga acacctcctt 1340

<210> 932
<211> 1367
<212> DNA
<213> Gemmiger formicilis

<220>
<221> modified_base
<222> (10)..(12)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1359)..(1360)

<223> a, c, t, g, unknown or other

<400> 932
aacggagtcn nngaggagct tgcttttctt gatttagtgg cgaacgggtg agtaacgcgt 60

gagtaacctg ccctggagtg ggggacaaca gttggaaacg actgctaata ccgcataagc 120

ccacggtgcc gcatggcact gagggaaaag gatttattcg cttcaggatg gactcgcgtc 180

caattagcta gttggtgagg taacggccca ccaaggcgac gattggtagc cggactgaga 240

ggttgaacgg ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg 300

gggatattgc acaatggggg aaaccctgat gcagcgacgc cgcgtggagg aagaaggttt 360

tcggattgta aactcctgtc gttagggacg ataatgacgg tacctaacaa gaaagcaccg 420

gctaactacg tgccagcagc cgcggtaaaa cgtagggtgc aagcgttgtc cggaattact 480

gggtgtaaag ggagcgcagg cggaccggca agttggaagt gaaatccatg ggctcaaccc 540

gtgaattgct ttcaaaactg ctggccttga gtagtgcaga ggtaggtgga attcccggtg 600

tagcggtgga atgcgtagat atcgggagga acaccagtgg cgaaggcgac ctactgggca 660

ccaactgacg ctgaggctcg aaagcatggg tagcaaacag gattagatac cctggtagtc 720

catgccgtaa acgatgatta ctaggtgttg gaggattgac cccttcagtg ccgcagttaa 780

cacaataagt aatccacctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 840

ggggcccgca caagcagtgg agtatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 900

aggtcttgac atccgatgca tagtgcagag atgcatgaag tccttcggga catcgagaca 960

gatggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1020

cgcaaccctt attgccagtt actacgcaag aggactctgg cgagactgcc gttgacaaaa 1080

cggaggaagg tggggatgac gtcaaatcat catgcccttt atgacctggg ctacacacgt 1140

actacaatgg cgtttaacaa agagaagcaa gaccgcgagg tggagcaaaa ctcagaaaca 1200

acgtctcagt tcagattgca ggctgcaact cgcctgcatg aagtcggaat tgctagtaat 1260

cgcggatcag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac 1320

catgagagcc ggggggaccc gaagtcggta gtctaaccnn aaggagg 1367

<210> 933
<211> 1553
<212> DNA
<213> Geobacillus kaustophilus

<400> 933
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgag 60

cggaccaaat cggagcttgc tctgatttgg tcagcggcgg acgggtgagt aacacgtggg 120

caacctgccc gcaagaccgg gataactccg ggaaaccgga gctaataccg gataacaccg 180

aagaccgcat ggtctttggt tgaaaggcgg cctttggctg tcacttgcgg atgggcccgc 240

ggcgcattag ctagttggtg aggtaacggc tcaccaaggc gacgatgcgt agccggcctg 300

agagggtgac cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgaaagcct gacggagcga cgccgcgtga gcgaagaagg 420

ccttcgggtc gtaaagctct gttgtgaggg acgaaggagc gccgttcgaa gagggcggcg 480

cggtgacggt acctcacgag gaagccccgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggggcg agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc ggttccttaa 600

gtctgatgtg aaagcccacg gctcaaccgt ggagggtcat tggaaactgg gggacttgag 660

tgcaggagag gagagcggaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 720

caccagtggc gaaggcggct ctctggcctg caactgacgc tgaggcgcga aagcgtgggg 780

agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtgc taagtgttag 840

aggggtcaca ccctttagtg ctgcagctaa cgcgataagc actccgcctg gggagtacgg 900

ccgcaaggct gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt 960

ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac atcccctgac aacccaagag 1020

attgggcgtt ccccccttcgg gggacagggt gacaggtggt gcatggttgt cgtcagctcg 1080

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcgcctct agttgccagc 1140

acgaaggtgg gcactctaga gggactgccg gcgacaagtc ggaggaaggt ggggatgacg 1200

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg cggtacaaag 1260

ggctgcgaac ccgcgagggg gagcgaatcc caaaaagccg ctctcagttc ggattgcagg 1320

ctgcaactcg cctgcatgaa gccggaatcg ctagtaatcg cggatcagca tgccgcggtg 1380

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagcttg caacacccga 1440

agtcggtgag gtaaccctta cgggagccag ccgccgaagg tggggcaagt gattggggtg 1500

aagtcgtaac aaggtagccg taccggaagg tgcggctgga tcacctcctt tct 1553

<210> 934
<211> 1517
<212> DNA
<213> Geobacillus sp. E263

<400> 934
agtttgatcc tggctcagga cgaacgctgg cggcgtgcct aatacatgca agtcgagcgg 60

accaaatcgg agcttgctct gatttggtca gcggcggacg ggtgagtaac acgtgggcaa 120

cctgcccgca agaccgggat aactccggga aaccggagct aataccggat aacaccgaag 180

accgcatggt ctttggttga aaggcggcct ttggctgtca cttgcggatg ggcccgcggc 240

gcattagcta gttggtgagg taacggctca ccaaggcgac gatgcgtagc cggcctgaga 300

gggtgaccgg ccacactggg actgagacac ggcccagacc cctacgggag gcagcagtag 360

ggaatcttcc gcaatgggcg aaagcctgac ggagcgacgc cgcgtgagcg aagaaggcct 420

tcgggtcgta aagctctgtt gtgagggacg aaggagcgcc gttcgaagag ggcggcgcgg 480

tgacggtacc tcacgaggaa gccccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggggcgagc gttgtccgga attattgggc gtaaagcgcg cgcaggcggt tccttaagtc 600

tgatgtgaaa gcccacggct caaccgtgga gggtcattgg aaactggggg acttgagtgc 660

aggagaggag agcggaattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac 720

cagtggcgaa ggcggctctc tggcctgcaa ctgacgctga ggcgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagagg 840

ggtcacaccc tttagtgctg cagctaacgc gataagcact ccgcctgggg agtacggccg 900

caaggctgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccctgacaac ccaagagatt 1020

gggcgttccc ccttcggggg gacagggtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgcctctag ttgccagcac 1140

gaaggtgggc actctagagg gactgccggc gacaagtcgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gcccccttatg acctgggcta cacacgtgct acaatgggcg gtacaaaggg 1260

ctgcgaaccc gcgaggggga gcgaatccca aaaagccgct ctcagttcgg attgcaggct 1320

gcaactcgcc tgcatgaagc cggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa 1380

tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagcttgca acacccgaag 1440

tcggtgaggt aacccgcaag ggagccagcc gccgaaggtg gggcaagtga ttggggtgaa 1500

gtcgtaacaa ggtaacc 1517

<210> 935
<211> 1546
<212> DNA
<213> Geobacillus sp. WCH70

<400> 935
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggaccgaacg gaagcttgct tctgttcggt tagcggcgga cgggtgagta acacgtgggt 120

aacctgcccg taagaccggg ataactccgg gaaaccgggg ctaataccgg ataacaccga 180

agaccgcatg gtctttggtt gaaaggtggc ttttgctacc acttacggat gggcccgcgg 240

cgcattagct agttggtgag gtaacggctc accaaggcga cgatgcgtag ccggcctgag 300

agggtgaccg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcgacg ccgcgtgagc gaagaaggtc 420

ttcggatcgt aaagctctgt tgttagggaa gaagaagtac cgttcgaata gggcggtacg 480

gtgacggtac ctaacgagaa agccccggct aactacgtgc cagcagccgc ggtaatacgt 540

aggggcgag cgttgtccgg aattattggg cgtaaagcgc gcgcaggcgg tcccttaagt 600

ctgatgtgaa agcccacggc tcaaccgtgg agggtcattg gaaactgggg gacttgagtg 660

cagaagagga gagcggaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca 720

ccagtggcga aggcggctct ctggtctgta actgacgctg aggcgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttagag 840

ggattaaacc ctttagtgct gtagctaacg cgttaagcac tccgcctggg gagtacggcc 900

gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgaagc aacgcgaaga accttaccag gtcttgacat cccctgacaa ccctggagac 1020

agggcgttcc cccttcgggg gggacagggt gacaggtggt gcatggttgt cgtcagctcg 1080

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcgcccct agttgccagc 1140

attcagttgg gcactctagg gggactgccg gctaaaagtc ggaggaaggt ggggatgacg 1200

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg cggtacaaag 1260

ggctgcgaac ccgcgagggg gagcgaatcc caaaaagccg ctctcagttc ggattgcagg 1320

ctgcaactcg cctgcatgaa gccggaatcg ctagtaatcg cggatcagca tgccgcggtg 1380

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagcttg caacacccga 1440

agtcggtgag gtaacccgta agggagccag ccgccgaagg tggggcaagt gattggggtg 1500

aagtcgtaac aaggtagccg taccggaagg tgcggctgga tcacct 1546

<210> 936
<211> 1523
<212> DNA
<213> Geobacillus stearothermophilus

<400> 936
acgaacgctg gcggcgtgcc taatacatgc aagtcgagcg gaccggattg gggcttgcct 60

tgattcggtc agcggcggac gggtgagtaa cacgtgggca acctgcccgc aagaccggga 120

taactccggg aaaccggagc taataccgga taacaccgaa gaccgcatgg tcttcggttg 180

aaaggcggcc tttgggctgt cacttgcgga tgggcccgcg gcgcattagc tagttggtga 240

ggtaacggct caccaaggcg acgatgcgta gccggcctga gagggtgacc ggccacactg 300

ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt ccgcaatggg 360

cgaaagcctg acggagcgac gccgcgtgag cgaagaaggc cttcgggtcg taaagctctg 420

ttgtgaggga cgaaggagcg ccgttcgaag agggcggcgc ggtgacggta cctcacgaga 480

aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcga gcgttgtccg 540

gaattattgg gcgtaaagcg cgcgcaggcg gtctcttaag tctgatgtga aagcccacgg 600

ctcaaccgtg gagggtcatt ggaaactggg ggacttgagg gcaggagagg agagcggaat 660

tccacgtgta gcggtgaaat gcgtagagat gtggaggaac accagtggcg aaggcggctc 720

tctggcctgc acctgacgct gaggcgcgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatgagtgct aagtgttaga ggggtcacac cctttagtgc 840

tgcagctaac gcgataagca ctccgcctgg ggagtacggc cgcaaggctg aaactcaaag 900

gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag 960

aaccttacca ggtcttgaca tcccctgaca acccaagaga ttgggcgttc ccccttcggg 1020

gggacagggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac cctcgcctct agttgccagc attcggttgg gcactctaga 1140

gggactgccg gcgacaagtc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta 1200

tgacctgggc tacacacgtg ctacaatggg cggtacaaag ggctgcgaac ccgcgagggg 1260

gagcgaatcc caaaaagccg ctctcagttc ggattgcagg ctgcaactcg cctgcatgaa 1320

gccggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacca cgagagcttg caacacccga agtcggtgag gtaaccctta 1440

cgggagccag ccgccgaagg tggggcaagt gattggggtg aagtcgtaac aaggtagccg 1500

taccggaagg tgcggctgga tca 1523

<210> 937
<211> 1561
<212> DNA
<213> Geobacillus thermocatenulatus

<400> 937
tcttttggag agtttgatcc tggctcagga cgaacgctgg cggcgtgcyt aatacatgca 60

agtcgagcgg accgaacggg agcttgctct cgtttggtca gcggcggacg ggtgagtaac 120

acgtgggcaa cctgcccgca agaccgggat aactccggga aaccggagct aataccggat 180

aacaccgaag accgcatggt ctttggttga aaggcggcct ttggctgtca cttgcggatg 240

ggcccgcggc gcattagcta gttggtgagg taacggctca ccaaggcgac gatgcgtagc 300

cggcctgaga gggtggacgg ccacactggg actgagacac ggcccagact cctacgggag 360

gcagcagtag ggaatcttcc gcaatgggcg aaagcctgac ggagcgacgc cgcgtgagcg 420

aagaaggcct tcgggtcgta aagctctgtt gtgagggacg aaggagcgcc gttcgaagag 480

ggcggcgcgg tgacggtacc tcacgagaaa gccccggcta actacgtgcc agcagccgcg 540

gtaatacgta gggggcgagc gttgtccgga attattgggc gtaaagcgcg cgcaggyggc 600

cccttaagtc tgatgtgaaa gcccacggct caaccgtgga gggtcattgg aaactggggg 660

gcttgagggc aggagaggag agcggaattc cacgtgtagc ggtgaaatgc gtagagatgt 720

ggaggaacac cagtggcgaa ggcggctctc tggcctgcaa ctgacgctga ggcgcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa 840

gtgttagagg ggtcacaccc tttagtgctg cagctaacgc gataagcact ccgcctgggg 900

agtacggccg caaggctgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 960

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccctgacaac 1020

ccaagagatt gggcgttccc ccttcggggg gacagggtga caggtggtgc atggttgtcg 1080

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgcctctag 1140

ttgccagcat tcaggtgggc actctagagg gactgccggc gacaagtcgg aggaaggtgg 1200

ggatgacgtc aaatcatcat gccccttatg acctgggcta cacacgtgct acaatgggcg 1260

gtacaaaggg ctgcgaaccc gcgaggggga gcgaatccca aaaagccgct ctcagttcgg 1320

attgcaggct gcaactcgcc tgcatgaagc cggaatcgct agtaatcgcg gatcagcatg 1380

ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagcttgca 1440

acacccgaag tcggtgaggc aacccgcaag ggagccagcc gccgaaggtg gggcaagtga 1500

ttggggtgaa gtcgtaacaa ggtagccgta ccggaaggtg cggctggatc acctcctttc 1560

t 1561

<210> 938
<211> 1551
<212> DNA
<213> Geobacillus thermodenitrificans

<400> 938
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggaccgaacg agagcttgct cttgttcggt cagcggcgga cgggtgagta acacgtgggc 120

aacctgcccg caagaccggg ataactccgg gaaaccggag ctaataccgg ataacaccaa 180

agaccgcatg gtctttggtt gaaaggcggc ttcggctgcc acttgcggat gggcccgcgg 240

cgcattagct agttggtgag gtaacggctc accaaggcga cgatgcgtag ccggcctgag 300

agggtgaccg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcgacg ccgcgtgagc gaagaaggcc 420

ttcgggtcgt aaaagctctg ttgtgaggga cgaaggagcg ccgtttgaat aaggcggcgc 480

gggggacggt acctcacgaa aaagcccccg gctaactacg tgccagcagc cgcggtaata 540

cgtagggggc gagcgttgtc cggaattatt gggcgtaaag gggcccgcag gcggtccttt 600

aagtctgatg tgaaagccca cggctcaacc gtggagggtc attggaaact gggggacttg 660

agtgcaggag aggagagcgg aattccacgt gtagcggtga aatgcgtaga gatgtggagg 720

aacaccagtg gcgaaggcgg ctctctggcc tgtaactgac gctgaggcgc gaaagcgtgg 780

ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 840

agaggggtca cacccttag tgctgtagct aacgcgataa gcactccgcc tggggagtac 900

ggccgcaagg ctgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg 960

gtttaattcg aagcaacgcg aagaacctta ccaggtcttg acatcccctg acaacccaag 1020

agattgggcg ttccccccttc ggggggacag ggtgacaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgcc tctagttgcc 1140

agcattcagt tgggcactct agagggactg ccggctaaaa gtcggaggaa ggtggggatg 1200

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat gggcggtaca 1260

aagggctgcg aacccgcgag ggggagcgaa tcccaaaaag ccgctctcag ttcggattgc 1320

aggctgcaac tcgcctgcat gaagccggaa tcgctagtaa tcgcggatca gcatgccgcg 1380

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacgagagc ttgcaacacc 1440

cgaagtcggt gaggtaaccc ttacgggagc cagccgccga aggtggggca agtgattggg 1500

gtgaagtcgt aacaaggtag ccgtaccgga aggtgcggct ggatcacctc c 1551

<210> 939
<211> 1562

<212> DNA
<213> Geobacillus thermoglucosidasius

<400> 939
ctctttggag agtttgatcc tggctcagga cgaacgctgg cggcgtgcct aatacatgca 60

agtcgagcgg accgggcggg agcttgcttc cgcttggtta gcggcggacg ggtgagtaac 120

acgtgggtaa cctgcccgta agaccgggat aactccggga aaccggggct aataccggat 180

aacaccgaag accgcatggt cttcggttga aaggcggctt cggctgccac ttacggatgg 240

gcccgcggcg cattagctag ttggtgaggt aacggctcac caaggcgacg atgcgtagcc 300

ggcctgagag ggtgaccggc cacactggga ctgagacacg gcccagactc ctacgggagg 360

cagcagtagg gaatcttccg caatggacga aagtctgacg gagcgacgcc gcgtgagcga 420

agaaggtctt cggatcgtaa agctctgttg ttagggaaga agaagtgccg ttcgaacagg 480

gcggcacggt gacggtacct aacgagaaag ccccggctaa ctacgtgcca gcagccgcgg 540

taatacgtag ggggcgagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggcggtc 600

ccttaagtct gatgtgaaag cccacggctt aaccgtggag ggtcattgga aactggggga 660

cttgagtgca gaagaggaga gcggaattcc acgtgtagcg gtgaaatgcg tagagatgtg 720

gaggaacacc agtggcgaag gcggctctct ggtctgtaac tgacgctgag gcgcgaaagc 780

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag 840

tgttagaggg gttattccct ttagtgctgt agctaacgcg ttaagcactc cgcctgggga 900

gtacggccgc aaggctgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 960

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc cctgacaacc 1020

ctggagacag ggcgttcctc ccttgcggga ggacagggtg acaggtggtg catggttgtc 1080

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc ctcgccccta 1140

gttgccagca ttcagttggg cactctaggg ggactgccgg ctaaaagtcg gaggaaggtg 1200

gggatgacgt caaatcatca tgccccttat gacctgggct acacacgtgc tacaatgggc 1260

ggtacaaagg gctgcgaacc cgcgaggggg agcgaatccc aaaaagccgc tctcagttcg 1320

gattgcaggc tgcaactcgc ctgcatgaag ccggaatcgc tagtaatcgc ggatcagcat 1380

gccgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac gagagcttgc 1440

aacacccgaa gtcggtgagg taacccgcaa gggagccagc cgccgaaggt ggggcaagtg 1500

attggggtga agtcgtaaca aggtagccgt accggaaggt gcggctggat cacctccttt 1560

ct 1562

<210> 940
<211> 1546
<212> DNA
<213> Geobacillus thermoleovorans

<400> 940
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

ggaccaaatc ggagcttgct ctgatttggt cagcggcgga cgggtgagta acacgtgggc 120

aacctgcccg caagaccggg ataactccgg gaaaccggag ctaataccgg ataacaccga 180

agaccgcatg gtctttggtt gaaaggcggc ctttggctgt cacttgcgga tgggcccgcg 240

gcgcattagc tagttggtga ggtaacggct caccaaggcg acgatgcgta gccggcctga 300

gagggtgacc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

agggaatctt ccgcaatggg cgaaagcctg acggagcgac gccgcgtgag cgaagaaggc 420

cttcgggtcg taaagctctg ttgtgaggga cgaaggagcg ccgttcgaag agggcggcgc 480

ggtgacggta cctcacgagg aagccccggc taactacgtg ccagcagccg cggtaatacg 540

taggggcga gcgttgtccg gaattattgg gcgtaaagcg cgcgcaggcg gttccttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactggg ggacttgagt 660

gcaggagagg agagcggaat tccacgtgta gcggtgaaat gcgtagagat gtggaggaac 720

accagtggcg aaggcggctc tctggcctgc aactgacgct gaggcgcgaa agcgtgggga 780

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttaga 840

ggggtcacac cctttagtgc tgcagctaac gcgataagca ctccgcctgg ggagtacggc 900

cgcaaggctg aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca ggtcttgaca tcccctgaca acccaagaga 1020

ttgggcgttc ccccttcggg gggacagggt gacaggtggt gcatggttgt cgtcagctcg 1080

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcgcctct agttgccagc 1140

acgaaggtgg gcactctaga gggactgccg gcgacaagtc ggaggaaggt ggggatgacg 1200

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg cggtacaaag 1260

ggctgcgaac ccgcgagggg gagcgaatcc caaaaagccg ctctcagttc ggattgcagg 1320

ctgcaactcg cctgcatgaa gccggaatcg ctagtaatcg cggatcagca tgccgcggtg 1380

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagcttg caacacccga 1440

agtcggtgag gcaacccgca agggagccag ccgccgaagg tggggcaagt gattggggtg 1500

aagtcgtaac aaggtagccg taccggaagg tgcggctgga tcacct 1546

<210> 941
<211> 1555
<212> DNA
<213> Geobacter bemidjiensis

<400> 941
aaactggaga gtttgatcct ggctcagaac gaacgctggc ggcgtgctta acacatgcaa 60

gtcgaacggg atccagagct tgctctggtg agagtggcgc acgggtgagt aacgcgtgga 120

taacctgccc tggtatctgg aataacatct cgaaaggggt gctaataccg gataagccta 180

cggagccttc ggtctctgca ggaaaaggtg gcctctattt ataagctacc gtatcaggat 240

gggtccgcgt accattagct agttggtagg gtaatggcct accaaggcta cgatggttag 300

ctggtctgag aggatgatca gccacactgg aactgagaca cggtccagac tcctacggga 360

ggcagcagtg gggaattttg cgcaatgggg gaaaccctga cgcagcaacg ccgcgtgagt 420

gatgaaggct ttcgggtcgt aaagctctgt cagtagggaa gaaatgaaaa cggttaatac 480

ccgtttttct tgacggtacc tacaaaggaa gcaccggcta actccgtgcc agcagccgcg 540

gtaatacgga gggtgcaagc gttgttcgga tttattgggc gtaaagcgcg tgtaggcggt 600

ttcttaagtc tgatgtgaaa gccctgggct caacccagga agtgcattgg atactgggag 660

acttgaatac gggagagggt agtggaattc ctagtgtagg agtgaaatcc gtagatatta 720

ggaggaacac cggtggcgaa ggcggctacc tggaccgata ttgacgctga gacgcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagaactag 840

gtgttgcggg tattgacccc tgcagtgccg cagctaacgc attaagttct ccgcctggga 900

agtacggtcg caagactaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 960

atgtggttta attcgacgca acgcgcagaa ccttacctgg gcttgacatc tgcggaacct 1020

ccccgaaacg ggagggtgcc ttcgggagcc gcaagacagg tgctgcatgg ctgtcgtcag 1080

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccctat ccttagttgc 1140

catcatttag ttgggcactc taaggagact gccggtgtca aaccggagga aggtggggat 1200

gacgtcaagt cctcatggcc cttatgtcca gggctacaca cgtgctacaa tggccggtac 1260

aaagagcagc gataccgcga ggtggagcca atctcaaaaa gccggtctca gttcggattg 1320

gagtctgcaa ctcgactcca tgaagttgga atcgctagta atcgcggatc agcacgccgc 1380

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accacgggag tcggttggtc 1440

ccgaagtgcg tgagctaacc cgcaagggag gcagcgtcct aaggaatggc cggtgactgg 1500

ggtgaagtcg taacaaggta gccgtagggg aacctgcggc tggatcacct ccttt 1555

<210> 942
<211> 1485
<212> DNA
<213> Gloeobacter violaceus

<400> 942
aaaatggaga gtttgatcct ggctcaggat gaacgctggc ggcgtgctta acacatgcaa 60

gtcgaacgag atcttcggat cgagtggcgg acgggtgagt aacacgtggg aatctgccct 120

caggaggggg ataacggccg gaaacggccg ctaatacccc atatgccgca aggtgaaatg 180

aatttcgcct gaggatgagc ccgcgtctga ttagctagtt ggtggggtaa tggcctacca 240

aggctacgat cagtagctgg tctgagagga tgatcagcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtgggga attttccgca atgggcgaaa gcctgacgga 360

gcaacgccgc gtgggtgatg aaggcccgtg ggtcgtaaag ccctttgtc agggacgaaa 420

cctgacggta cctgacgaat aagcatcggc taactccgtg ccagcagccg cggtaatacg 480

gaggatgcaa gcgttatccg gaattattgg gcgtaaagcg tacgtaggcg gccagccaag 540

tctggggtca aagcccgcag cctaactgcg gaaaggccct ggaaactggt tggctagagt 600

gcggtagggg caaggggaat tcccggtgta gcggtgaaat gtggagatat cgggaagaac 660

accagcggcg aaagcgcctt gctggaccgc aactgacgct gaggtacgaa agccagggga 720

gcaaatggga ttagataccc cagtagtcct ggccgtaaac gatggacact aggtgttgcg 780

cgtatcgacc cgtgcagtgc cgtagctaac gcgttaagtg tcccgcctgg ggagtacgca 840

cgcaagtgtg aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 900

taattcgatg caacgcgaag aaccttacca gggcttgaca tgtcgcgaat ctcgcggaaa 960

cgtgggagtg ccttcgggaa cgcgaacaca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gtcgtcagtt gccatcattc 1080

agttgggcac tctggcgaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1140

gtcagcatgg ctcttacgtc ctgggctaca cacgtgctac aatggttcgg ataaagggtc 1200

gcaatctcgc gaggggggagc caatcccata aaccgaatct cagttcggat tgcaggctgc 1260

aactcgcctg catgaagtcg gaatcgctag taatcgcagg tcagcatact gcggtgaata 1320

cgttcccggg ccttgtacac accgcccgtc acaccatgga agctggtcat gcccgaagtc 1380

ggtattctaa ccgcaaggag ggagccgccg aaggcggggc cggtgactgg ggtgaagtcg 1440

taacaaggta gccgtaccgg aaggtgcggc tggatcacct ccttt 1485

<210> 943
<211> 1447
<212> DNA
<213> Gluconacetobacter azotocaptans

<400> 943
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gaacctttcg gggttagtgg 60

cggacgggtg agtaacgcgt agggatctgt ccatgggtgg gggataacct cgggaaactg 120

aggctaatac cgcatgacac ctgagggtca aaggcgtaag tcgcctgtgg aggaacctgc 180

gttcgattag ctggttggtg gggtaaaggc ctaccaaggc gatgatcgat agctggtctg 240

agaggatgat cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tggacaatgg gcgcaagcct gatccagcaa tgccgcgtgt gtgaagaagg 360

tcttcggatt gtaaagcact ttcgacgggg acgatgatga cggtacccgt agaagaagcc 420

ccggctaact tcgtgccacg tgccgcggta atacgaaggg ggctagcgtt gctcggaatg 480

actgggcgta aagggcgcgt aggcggtttg gacagtcaga tgtgaaattc ctgggcttaa 540

cctgggggct gcatttgata cgtacagact agagtgtgag agagggttgt ggaattccca 600

gtgtagaggt gaaattcgta gatattggga agaacaccgg tggcgaaggc ggcaacctgg 660

ctcataactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 720

gtccacgctg taaacgatgt gtgctggatg ttgggtggct tagccactca gtgtcgtagt 780

taacgcgata agcacaccgc ctggggagta cggccgcaag gttgaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gcagaacctt 900

accagggctt gacatgggga ggctgtgttc agagatgagc atttcccgca agggacctcc 960

tgcacaggtg ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1020

aacgagcgca accctcgcct ttagttgcca gcatgtttgg gtgggcactc taaaggaact 1080

gccggtgaca agccggagga aggtggggat gacgtcaagt cctcatggcc cttatgtcct 1140

gggctacaca cgtgctacaa tggcggtgac agtgggaagc caggcagcga tgccgagctg 1200

atctcaaaaa gccgtctcag ttcggattgc actctgcaac tcgggtgcat gaagttggaa 1260

tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggcct tgtacacacc 1320

gcccgtcaca ccatgggagt tggtttgacc ttaagccggt gagcgaaccc agcaatgggg 1380

cgcagccgac cacggtcggg tcagcgactg gggtgaagtc gtaacaaggt agccgtaggg 1440

gaactgc 1447

<210> 944
<211> 1486
<212> DNA
<213> Gluconacetobacter diazotrophicus

<400> 944
agagtttgat cctggctcag agcgaacgct ggcggcatgc ttaacacatg caagtcgcac 60

gaacctttcg gggttagtgg cggacgggtg agtaacgcgt agggatctgt ccatgggtgg 120

gggataactc cgggaaactg gagctaatac cgcatgacac ctgagggtca aaggcgcgag 180

tcgcctgtgg aggaacctgc gttcgattag ctagttggtg gggtaaaggc ctaccaaggc 240

gatgatcgat agctggtctg agaggatgat cagccacact gggactgaga cacggcccag 300

actcctacgg gaggcagcag tggggaatat tggacaatgg gcgcaagcct gatccagcaa 360

tgccgcgtgt gtgaagaagg tcttcggatt gtaaagcact ttcgacgggg acgatgatga 420

cggtacccgt agaagaagcc ccggctaact tcgtgccagc agccgcggta atacgaaggg 480

ggctagcgtt gctcggaatg actgggcgta aagggcgcgt aggcggtttg gacagtcaga 540

tgtgaaattc ctgggcttaa cctgggggct gcatttgata cgtacagact agagtgtgag 600

agagggttgt ggaattccca gtgtagaggt gaaattcgta gatattggga agaacaccgg 660

tggcgaaggc ggcaacctgg ctcataactg acgctgaggc gcgaaagcgt ggggagcaaa 720

caggattaga taccctggta gtccacgctg taaacgatgt gtgctggatg ttgggtggct 780

tagcccctca gtgtcgtagt taacgcgata agcacaccgc ctggggagta cggccgcaag 840

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 900

gaagcaacgc gcagaacctt accagggctt gacatgggga ggctgcagtc agagatggct 960

gtttcccgca agggacctcc tgcacaggtg ctgcatggct gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca accctcgcct ttagttgcca gcatgattgg 1080

gtgggcactc taaaggaact gccggtgaca agccggagga aggtggggat gacgtcaagt 1140

cctcatggcc cttatgtcct gggctacaca cgtgctacaa tggcggtgac agtgggaagc 1200

caggcagcga tgccgagctg atctcaaaaa gccgtctcag ttcggattgc actctgcaac 1260

tcgagtgcat gaaggtggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt tggtttgacc ttaagccggt 1380

gagcgaaccc agcaatgggg cgcagccgac cacggtcggg tcagcgactg gggtgaagtc 1440

gtaacaaggt agccgtaggg gaacctgcgg ctggatcacc tccttt 1486

<210> 945
<211> 1484
<212> DNA
<213> Gluconacetobacter entanii

<220>
<221> modified_base
<222> (10)..(11)
<223> a, c, t, g, unknown or other

<400> 945
gagtttgatn ntggctcaga gcgaacgctg gcggcatgct taacacatgc aagtcgcacg 60

aacctttcgg ggttagtggc ggacgggtga gtaacgcgta gggatctgtc catgggtggg 120

ggataacctt gggaaaccga ggctaatacc gcatgacacc tgagggtcaa aggcgcaagt 180

cgcctgtgga ggaacctgcg ttcgattagc tagttggtgg ggtaaaggcc taccaaggcg 240

atgatcgata gctggtctga gaggatgatc agccacactg ggactgagac acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgcaagcctg atccagcaat 360

gccgcgtgtg tgaagaaggt tttcggattg taaagcactt tcagcgggga cgatgatgac 420

ggtacccgca gaagaagccc cggctaactt cgtgccagca gccgcggtaa tacgaagggg 480

gcaagcgttg ctcggaatga ctgggcgtaa agggcgcgta ggcggttgtt acagtcagat 540

gtgaaattcc cgggcttaac ctgggggctg catttgatac gtggcgacta gagtgtgaga 600

gagggttgtg gaattcccag tgtagaggtg aaattcgtag atattgggaa gaacaccggt 660

ggcgaaggcg gcaacctggc tcatgactga cgctgaggcg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtg tgctggatgt tgggtggctt 780

ggccattcag tgtcgtagtt aacgcgataa gcacaccgcc tggggagtac ggccgcaagg 840

ttgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg cagaacctta ccagggcttg acatgcggag gctgtgtcca gagatgggca 960

tttctcgcaa gagacctcca gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgca acgagcgcaa ccctcgcctt tagttgccag cacgtctggg 1080

tgggcactct aaaggaactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1140

ctcatggccc ttatgtcctg ggctacacac gtgctacaat ggcggtgaca gtgggaagcc 1200

aggcagcgat gccgagcgga tctccaaaag ccgtctcagt tcggattgca ctctgcaact 1260

cgagtgcatg aaggtggaat cgctagtaat cgcggatcag catgccgcgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catgggagtt ggtttgacct taagccggtg 1380

agcgaaccgc aaggacgcag ccgaccacgg tcgggtcagc gactggggtg aagtcgtaac 1440

aaggtagccg taggggaacc tgcggctgga tcacctcctt tcaa 1484

<210> 946
<211> 1482
<212> DNA
<213> Gluconacetobacter europaeus

<400> 946
gagtttgatc atggctcaga gcgaacgctg gcggcatgct taacacatgc aagtcgcacg 60

aacctttcgg ggttagtggc ggacgggtga gtaacgcgta gggatctgtc catgggtggg 120

ggataacttt gggaaactga agctaatacc gcatgacacc tgagggtcaa aggcgcaagt 180

cgcctgtgga ggaacctgcg ttcgattagc tagttggtgg ggtaaaggcc taccaaggcg 240

atgatcgata gctggtctga gaggatgatc agccacactg ggactgagac acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgcaagcctg atccagcaat 360

gccgcgtgtg tgaagaaggt tttcggattg taaagcactt tcagcgggga cgatgatgac 420

ggtacccgca gaagaagccc cggctaactt cgtgccagca gccgcggtaa tacgaagggg 480

gcaagcgttg ctcggaatga ctgggcgtaa agggcgcgta ggcggttgac acagtcagat 540

gtgaaattcc tgggcttaac ctgggggctg catttgatac gtggcgacta gagtgtgaga 600

gagggttgtg gaattcccag tgtagaggtg aaattcgtag atatttggga agaacaccgg 660

tggcgaaggc ggcaacctgg ctcatgactg acgctgaggc gcgaaagcgt ggggagcaaa 720

caggattaga taccctggta gtccacgctg taaacgatgt gtgctggatg ttgggtgact 780

ttgtcattca gtgtcgtagt taacgcgata agcacaccgc ctggggagta cggccgcaag 840

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 900

gaagcaacgc gcagaacctt accagggctt gacatgcgga ggccgtgtcc agagatgggc 960

atttctcgca agagacctcc agcacaggtg ctgcatggct gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca accctcgcct ttagttgcca tcacgtctgg 1080

gtgggcactc taaaggaact gccggtgaca agccggagga aggtggggat gacgtcaagt 1140

cctcatggcc cttatgtcct gggctacaca cgtgctacaa tggcggtgac agtgggaagc 1200

caggtagcga taccgagccg atctcaaaaa gccgtctcag ttcggattgc actctgcaac 1260

tcgagtgcat gaaggtggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt tggtttgacc ttaagccggt 1380

gagcgaaccg caaggacgca gccgaccacg gtcgggtcag cgactggggt gaagtcgtaa 1440

caaggtagcc gtaggggaac ctgcggctgg atcacctcct tt 1482

<210> 947
<211> 1481
<212> DNA
<213> Gluconacetobacter hansenii

<400> 947
gagtttgatt atggctcaga gcgaacgctg gcggcatgct taacacatgc aagtcgcacg 60

aacctttcgg ggttagtggc ggacgggtga gtaacgcgta gggatctgtc catgggtggg 120

ggataacttt gggaaactga agctaatacc gcatgacacc tgagggtcaa aggcgcgagt 180

cgcctgtgga ggaacctgcg ttcgattagc tagttggtgg ggtaaaggcc taccaaggcg 240

atgatcgata gctggtctga gaggatgatc agccacactg ggactgagac acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgcaagcctg atccagcaat 360

gccgcgtgtg tgaagaaggt tttcggattg taaagcactt tcagcgggga cgatgatgac 420

ggtacccgca gaagaagccc cggctaactt cgtgccagca gccgcggtaa tacgaagggg 480

gcaagcgttg ctcggaatga ctgggcgtaa agggcgcgta ggcggttgtt acagtcagat 540

gtgaaattcc cgggcttaac ctgggggctg catttgatac gtgacgacta gagtgtgaga 600

gagggttgtg gaattcccag tgtagaggtg aaattcgtag atattgggaa gaacaccggt 660

ggcgaaggcg gcaacctggc tcatgactga cgctgaggcg cgaaagcgtg gggtgcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtg tgctggatgt tggatggctt 780

ggccattcgg tgtcgtagtt aacgcgataa gcacaccgcc tggggagtac ggccgcaagg 840

ttgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg cagaacctta ccaggacttg acatgcggag gctgtgtcca gagatgggca 960

tttctcgcaa gagacctcca gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgca acgagcgcaa ccctcgcctt tagttgccag cacgtctggg 1080

tgggcactct aaaggaactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1140

ctcatggccc ttatgtcctg ggctacacac gtgctacaat ggcggtgaca gtgggaagcc 1200

aggcagcgat gccgagcgga tctccaaaag ccgtctcagt tcggattgca ctctgcaact 1260

cgagtgcatg aaggtggaat cgctagtaat cgcggatcag catgccgcgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catgggagtt ggtttgacct taagccggtg 1380

agcgaaccgc aaggacgcag ccgaccacgg tcgggtcagc gactggggtg aagtcgtaac 1440

aaggtagccg taggggaacc tgcggctgga tcacctcctt t 1481

<210> 948
<211> 1447
<212> DNA
<213> Gluconacetobacter johannae

<400> 948
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gaacctttcg gggttagtgg 60

cggacgggtg agtaacgcgt agggatctgt ccatgggtgg gggataacct cgggaaactg 120

aggctaatac cgcatgacac ctgagggtca aaggcgtaag tcgcctgtgg aggaacctgc 180

gttcgattag ctagttggtg gggtaaaggc ctaccaaggc gatgatcgat agctggtctg 240

agaggatgat cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tggacaatgg gcgcaagctg atccagcaat gccgcgtgtg tgaagaaggt 360

cttcggattg taaagcactt tcgacgggga cgatgatgac ggtacccgta gaagaagccc 420

cggctaactt cgtgccagca gccgcggtaa tacgaagggg gctagcgttg ctcggaatga 480

ctgggcgtaa agggcgcgta ggcggtttgg acagtcagat gtgaaattcc tgggcttaac 540

ctgggggctg catttgatac gtatagacta gagtgtgaga gagggttgtg gaattcccag 600

tgtagaggtg aaattcgtag atattgggaa gaacaccggt ggcgaaggcg gcaacctggc 660

tcataactga cgctgaggcg cgaaagggtg gggagcaaac aggattagat accctggtag 720

tccacgctgt aaacgatgtg tgctggatgt tgggtggctt agccactcag tgtcgtagtt 780

aacgcgataa gcacaccgcc tggggagtac ggccgcaagg ttgaaactca aaggaattga 840

cgggggcccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg cagaacctta 900

ccagggcttg acatggggag gctgtgagca gagatgttca tttcccgcaa gggacctcct 960

gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcaa ccctcgcctt tagttgccag catgtttggg tgggcactct aaaggaactg 1080

ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc ctcatggccc ttatgtcctg 1140

ggctacacac gtgctacaat ggcggtgaca gtgggaagcc aggcagcgat gccgagctga 1200

tctcaaaaag ccgtctcagt tcggattgca ctctgcaact cgggtgcatg aagttggaat 1260

cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt ggtttgacct taagccggtg agcgaaccca gcaatggggc 1380

gcagccgacc acggtcgggt cagcgactgg ggtgaagtcg taacaaggta gccgtagggg 1440

aacctgc 1447

<210> 949
<211> 1449
<212> DNA
<213> Gluconacetobacter oboediens

<400> 949
tgagtttgat cctggctcag agcgaatgct ggcggcatgc ttaacacatg caagtcgcac 60

gaacctttcg gggttagtgg cggacgggtg agtaacgcgt agggatctat ccacgggtgg 120

gggataactt tgggaaactg aagctaatac cgcatgacac ctgagggtca aaggcgcaag 180

tcgcctgtgg aggaacctgc gttcgattag ctagttggtg gggtaaaggc ctaccaaggc 240

gatgatcgat agctggtctg agaggatgat cagccacact gggactgaga cacggcccag 300

actcctacgg gaggcagcag tggggaatat tggacaatgg gcgcaagcct gatccagcaa 360

tgccgcgtgt gtgaagaagg ttttcggatt gtaaagcact ttcagcgggg atgatgatga 420

cggtacccgc agaagaagcc ccggctaact tcgtgccagc agccgcggta atacgaaggg 480

ggcaagcgtt gctcggaatg actgggcgta aagggcgcgt aggcggttga cacagtcaga 540

tgtgaaattc ccgggcttaa cctgggggct gcatttgata cgtggcgact agagtgtgag 600

agagggttgt ggaattccca gtgtagaggt gaaattcgta gatattggga agaacaccgg 660

tggcgaaggc ggcaacctgg ctcatgactg acgctgaggc gcgaaagcgt ggggagcaaa 720

caggattaga taccctggta gtccacgctg taaacgatgt gtgctggatg ttgggtgact 780

ttgtcattca gtgtcgtagt taacgcgata agcacaccgc ctggggagta cggccgcaag 840

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 900

gaagcaacgc gcagaacctt accagggctt gacatgcgga ggccgtgtcc agagatgggc 960

atttctcgca agagacctcc agcacaggtg ctgcatggct gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca accctcgcct ttagttgcca tcacgtctgg 1080

gtgggcactc taaaggaact gccggtgaca agccggagga aggtggggat gacgtcaagt 1140

cctcatggcc cttatgtcct gggctacaca cgtgctacaa tggcggtgac agtgggaagc 1200

caggtggtga caccgagccg atctcaaaaa gccgtctcag ttcggattgc actctgcaac 1260

tcgagtgcat gaaggtggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt tggtttgacc ttaagccggt 1380

gagcgaaccg caaggacgca gccgaccacg gtcgggtcag cgactggggt gaagtcgtaa 1440

caaggtagc 1449

<210> 950
<211> 1493
<212> DNA
<213> Gluconacetobacter xylinus

<400> 950
atgaacctga gagtttgatc ctggctcaga gcgaacgctg gcggcatgct taacacatgc 60

aagtcgcacg aacctttcgg ggttagtggc ggacgggtga gtaacgcgta gggatctgtc 120

catgggtggg ggataacttt gggaaactga agctaatacc gcatgacacc tgagggtcaa 180

aggcgcaagt cgcctgtgga ggaacctgcg ttcgattagc tagttggtgg ggtaaaggcc 240

taccaaggcg atgatcgata gctggtctga gaggatgatc agccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgcaagcctg 360

atccagcaat gccgcgtgtg tgaagaaggt tttcggattg taaagcactt tcagcgggga 420

cgatgatgac ggtacccgca gaagaagccc cggctaactt cgtgccagca gccgcggtaa 480

tacgaagggg gcaagcgttg ctcggaatga ctgggcgtaa agggcgcgta ggcggttgac 540

acagtcaggt gtgaaattcc cgggcttaac ctggggtctg catttgatac gtggcgacta 600

gagtgtgaga gagggttgtg gaattcccag tgtagaggtg aaattcgtag atattgggaa 660

gaacaccggt ggcgaaggcg gcaacctggc tcatgactga cgctgaggcg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgctgt aaacgatgtg tgctggatgt 780

tgggtgactt tgtcattcag tgtcgtagtt aacgcgataa gcacaccgcc tggggagtac 840

ggccgcaagg ttgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg 900

gtttaattcg aagcaacgcg cagaacctta ccagggcttg acatgcggag gctgtgtcca 960

gagatgggca tttctcgcaa gagacctcca gcacaggtgc tgcatggctg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccctcgcctt tagttgccat 1080

cacgtttggg tgggcactct aaaggaactg ccggtgacaa gccggaggaa ggtggggatg 1140

acgtcaagtc ctcatggccc ttatgtcctg ggctacacac gtgctacaat ggcggtgaca 1200

gtgggaagcc aggtggtgac accgagccga tctcaaaaag ccgtctcagt tcggattgca 1260

ctctgcaact cgagtgcatg aaggtggaat cgctagtaat cgcggatcag catgccgcgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgggagtt ggtttgacct 1380

taagccggtg agcgaacccg caaggggcgc agccgaccac ggtcgggtca gcgactgggg 1440

tgaagtcgta acaaggtagc cgtaggggaa cctgcggctg gatcacctcc ttt 1493

<210> 951
<211> 1472
<212> DNA
<213> Gordonia bronchialis

<400> 951
ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa cggaaaggcc cagcttgctg 60

ggtactcgag tggcgaacgg gtgagtaaca cgtgggtgat ctgcccctga ctttgggata 120

agcctgggaa actgggtcta ataccggata tgaccttaca tcgcatggtg tttggtggaa 180

agcttttgcg gttggggatg ggcccgcggc ctatcagctt gttggtgggg taatggccta 240

ccaaggcgac gacgggtagc cgacctgaga gggtgatcgg ccacactggg actgagacac 300

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg caagcctgat 360

gcagcgacgc cgcgtgaggg atgacggcct tcgggttgta aacctctttc accagggacg 420

aagcgtgagt gacggtacct ggagaagaag caccggccaa ctacgtgcca gcagccgcgg 480

taatacgtag ggtgcgagcg ttgtccggaa ttactgggcg taaagagctc gtaggcggtt 540

tgtcgcgtcg tctgtgaaat tctgcagctt aactgtaggc gtgcaggcga tacgggcaga 600

cttgagtact acaggggaga ctggaattcc tggtgtagcg gtgaaatgcg cagatatcag 660

gaggaacacc ggtggcgaag gcgggtctct gggtagtaac tgacgctgag gagcgaaagc 720

gtgggtagcg aacaggatta gataccctgg tagtccacgc cgtaaacggt gggtactagg 780

tgtggggttc atttcacgga atccgtgccg tagctaacgc attaagtacc ccgcctgggg 840

agtacggccg caaggctaaa actcaaagga attgacgggg gcccgcacaa gcggcggagc 900

atgtggatta attcgatgca acgcgaagaa ccttacctgg gtttgacata caccagacgc 960

ggctagagat agtcgttccc ttgtggttgg tgtacaggtg gtgcatggct gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtcc tgtattgcca 1080

gcgggttatg ccggggactt gcaggagact gccggggtca actcggagga aggtggggat 1140

gacgtcaagt catcatgccc cttatgtcca gggcttcaca catgctacaa tggccggtac 1200

agagggctgc gataccgtga ggtggagcga atcccttaaa gccggtctca gttcggatcg 1260

gggtctgcaa ctcgaccccg tgaagtcgga gtcgctagta atcgcagatc agcaacgctg 1320

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca cgtcatgaaa gtcggtaaca 1380

cccgaagccg gtggcctaac cccttgtggg agggagctgt cgaaggtggg atcggcgatt 1440

gggacgaagt cgtaacaagg tagccgtacc gg 1472

<210> 952
<211> 1298
<212> DNA
<213> Gordonia polyisoprenivorans

<400> 952
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgggt gatctgcccc tgactttggg ataagcctgg gaaactgggt ctaataccgg 120

atatggaaag gcggttgggg atgggcccgc ggcctatcag cttgttggtg gggtaatggc 180

ctaccaaggc gacgacgggt agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 300

gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt gtaaacctct tcagcaggg 360

acgatgacgg tacctgcaga agaagcaccg gccaactacg tgccagcagc cgcggtaata 420

cgtagggtgc gagcgttgtc cggaattact gggcgtaaag agctcgtagg cggtttgtcg 480

cgtcgtctgt gaaattctgc agcttaactg taggcgtgca ggcgatacgg gcagacttga 540

gtactacagg ggagactgga attcctggtg tagcggtgaa atgcgcagat atcaggagga 600

acaccggtgg cgaaggcggg tctctgggta gactgacgct gaggagcgaa agcgtgggta 660

gcgaacagga ttagataccc tggtagtcca cgccgtaaac ggtgggtact aggtgtgggt 720

tgatccgtgc cgtagctaac gcattaagta ccccgcctgg ggagtacggc cgcaaggcta 780

aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgtggat taattcgatg 840

caacgcgaag aaccttacct gggtttgaca tatacaggtg gtgcatggct gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtcc tgtattgcca 960

gcggccgggg acttgcagga gactgccggg gtcaactcgg aggaaggtgg ggatgacgtc 1020

aagtcatcat gcccccttatg tccagggctt cacacatgct acaatggccg gcagagggct 1080

gcgataccgt gaggtggagc gaatcccttc cggtctcagt tcggacgggg tctgcaactc 1140

gaccccggaa gtcggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc 1200

ccgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gtaacacccg aagccggtgc 1260

ctagggagct gtcgaaggtg ggatcggcga ttgggacg 1298

<210> 953
<211> 1485
<212> DNA
<213> Gordonia sp. KTR9

<220>
<221> modified_base
<222> (11)..(11)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (415)..(415)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1483)..(1483)
<223> a, c, t, g, unknown or other

<400> 953
agagtttgat ncctggctca ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cggaaaggcc cagcttgctg ggtactcgag tggcgaacgg gtgagtaaca cgtgggtgat 120

ctgccctgca ctctgggata agcctgggaa actgggtcta ataccggata tgaccaactg 180

tcgcatggtg gttggtggaa agcttttgcg gtgtgggatg ggcccgcggc ctatcagctt 240

gttggtgggg taatggccta ccaaggcgac gacgggtagc cgacctgaga gggtgatcgg 300

ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg caagcctgat gcagcgacgc cgcgtgaggg atgacggcct tcggnttgta 420

aacctctttc accagggacg aagcgtgagt gacggtacct ggagaagaag caccggccaa 480

ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg ttgtccggaa ttactgggcg 540

taaagagctc gtaggcggtt tgtcgcgtcg tctgtgaaat tctgcaactc aattgtaggc 600

gtgcaggcga tacgggcaga cttgagtact acaggggaga ctggaattcc tggtgtagcg 660

gtgaaatgcg cagatatcag gaggaacacc ggtggcgaag gcgggtctct gggtagtaac 720

tgacgctgag gagcgaaagc gtgggtagcg aacaggatta gataccctgg tagtccacgc 780

cgtaacggtg ggtactaggt gtgggttcct tttcacggga tccgtgccgt agctaacgca 840

ttaagtaccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac cttacctggg 960

tttgacatac accagacgcg gctagagata gtcgttccct tgtggttggt gtacaggtgg 1020

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

cccttgtcct gtattgccag cgggttatgc cggggacttg caggagactg ccggggtcaa 1140

ctcggaggaa ggtggggatg acgtcaagtc atcatgcccc ttatgtccag ggcttcacac 1200

atgctacaat ggctggtaca gagggctgcg ataccgtgag gtggagcgaa tcccttaaag 1260

ccagtctcag ttcggattgg ggtctgcaac tcgaccccat gaagtcggag tcgctagtaa 1320

tcgcagatca gcaacgctgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

gtcatgaaag tcggtaacac ccgaagccgg tggcctaacc ccttgtggga gggagctgtc 1440

gaaggtggga tcggcgattg ggacgaagtc gtaaccaagg tancc 1485

<210> 954
<211> 1430
<212> DNA
<213> Gordonia sputi

<400> 954
tgcaagtcga acggaaaggc ccagcttgct gggtactcga gtggcgaacg ggtgagtaac 60

acgtgggtga tctgcccctg actttgggat aagcctggga aactgggtct aataccggat 120

attcattttt cctcgcatgg ggatttgtgg aaagcttttg cggttgggga tgggcccgcg 180

gcctatcagc ttgttggtgg ggtaatggcc taccaaggcg acgacgggta gccgacctga 240

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

ggggaatatt gcacaatggg cgcaagcctg atgcagcgac gccgcgtgag ggatgacggc 360

cttcgggttg taaacctctt tcagctccga cgaagcgcaa gtgacggtag gagcagaaga 420

agcaccggcc aactacgtgc cagcagccgc ggtaatacgt agggtgcaag cgttgtccgg 480

aattactggg cgtaaagagc tcgtaggcgg tttgtcgcgt cgtctgtgaa attctgcagc 540

ttaactgcag gcgtgcaggc gatacgggca gacttgagta ctacagggga gactggaatt 600

cctggtgtag cggtgaaatg cgcagatatc aggaggaaca ccggtggcga aggcgggtct 660

ctgggtagta actgacgctg aggagcgaaa gcgtgggtag cgaacaggat tagataccct 720

ggtagtccac gccgtaaacg gtgggtacta ggtgtgggtt tcatttcacg gaatccgtgc 780

cgtagctaac gcattaagta ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag 840

gaattgacgg gggcccgcac aagcggcgga gcatgtggat taattcgatg caacgcgaag 900

aaccttacct gggtttgaca tacaccagac gcagtcagag atggctgttc ccttgtggtt 960

ggtgtacagg tggtgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1020

gcaacgagcg caacccttgt cctgtattgc cagcgggtta tgccggggac ttgcaggaga 1080

ctgccggggt caactcggag gaaggtgggg atgacgtcaa gtcatcatgc cccttatgtc 1140

cagggcttca cacatgctac aatggctggt acagagggct gcgagaccgt gaggtggagc 1200

gaatccctta aagccagtct cagttcggat tggggtctgc aactcgaccc catgaagtcg 1260

gagtcgctag taatcgcaga tcagcaacgc tgcggtgaat acgttcccgg gccttgtaca 1320

caccgcccgt cacgtcatga aagtcggtaa cacccgaagc cggtggccta acccttgtgg 1380

agggagctgt cgaaggtggg atcggcgatt gggacgaagt cgtaacaagg 1430

<210> 955
<211> 1467
<212> DNA
<213> Gordonia terrae

<220>
<221> modified_base
<222> (444)..(445)
<223> a, c, t, g, unknown or other

<400> 955
gagtttgatc atggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gaaaggccca gcttgctggg tactcgagtg gcgaacgggt gagtaacacg tgggtgatct 120

gccctgcact ctgggataag cctgggaaac tgggtctaat accggatatg accaactgtc 180

gcatggtggt tggtggaaag cttttgcggt gtgggatggg cccgcggcct atcagcttgt 240

tggtggggta atggcctacc aaggcgacga cgggtagccg acctgagagg gtgatcggcc 300

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggcgca agcctgatgc agcgacgccg cgtgagggat gacggccttc gggttgtaaa 420

cctctttcac cagggacgaa gcgnnagtga cggtacctgg agaagaagca ccggccaact 480

acgtgccagc agccgcggta atacgtaggg tgcgagcgtt gtccggaatt actgggcgta 540

aagagctcgt aggcggtttg tcgcgtcgtc tgtgaaattc tgcaactcaa ttgcaggcgt 600

gcaggcgata cgggcagact tgagtactac aggggagact ggaattcctg gtgtagcggt 660

gaaatgcgca gatatcagga ggaacaccgg tggcgaaggc gggtctctgg gtagtaactg 720

acgctgagga gcgaaagcgt gggtagcgaa caggattaga taccctggta gtccacgccg 780

taaacggtgg gtactaggtg tgggttcctt ttcacgggat ccgtgccgta gctaacgcat 840

taagtacccc gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacgggggc 900

ccgcacaagc ggcggagcat gtggattaat tcgatgcaac gcgaagaacc ttacctgggt 960

ttgacataca ccagacgcgg ctagagatag tcgttccctt gtggttggtg tacaggtggt 1020

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttgtcctg tattgccagc gggttatgcc ggggacttgc aggagactgc cggggtcaac 1140

tcggaggaag gtggggatga cgtcaagtca tcatgcccct tatgtccagg gcttcacaca 1200

tgctacaatg gctggtacag agggctgcga taccgtgagg tggagcgaat cccttaaagc 1260

cagtctcagt tcggattggg gtctgcaact cgaccccatg aagtcggagt cgctagtaat 1320

cgcagatcag caacgctgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcacg 1380

tcatgaaagt cggtaacacc cgaagccggt ggcctaaccc cttgtgggag ggagctgtcg 1440

aaggtgggat cggcgattgg gacgaag 1467

<210> 956
<211> 1497
<212> DNA
<213> Gordonibacter pamelaeae

<400> 956
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

gattaagacg gctccggccg tgaatagagt ggcgaacggg tgagtaacac gtgaccaacc 120

tgcccctac cccgggataa cgcaaggaaa cctgcgctaa taccggatac tccttccct 180

gctcctgcag gggtcgggaa agcccagacg gtaggggatg gggtcgcggc ccattaggta 240

gacggcgggg caacggccca ccgtgcctgc gatgggtagc cgggttgaga gaccgaccgg 300

ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg ggaattttgc 360

gcaatggggg gaaccctgac gcagcaacgc cgcgtgcggg atgaaggcct tcgggttgta 420

aaccgctttc agcagggaag atagtgacgg tacctgcaga agaagccccg gctaactacg 480

tgccagcagc cgcggtaata cgtaggggcc gagcgttatc cggattcatt gggcgtaaag 540

cgcgcgtagg cggcccgtca agcggaacct ctaacccgag ggctcaaccc ccggtcgggt 600

tccgaactgg caggctcgag tttggtagag gaagatggaa ttcccggtgt agcggtggaa 660

tgcgcagata tcgggaagaa caccgatggc gaaggcagtc ttctgggcca tcaactgacg 720

ctgaggcgcg aaagctgggg gagcgaacag gattagatac cctggtagtc ccagccgtaa 780

acgatgggtg ctaggtgtgg ggggatcatc cctccgtgcc gcagccaacg cattaagcac 840

cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca 900

agcagcggag catgtggctt aattcgaagc aacgcgaaga accttaccag ggcttgacat 960

gctagtgaag ccggggaaac ccggtggccg agaggagcta gcgcaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatcgt 1080

atgttgccag cattgagttg gggactcata cgagactgcc ggcgtcaagc cggaggaagg 1140

tggggacgac gtcaagtcat catgcccttt atgccctggg ctgcacacgt gctacaatgg 1200

ccggtacaac gggccgcgac ctggcgacag gaagcgaatc cctcaaagcc ggccccagtt 1260

cggatcggag gctgcaaccc gcctccgtga agtcggagtt gctagtaatc gcggatcagc 1320

atgccgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acccgagtcg 1380

tctgcacccg aagccgccgg ccgaacccgc aaggggcgga ggcgtcgaag gtgtggaggg 1440

taaggggggt gaagtcgtaa caaggtagcc gtaccggaag gtgcggctgg atcacct 1497

<210> 957
<211> 1549
<212> DNA
<213> Gracilibacter thermotolerans

<400> 957
cctaccatgc agtcgagcgg agatttcttc ggcactgaac attctagtag tatgacgcaa 60

acaaagcgtc atgaagaaac accattggtg tatatgataa gataaaagtt tcttcatcac 120

gcgttaataa agtgccaaca caaacatcaa gagaaattag agaaaagaat gtattagaat 180

gttgagtgct gaagaaatct tagcggcgga cgggtgagta acacgtgggc aacctgcctc 240

gaagaggggg ataacaccga gaaatcggtg ctaataccgc ataacataca cagaccgcat 300

ggtgagtgta tcaaaggaga aatccgcttt gagatgggcc cgcggctgat tagctagttg 360

gtaaggtaac ggcttaccaa ggcgacgatc agtagccgac ctgagagggt gaccggccac 420

actggaactg agacacggtc cagactccta cgggaggcag cagtggggaa tattgcgcaa 480

tgggggaaac cctgacgcag caacgccgcg tggaggaaga aggtcttcgg attgtaaact 540

cctgtcttct gggacgaaga atgacggtac cagaggagga agccacggct aactacgtgc 600

cagcagccgc ggtaatacgt aggtggcgag cgttgtccgg aattactggg cgtaaagggc 660

gcgtaggcgg ttttttaagt cagatgtgaa aacccagggc ttaactctgg gattgcattt 720

gaaactggaa ggcttgagtg caggagaggt aagtggaatt cctagtgtag cggtgaaatg 780

cgtagatatt aggaggaaca ccagtggcga aggcgactta ctggactgta actgacgctg 840

aggcgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 900

atggatacta ggtgtgggag gtgtcgaccc cttccgtgcc gcagtaaacg caataagtat 960

cccgcctggg gagtacggcc gcaaggttga aactcaaagg aattgacggg ggcccgcaca 1020

agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccag gacttgacat 1080

cccctgaatt actcgtaacg gaggaagtcc ttcgggacag ggagacaggt ggtgcatggt 1140

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctatt 1200

gctagttgcc atcattaagt tgggcactct agtgagactg ccggagacaa ttcggaggaa 1260

ggtggggatg acgtcaaatc atcatgcccc ttatgttctg ggctacacac gtgctacaat 1320

gggtgtaaca acgagaagcg agctagtgat agcaagccaa cctctaaaaa gcaccctcag 1380

ttcggattgt aggctgaaac ccgcctacat gaagttggag ttgctagtaa tcgcgaatca 1440

gcatgtcgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgggagt 1500

tggaagcacc cgaagccggt gacttaaccg caaggagaga gcctcgaag 1549

<210> 958
<211> 1527
<212> DNA
<213> Gramella forsetii

<400> 958
atgaagagtt tgatcctggc tcaggatgaa cgctagcggc aggcctaaca catgcaagtc 60

gaacggtaac agggattgct tgcaatccgc tgacgagtgg cgcacgggtg cgtaacgcgt 120

atacaatctg cctttaagcg gggaatagcc catggaaacg tggattaata ccccatagta 180

ttatgatttc acctgggatt ataattaaac atttatggct taaagatgag tatgcgtcct 240

attagttagt tggtaaggta acggcttacc aagacagcga taggtagggg tcctgagagg 300

gagatccccc acactggtac tgagacacgg accagactcc tacgggaggc agcagtgagg 360

aatattggac aatggaggca actctgatcc agccatgccg cgtgcaggaa gacggcccta 420

tgggttgtaa actgctttta tacgggaaga accacatcta cgtgtagatg cttgacggta 480

ccgtatgaat aaggaccggc taactccgtg ccagcagccg cggtaatacg gagggtccaa 540

gcgttatccg gaatcattgg gtttaaaggg tccgtaggcg gaataataag tcagtggtga 600

aagtctgcag ctcaactgta gaattgccat tgatactgtt gttcttgaat tattatgaag 660

tggttggaat aagtagtgta gcggtgaaat gcatagatat tacttagaac acctattgcg 720

aaggcagatc actaataata tattgacgct gagggacgaa agcgtaggta gcgaacagga 780

ttagataccc tggtagtcta cgccgtaaac gatggttact agctgtccgg cctaattgag 840

ggctgggtgg ttaagcgaaa gtgataagta acccacctgg ggagtacgtt cgcaagaatg 900

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

atacgcgagg aaccttacca gggcttaaat gcagtctgac aggtctggaa acagactttt 1020

cttcggacag attgcaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcagg 1080

ttaagtccta taacgagcgc aacccctgtg gttagttgcc agcgagtaat gtcgggaact 1140

ctagccagac tgccggtgca aaccgcgagg aaggtgggga tgacgtcaaa tcatcacggc 1200

ccttacgtcc tgggccacac acgtgctaca atggtaggga cagagggcag ctaccccgcg 1260

aggggatgcg aatcttcaaa ccctatcaca gttcggatcg cagtctgcaa ctcgactgcg 1320

tgaagctgga atcgctagta atcgcatatc agccatgatg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatggaa gctgggggta cctgaagtcc gtcaccgtaa 1440

ggagcggcct agggtaaaac tggtaactgg ggctaagtcg taacaaggta gccgtaccgg 1500

aaggtgcggc tggaacacct cctttct 1527

<210> 959
<211> 1548
<212> DNA
<213> Granulicatella adiacens

<400> 959
atgagagttt gatcctggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg 60

aacgagagcg accggtgctt gcactggtca atctagtggc gaacgggtga gtaacacgtg 120

ggtaacctgc ccatcagagg gggataacat ccggaaacgg atgctaaaac cgcataggtc 180

ttcgaaccgc atggtttgaa gaggaaaaga ggcgcaagct tctgctgatg gatggacccg 240

cggtgcatta gctagttggt gaggtaacgg ctcaccaagg ccgtgatgca tagccgacct 300

gagagggtga tcggccacat tgggactgag acacggccca aactcctacg ggaggcagca 360

gtagggaatc ttccgcaatg gacgcaagtc tgacggagca acgccgcgtg agtgaagaag 420

gttttcggat cgtaaaactc tgttgttaga gaagaacaag tgctagagta actgttagcg 480

ccttgacggt atctaaccag aaagccacgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc ggttccttaa 600

gtctgatgtg aaagcccccg gctcaaccgg ggagggtcat tggaaactgg ggaacttgag 660

tgcagaagag gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 720

caccagtggc gaaggcgact ctctggtctg taactgacgc tgaggctcga aagcgtgggt 780

agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtgc taagtgttgg 840

agggtttccg cccttcagtg ctgcagttaa cgcattaagc actccgcctg gggagtacga 900

ccgcaaggtt gaaactcaaa ggaattgacg gggacccgca caagcggtgg agcatgtggt 960

ttaattcgaa gcaacgcgaa gaaccttacc aagtcttgac atcctttgac cactctagag 1020

atagagcttt cccttcgggg acaaagtgac aggtggtgca tggttgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tattactagt tgccagcatt 1140

cggttgggca ctctagtgag actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1200

aatcatcatg cccctttatga cttgggctac acacgtgcta caatggatgg tacaacgagc 1260

agcgaactcg cgagggtaag cgaatctctt aaagccattc tcagttcgga ttgtaggctg 1320

caactcgcct acatgaagcc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat 1380

acgttcccgg gtcttgtaca caccgcccgt cacaccacga gagtttgtaa cacccaaagt 1440

cggtgaggta accatttgga gccagccgcc taaggtggga tagatgattg gggtgaagtc 1500

gtaacaaggt agccgtatcg gaaggtgcgg ctggatcacc tcctttct 1548

<210> 960
<211> 1227
<212> DNA
<213> Granulicatella elegans

<400> 960
gtcgaacgag tggcgaacgg gtgagtaaca cgtgggtaac ctgcccatca gaggggggata 60

acattcggaa acggatgcta aaaccgcata gggaaaactg ctgatggatg gacccgcggt 120

gcattagcta gttggtgagg taacggctca ccaaggccgt gatgcatagc cgacctgaga 180

gggtgatcgg ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtag 240

ggaatcttcc gcaatggacg caagtctgac ggagcaacgc cgcgtgagtg aagaaggatt 300

tcggttcgta aaactctgtt gttagagaag atgacggtat ctaaccagaa agccacggct 360

aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg atttattggg 420

cgtaaagcga gcgcaggcgg tcaattaagt ctgatgtgaa agcccccggc tcaaccgggg 480

agggtcattg gaaactggtt gacttgagtg cagaagagga gagtggaatt ccatgtgtag 540

cggtgaaatg cgtagatata tggaggaaca ccagtggcga aggcgactct ctggtctgac 600

tgacgctgag gctcgaaagc gtgggtagca aacaggatta gataccctgg tagtccacgc 660

cgtaaacgat gagtgctaag tgttggagct tcagtgctgc agttaacgca ttaagcactc 720

cgcctgggga gtacgaccgc aaggttgaaa ctcaaaggaa ttgacgggga cccgcacaag 780

cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaagt cttgacatcg 840

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 900

gagcgcaacc cttattacta gttgccagca tgggcactct agtgagactg ccggtgacaa 960

accggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgacttg ggctacacac 1020

gtgctacaat ggatggcaac gagcagcgaa ctcgcgaggg taagcgaatc tcttccattc 1080

tcagttcgga tgtaggctgc aactcgccta cagaagccgg aatcgctagt aatcgcggat 1140

cagcacgccg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccacgaga 1200

gtttgtaaca cccaaagtcg gtaggta 1227

<210> 961
<211> 1512
<212> DNA
<213> Granulicatella paradiacens

<400> 961
agtttgatca tggctcagga cgaacgctgg cggcgtgcct aatacatgca agtcgaacga 60

gagcgaccgg tgcttgcact ggtcaatcta gtggcgaacg ggtgagtaac acgtgggtaa 120

cctgcccatc agaggggat aacattcgga aacggatgct aaaaccgcat aggtcttcga 180

accgcatggt ttgaagagga aaagaggcgc aagcttctgc tgatggatgg acccgcggtg 240

cattagctag ttggtgaggt aacggctcac caaggccgtg atgcatagcc gacctgagag 300

ggtgatcggc cacattggga ctgagacacg gcccaaactc ctacgggagg cagcagtagg 360

gaatcttccg caatggacgc aagtctgacg gagcaacgcc gcgtgagtga agaaggtttt 420

cggatcgtaa aactctgttg ttagagaaga acaagtgcta gagtaactgt tagcgccttg 480

acggtatcta accagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg 540

tggcaagcgt tgtccggatt tattgggcgt aaagcgagcg caggcggttc cttaagtctg 600

atgtgaaagc ccccggctca accggggagg gtcattggaa actggggaac ttgagtgcag 660

aagaggagag tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg aggaacacca 720

gtggcgaagg cgactctctg gtctgtaact gacgctgagg ctcgaaagcg tgggtagcaa 780

acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaagt gttggagggt 840

ttccgccctt cagtgctgca gttaacgcat taagcactcc gcctggggag tacgaccgca 900

aggttgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat 960

tcgaagcaac gcgaagaacc ttaccaagtc ttgacatcct ttgaccactc tagagataga 1020

gctttccctt cggggacaaa gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga 1080

gatgttgggt taagtcccgc aacgagcgca acccttatta ctagttgcca gcattgagtt 1140

gggcactcta gtgagactgc cggtgacaaa ccggaggaag gtggggatga cgtcaaatca 1200

tcatgcccct tatgacttgg gctacacacg tgctacaatg gatggtacaa cgagcagcga 1260

actcgcgagg gtaagcgaat ctcttaaagc cattctcagt tcggattgta ggctgcaact 1320

cgcctacatg aagccggaat cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt 1380

cccgggtctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc aaagtcggtg 1440

aggtaacctt ttggagccag ccgcctaagg tgggatagat gattggggtg aagtcgtaac 1500

aaggtagccg ta 1512

<210> 962
<211> 1445
<212> DNA
<213> Granulicatella sp. M658/99/3

<220>
<221> modified_base
<222> (73)..(73)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (180)..(180)
<223> a, c, t, g, unknown or other

<400> 962
acgctggcgg cgtgcctaat acatgcaagt cgaacgcagt ttcattcacc gagtgcttgc 60

actcaccgaa tgnactgagt ggcgaacggg tgagtaacac gtgggtaacc tgcccatcag 120

tgggggataa cagtcggaaa cgactgctaa taccgcatga ttttcaacac cgcatggtgn 180

tgaaataaaa gacggctttg ctgtcgctga tggatggacc cgcggcgtat tagctagttg 240

gtgaggtaac ggctcaccaa ggcaatgata cgtagccggc ctgagagggt aatcggccac 300

attgggactg agacacggcc caaactccta cgggaggcag cagtagggaa tcttccgcaa 360

tggacgaaag tctgacggag caacgccgcg tgagtgaaga aggttttcgg atcgtaaaac 420

tctgttgtta gagaagaaca acctcttgag taactgtaag aggtctgacg gtatctaacc 480

agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg caagcgttgt 540

ccggatttat tgggcgtaaa gcgagtgcag gcggttcctt aagtctgatg tgaaagccca 600

cggcttaacc gtggagggtc attggaaact ggggaacttg agtgcagaag aggagagtgg 660

aattccatgt gtagcggtgg aatgcgtaga tatatggagg aacaccagtg gcgaaggcga 720

ctctctggtc tgtaactgac gctgaggctc gaaagcgtgg gtagcaaaca ggattagata 780

ccctggtagt ccacgccgta aacgatgagt gctaggtgtt ggagggtttc cgcccttcag 840

tgccgcagtt aacgcattaa gcactccgcc tggggagtac ggccgcaagg ctgaaactca 900

aaggaattga cggggacccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 960

aagaacctta ccaagtcttg acatcctttg accactctag agatagagct ttcccttcgg 1020

ggacaaagtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttatcatta gttgccagca ttcagttggg cactctagtg 1140

atactgccgg tgacaaaccg gaggaaggtg gggatgacgt caaatcagca tgccccttat 1200

gacttgggct acacacgtgc tacaatggat ggtacaacga gcagcaaacc cgcgagggca 1260

agcgaatctc ttaaagccat tctcagttcg gattgttctc tgcaactcga gaacatgaag 1320

ccggaatcgc tagtaatcgc ggatcagcac gccgcggtga atacgttccc gggtcttgta 1380

cacaccgccc gtcacaccac gagagtttgt aacacccaaa gtcggtgagg taacccttct 1440

gggag 1445

<210> 963
<211> 1510
<212> DNA
<213> Granulicatella sp. oral clone ASC02

<220>
<221> modified_base
<222> (743)..(743)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (902)..(902)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (998)..(998)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (1013)..(1013)
<223> a, c, t, g, unknown or other

<400> 963
gagagtttga ttctggctca ggatgaacgc tgacagaatg cttaacacat gcaagtctac 60

ttgaacttcg gtttgggtgg cggacgggtg agtaacgcgt aaagaacttg cctcacagtt 120

agggacaaca tttggaaacg aatgctaata cctgatatta tgattttagg gcatcctaag 180

attatgaaag ctatatacgc tgtgagagag ctttgcgtcc cattagctag ttggagaggt 240

aacggctcac caaggcgatg atgggtagcc ggcctgagag ggtgaacggc cacaagggga 300

ctgagacacg gcccttactc ctacgggagg cagcagtggg gaatattgga caatggacca 360

aaagtctgat ccagcaattc tgtgtgcacg atgacgtttt tcggaatgta aagtgctttc 420

agttgggaag aaaaaaatga cggtaccaac agaagaagtg acggctaact acgtgccagc 480

agccgcggta atacgtatgt ggcaagcgtt gtccggattt attgggcgta aagcgagcgc 540

aggcggtcaa ttaagtctga tgtgaaagcc cccggctcaa ccggggaggg tcattggaaa 600

ctggttgact tgagtgcaga agaggagagt ggaattccat gtgtaagcgg tgaaatgcgt 660

agatatatgg aggaacacca gtggcgaagg cgactctctg gtctgtaact gaccgctgag 720

cgctcgaaag cgtgggtagc aanacaggat tagatacccc tggtagtcca cgccgtaaac 780

gatgagtgct aagtgttgga gggtttccgc ccttcagtgc tgcagttacc gcattaagca 840

ctccgcctgg ggagtacgac cgccaaggtt gaaactcaaa ggaattgagc ggggacccgc 900

ancaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaagtcttg 960

acatcctttg accactctag agatagagct ttcccttncg gggacaaagt gancaggtgg 1020

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

cccttattac tagttgccag cattgagttg ggcactctag tgagactgcc ggtgacaaac 1140

cggaggaagg tggggatgac gtcaaatcat catgcccctt atgacttggg ctacacacgt 1200

gctacaatgg atggtacaac gagcagcgaa ctcgcgaggg taagcgaatc tcttaaagcc 1260

attctcagtt cggattgtag gctgcaactc gcctacatga agccggaatc gctagtaatc 1320

gcggatcagc acgccgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc 1380

acgagagttt gtaacaccca aagtcggtga ggtaacctta aggagccagc cgcctaaggt 1440

gggatagatg attggggtga agtcgtaaca aggtagccgt atcggaaggt gcggctggaa 1500

cacctccttc 1510

<210> 964
<211> 1327
<212> DNA
<213> Granulicatella sp. oral clone ASCA05

<220>
<221> modified_base
<222> (136)..(136)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (159)..(160)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (427)..(427)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (702)..(702)
<223> a, c, t, g, unknown or other

<400> 964
tggcggcgtg cctaatacat gcaagtcgaa cgagtggcga acgggtgagt aacacgtggg 60

taacctgccc atcagagggg gataacattc ggaaacggat gctaaaaccg catagggaaa 120

actgctgatg gatggntccg cggtgcatta gctagttgnn gaggtaacgg ctcaccaagg 180

cgatgatgca tagccgacct gagagggtga tcggccacat tgggactgag acacggccca 240

aactcctacg ggaggcagca gtagggaatc ttccgcaatg gacgcaagtc tgacggagcc 300

cgccgtttga gtgaagaagg atttcggttc gtaaaactct gttgttagag accatgacgg 360

tatctaacca gaaagccacg gctaactacg cgccagcagc cgcggtaata cgtaggtggc 420

aagcgtngtc cggatttatt gggcgtaaag cgagcgcagg cggtcaatta agtctgatgt 480

gaaagccccc ggctcaaccg gggagggtca ttggaaactg gttgacttga gtgcagaaga 540

ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga acaccagtgg 600

cgaaggcgac tctctggtct gactgacgct gaggctcgaa agcgtgggta gcaaacagga 660

ttagataccc tggtagtcca cgccgtaaac gatgagtgct anatgttgga gctacagtgc 720

tgcagttaac gcattaagca ctccgcctgg ggagtacgac cgcaaggttg aaactcaaag 780

gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag 840

aaccttacca agtcttgaca tcgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga 900

gatgttggtt aagtccgcaa cgagcgcaac ccttattact agttgccagc atgggcactc 960

tagtgagact gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc 1020

cttatgactt gggctacaca cgtgctacaa tggatggcaa cgagcagcga actcgcgagg 1080

gtaagcgaat ctcttccatt ctcagttcgg atgtaggctg caactcgcct acagaagccg 1140

gaatcgctag taatcgcgga tcagcacgcc gcggtgaata cgttcccggg tcttgtacac 1200

accgcccgtc acaccacgag agtttgtaac acccaaagtc ggtaggtagc cagccgccta 1260

aggtgggata gatgattggg gtgaagtcgt aacaaggtag ccgtatcgga aggtgcggct 1320

ggaacac 1327

<210> 965
<211> 1560
<212> DNA
<213> Granulicatella sp. oral clone ASCB09

<220>
<221> modified_base
<222> (887)..(887)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (907)..(907)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (993)..(993)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1055)..(1055)
<223> a, c, t, g, unknown or other

<400> 965
gagagtttga tcatggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgaa 60

cgagaagcga ccggtgcttg cactggtcaa tctagtggcg aacgggtgag taacacgtgg 120

gtaacctgcc catcagaggg ggataacatt cggaaacgga tgctaaaacc gcataggttc 180

tttagtcgca tgactgaaga aggaaaagag gcttcggctt ctgctgatgg atggacccgc 240

ggtgcattag ctagttggtg aggtaacggc tcaccaaggc gatgatgcat agccgacctg 300

agagggtgat cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg acgcaagtct gacggagcaa cgccgcgtga gtgaagaagg 420

atttcggttc gtaaaacttc tgttgttaga gaagaacagc gcatagagta actgttatgc 480

gtgtgacggt atctaaccag aaagccacgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc ggtcaattaa 600

gtctgatgtg aaagcccccg gctcaaccgg ggagggtcat tggaaactgg ttgacttgag 660

tgcagaagag gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 720

caccagtggc gaaggcgact ctctggtctg taactgacgc tgaggctcga aagcgtgggt 780

agcaaacagg attagatacc cctggtagtc cacgccgtaa acgatgagtg ctaagtgttg 840

gagggtttcc gcccttcagt gctgcagtta acgcattaag cactccngcc tgggtgagta 900

cgaccgncaa ggttgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct tanccaagtc ttgacatcct ttgaccactc 1020

tagagataga gctttccctt cggggacaaa gtgancaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcag caaaccacat tattactagt 1140

tgccagcatt gagttgggca ctctagcgag actgccaggt aacaaacccg gaggaaggtg 1200

gggatgacag tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggc 1260

tggtacaacg agttgcaagt cggtgacggc aagctaatct cttaaagcca gtctcagttc 1320

ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg cggatcagca 1380

cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagtttg 1440

taacacccga agtcggtgag gtaacctttt aggagccagc cgcctaaggt gggatagatg 1500

attggggtga agtcgtaaca aggtagccgt atcggaaggt gcggttggaa cacctccttc 1560

<210> 966
<211> 1331
<212> DNA
<213> Granulicatella sp. oral clone ASCG05

<220>
<221> modified_base
<222> (1154)..(1154)
<223> a, c, t, g, unknown or other

<400> 966
gcgtgcctaa tacatgcaag tcgaacgagt ggcgaacggg tgagtaacac gtgggtaacc 60

tgcccatcag aggggataa cattcggaaa cggatgctaa aaccgcatag ggaaaactgc 120

tgatggatgg acccgcggtg cattagctag ttggtgaggt aacggctcac caaggccgtg 180

atgcatagcc gacctgagag ggtgatcggc cacattggga ctgagacacg gcccaaactc 240

ctacgggagg cagcagtagg gaatcttccg caatggacgc aagtctgacg gagcaacgcc 300

gcgtgagtga agaaggtttt cggatcgtaa aactctgttg ttagagaaga tgacggtatc 360

taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc 420

gttgtccgga tttattgggc gtaaagcgag cgcaggcggt tccttaagtc tgatgtgaaa 480

gcccccggct caaccgggga gggtcattgg aaactgggga acttgagtgc agaagaggag 540

agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac cagtggcgaa 600

ggcgactctc tggtctgact gacgctgagg ctcgaaagcg tgggtagcaa acaggattag 660

ataccctggt agtccacgcc gtaaacgatg agtgctaagt gttggagctt cagtgcttca 720

gttaacgcat taagcactcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 780

tgacggggac ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 840

ttaccaagtc ttgacatcga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 900

ttgggttaag tcccgcggcg agcgcaaccc ttattactag ttgccagcat gggcactcta 960

gtgagactgc cggtgacaaa ccggaggaag gtggggatga cgtcaaatca tcatgccct 1020

tatgacttgg gctacacacg tgctacaatg gatggcaacg agcagcgaac tcgcgagggt 1080

aagcgaatct cttccattct cagttcggat gtaggctgca actcgcctac agaagccgga 1140

atcgctagta atcncggatc agcacgccgc ggtgaatacg ttcccgggtc ttgtacacac 1200

cgcccgtcac accacgagag tttgtaacac ccaaagtcgg taggtagcca gccgcctaag 1260

gtgggataga tgattggggt gaagtcgtaa caaggtagcc gtatcggaag gtgcggctgg 1320

aacacctcct t 1331

<210> 967
<211> 1488

<212> DNA
<213> Grimontia hollisae

<400> 967
ctaattgaag agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca 60

agtcgagcgg cagcgacatg aacaatcctt cgggtgcgtt catgggcggc gagcggcgga 120

cgggtgagta aaggctggga acctgccctg acgagggga taaccactgg aaacggtggc 180

taataccgca taatgtcttc ggaccaaaga gggggacttt cgggcctctc gcgtcaggat 240

gggcccagtt gggattagct ggttggtggg gtaaaggctc accaaggcga cgatccctag 300

ctggtttgag aggatgatca gccacactgg aactgagaca cggtccagac tcctacggga 360

ggcagcagtg gggaatattg cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt 420

gaagaaggcc ttcgggttgt aaagcacttt cagccgtgag gaaggtagcg tagttaatac 480

ctgcgttact tgacgttagc ggcagaagaa gcaccggcta actccgtgcc agcagccgcg 540

gtaatacgga gggtgcgagc gttaatcgga attactgggc gtaaagcgca tgcaggcggt 600

ctgttaagca agatgtgaaa gccccgggct taacctggga gtggcatttt gaactggcag 660

gctagagtct tgtagagggg ggtagaattt caggtgtagc ggtgaaatgc gtagagatct 720

gaaggaatac cggtggcgaa ggcggccccc tggacaaaga ctgacgctca gatgcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ctgtaaacga tgtctacttg 840

gaggctgtgg tctagaaccg tggctttcgg agctaacgcg ttaagtagac cgcctgggga 900

gtacggtcgc aagattaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca 960

tgtggtttaa ttcgatgcaa cgcgaagaac cttacctact cttgacatcc tcagaagccg 1020

gaagagattc tggtgtgcct tcgggaactg agagacaggt gctgcatggc tgtcgtcagc 1080

tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc aacccttatc cttgtttgcc 1140

agcacttcgg gtgggaactc cagggagact gccggtgata aaccggagga aggtggggac 1200

gacgtcaagt catcatggcc cttacgagta gggctacaca cgtgctacaa tggtgcatac 1260

agagggcagc gagaccgcga ggtggagcga atcccagaaa gtgcatcgta gtccggattg 1320

gagtctgcaa ctcgactcca tgaagtcgga atcgctagta atcgtggatc agaatgccac 1380

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggctgcac 1440

cagaagtaga tagcttaacc ttcgggaggg cgtttaccac ggtgtggt 1488

<210> 968
<211> 1425
<212> DNA
<213> Haematobacter sp. BC14248

<400> 968
cgaacgctgg cggcaggcct aacacatgca agtcgagcgg ggacttcggt cctagcggcg 60

gacgggtgag taacgcgtgg gaacgtgccc tttgcttcgg aatagccccg ggaaactggg 120

agtaataccg gatgagccct ttgggggaaa gatttatcgg cgaaggatcg gcccgcgttg 180

gattaggtag ttggtggggt aatggcctac caagccgacg atccatagct ggtttgagag 240

gatgatcagc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatcttaga caatggggga aaccctgatc tagccatgcc gcgtgagcga tgaaggcctt 360

agggttgtaa agctctttca ccggggaaga taatgacggt acccggagaa gaagccccgg 420

ctaactccgt gctagcagcc gcggtaatac ggaggggggct agcgttgttc ggaattactg 480

ggcgtaaagc gcacgtaggc ggatcggtaa gtcagaggtg aaatcccggg gctcaacccc 540

ggaactgcct ttgaaactcc cggtcttgag gtcgagagag gtgagtggaa ttccgagtgt 600

agaggtgaaa ttcgtagata ttcggaggaa caccagtggc gaaggcggct cactggctcg 660

atactgacgc tgaggtgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 720

acgccgtaaa cgatgaatgc cagtcgtcgg gtagcatgct attcggtgac acacctaacg 780

gattaagcat tccgcctggg gagtacggcc gcaaggttaa aactcaaagg aattgacggg 840

ggcccgcaca agcggtggag catgtggttt aattcgaagc aacgcgcaga accttaccaa 900

cccttgacat gggcgtcgcg ggaccagaga tggttctttc agttcggctg gacgccacac 960

aggtgctgca tggctgtcgt cagctcgtgt cgtgagatgt tcggttaagt ccggcaacga 1020

gcgcaaccca cactcccagt tgccatcatt cagttgggca ctctgggaga actgccgatg 1080

ataagtcgga ggaaggtgtg gatgacgtca agtcctcatg gcccttacgg gttgggctac 1140

acacgtgcta caatggtggt gacaatgggt taatccccaa aagccatctc agttcggatt 1200

ggggtctgca actcgacccc atgaagtcgg aatcgctagt aatcgcgtaa cagcatgacg 1260

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga attgggtcta 1320

cccgacgacg gtgcgccaac ctcgcaagag gaagcagccg gccacggtag gctcagtgac 1380

tgggggggaag tcgtaacaag gtggccgtag gggaacctgc ggttg 1425

<210> 969
<211> 1543
<212> DNA
<213> Haemophilus aegyptius

<400> 969
ttgaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtagcaggag aaagcttgct ttcttgctga cgagtggcgg acgggtgagt 120

aatgcttggg aatctggctt atggaggggg ataacgacgg gaaactgtcg ctaataccgc 180

gtagtgtcga gagacgaaag tgcgggactg agaggccgca tgccatagga tgagcccaag 240

tgggattagg tagttggtgg ggtaaaggtc taccaagcct gcgatctcta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcgcaatggg gggaaccctg acgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtattga ggaaggttga tgtgttaata gcacatcaaa 480

ttgacgttaa atacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aataactggg cgtaaagggc acgcaggcgg ttatttaagt 600

gaggtgtgaa agccctgggc ttaacctagg aattgcattt cagactgggt aactagagta 660

ctttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatgt actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt gggggttggg 840

gtttaactct ggcgcccgta gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcct aagaagagct cagagatgag 1020

cttgtgcctt cgggaactta gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcgacttggt 1140

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca gagggaagcg 1260

aagctgcgag gtggagcgaa tctcataaag tacgtctaag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc agaagtagat 1440

agcttaacct tttggagggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct tac 1543

<210> 970
<211> 1544
<212> DNA
<213> Haemophilus ducreyi

<400> 970
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtagcacgaa ggggcttgct ccttgggtga cgagtggcgg acgggtgagt 120

aatgcttggg aatctggctt atggaggggg ataactacgg gaaactgtag ctaataccgc 180

gtaatatctt cggattaaag ggtgggacct tcgggccacc tgccataaga tgagcccaag 240

tgggattagg tagttggtta ggtaaaggct gaccaagccg acgatctcta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ggaaaccctg atgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtgatga ggaaggcagt tttgttaata gcaaaattga 480

ttgacgttag tcacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aataactggg cgtaaagggc acgcaggcgg ttgattaagt 600

gagatgtgaa agccccgggc ttaacctggg aattgcattt catactggtc aactagagta 660

ctttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatat actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgattt gggggttggt 840

ctttaagact ggcgcccgaa gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca tagaagaact cagagatgag 1020

tttgtgcctt cgggaactat gtgacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcatgtagtg 1140

atgggaactc aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt 1200

catcatggcc cttacgagta gggctacaca cgtgctacaa tggcgtatac agagggcggc 1260

aaacctgcaa aggggagcga atctcacaaa gtacgtctaa gtccggattg gagtctgcaa 1320

ctcgactcca tgaagtcgga atcgctagta atcgcaaatc agaatgttgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggttgtac cagaagtaga 1440

tagcttaacc ttcgggaggg cgtttaccac ggtatgattc atgactgggg tgaagtcgta 1500

acaaggtaac cgtaggggaa cctgcggttg gatcacctcc ttac 1544

<210> 971
<211> 1281
<212> DNA
<213> Haemophilus genomosp. P2 oral clone MB3_C24

<400> 971
caggcttaac acatgcaagt cgaacgagtg gcggacgggt gagtaatgct tgggaatctg 60

gcttatggag ggggataacg acgggaaact atcgctaata ccgcgtagtg aaagatgcca 120

taggatgagc ccaagtggga ttaggtagtt ggtggggtaa aggcctacca agccgacgat 180

ctctagctgg tctgagagga tgaccagcca caccgggact gagacacggc ccggactcct 240

acgggaggca gcagtgggga atattgcgca atgggggcaa ccctgacgca gccatgccgc 300

gtgaatgaag aaggccttcg ggttgtaaag ttctttcggt gacgaggatg acgttaatca 360

cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg atgcgagcgt 420

taatcggaat aactgggcgt aaagggcacg caggcggcta tttaagtgag gtgtgaaatc 480

cccgggctta acctgggaat tgcatttcag actgggtagc tagagtactt tagggagggg 540

tagaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaataccg aaggcgaagg 600

cagccccttg ggaatactga cgctcatgtg cgaaagcgtg gggagcaaac aggattagat 660

accctggtag tccacgctgt aaacgctgtc gatttgggga ttgggcttgg tgcccgaagc 720

taacgtgata aatcgaccgc ctggggagta cggccgcaac gttaaaactc aaatgaattg 780

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc gaagaacctt 840

acctactctt gacatcgaca ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt 900

gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt gccagcgatc gggaactcaa 960

aggagactgc cggtgataaa ccggaggaag gtggggatga cgtcaagtca tcatggccct 1020

tacgagtagg gctacacacg tgctacaatg gcgtacagag ggcgacgaag ccgcgaggtg 1080

gagtgaatct cactacgtct aagtccggat ggagtctgca actcgactcc agaagtcgga 1140

atcgctagta atcgcgaatc agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac 1200

cgcccgtcac accatgggag tgggttgtac cagaagtaga tgcttagggc gtttaccacg 1260

gtatgattca tgactggggt g 1281

<210> 972
<211> 1296
<212> DNA
<213> Haemophilus genomosp. P3 oral clone MB3_C38

<400> 972
attgaacgct ggcggcaggc ttaacacatg caagtcgaac gagtggcgga cgggtgagta 60

atgcttggga atctggctta tggaggggga taacgacggg aaactgtcgc taataccgcg 120

tagagaaaga tgccatagga tgagcccaag tgggattagg tagttggtgg ggtaatagcc 180

taccaagccg acgatctcta gctggtctga gaggatgacc agccacaccg ggactgagac 240

acggcccgga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggcaaccctg 300

acgcagccat gccgcgtgaa tgaagaaggc cttcgggttg taaagttctt tcggtattga 360

ggatgacgtt aaatacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 420

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcacgcaggc ggacttttaa 480

gtgaggtgtg aaatccccgg gcttaacctg ggaattgcat ttcagactgg gagtctagag 540

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 600

taccgaaggc gaaggcagcc ccttgggaat actgacgctc atgtgcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 720

cttggtgccc gaagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 780

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 840

aacgcgaaga accttaccta ctcttgacat cgacaggtgc tgcatggctg tcgtcagctc 900

gtgttgtgaa atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag 960

cgatcgggaa ctcaaaggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca 1020

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggcgta cagagggcga 1080

cgaagccgcg aggtggagtg aatctcacta cgtctaagtc cggatggagt ctgcaactcg 1140

actccagaag tcggaatcgc tagtaatcgc gaatcagaat gtcgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccat gggagtgggt tgtaccagaa gtagatgctt 1260

agggcgttta ccacggtatg attcatgact ggggtg 1296

<210> 973
<211> 1486
<212> DNA
<213> Haemophilus haemolyticus

<400> 973
gctcagattg aacgctggcg gcaggcttaa cacatgcaag tcgaacggta gcaggagaaa 60

gcttgctttc ttgctgacga gtggcggacg ggtgagtaat gcttgggaat ctggcttatg 120

gaggggggata actacgggaa actgtagcta ataccgcgta gtgtcgagag acgaaagtgc 180

gggaccgcaa ggccgcatgc catgagatga gcccaagtgg gattaggtag ttggtggggt 240

aaaggcctac caagcctgcg atctctagct ggtctgagag gatggccagc cacactggaa 300

ctgagacacg gtccagactc ctacgggagg cagcagtggg gaatattgcg caatgggggg 360

aaccctgacg cagccatgcc gcgtgaatga agaaggcctt cgggttgtaa agttctttcg 420

gtattgagga aggagtgtat gttaatagca tacattattg acgttaaata cagaagaagc 480

accggctaac tccgtgccag cagccgcggt aatacggagg gtgcgagcgt taatcggaat 540

aactgggcgt aaagggcacg caggcggtta tttaagtgag gtgtgaaagc cccgggctta 600

acctgggaat tgcatttcag actgggtaac tagagtactt tagggagggg tagaattcca 660

cgtgtagcgg tgaaatgcgt agagatgtgg aggaataccg aaggcgaagg cagccccttg 720

ggaatgtact gacgctcatg tgcgaaagcg tggggagcaa acaggattag ataccctggt 780

agtccacgct gtaaacgctg tcgatttggg gattgggctt aaagcttggt gcccgtagct 840

aacgtgataa atcgaccgcc tggggagtac ggccgcaagg ttaaaactca aatgaattga 900

cgggggcccg cacaagcggt ggagcatgtg gtttaattcg atgcaacgcg aagaacctta 960

cctactcttg acatccatgg aattctgtag agatacggga gtgccttcgg gaaccatgag 1020

acaggtgctg catggctgtc gtcagctcgt gttgtgaaat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttatccttt gttgccagcg attcggtcgg gaactcaaag gagactgcca 1140

gtgataaact ggaggaaggt ggggatgacg tcaagtcatc atggccctta cgagtagggc 1200

tacacacgtg ctacaatggc gtatacagag ggtggcgaaa ctgcgaggtg gagcgaatct 1260

cagaaagtac gtctaagtcc ggattggagt ctgcaactcg actccatgaa gtcggaatcg 1320

ctagtaatcg cgaatcagaa tgtcgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcacacca tgggagtggg ttgtaccaga agtagatagc ttaaccgcaa ggggggcgtt 1440

taccacggta tgattcatga ctggggtgaa gtcgtaacaa ggtaac 1486

<210> 974
<211> 1544
<212> DNA
<213> Haemophilus influenzae

<400> 974
ttgaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtagcaggag aaagcttgct ttcttgctga cgagtggcgg acgggtgagt 120

aatgcttggg aatctggctt atggaggggg ataacgacgg gaaactgtcg ctaataccgc 180

gtattatcgg aagatgaaag tgcgggactg agaggccgca tgccatagga tgagcccaag 240

tgggattagg tagttggtgg ggtaaatgcc taccaagcct gcgatctcta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcgcaatggg gggaaccctg acgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtattga ggaaggttga tgtgttaata gcacatcaaa 480

ttgacgttaa atacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aataactggg cgtaaagggc acgcaggcgg ttatttaagt 600

gaggtgtgaa agccctgggc ttaacctagg aattgcattt cagactgggt aactagagta 660

ctttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatgt actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt ggggattggg 840

cttagagctt ggtgcccgta gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcct aagaagagct cagagatgag 1020

cttgtgcctt cgggaactta gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcgacttggt 1140

cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca gagggaagcg 1260

aagctgcgag gtggagcgaa tctcataaag tacgtctaag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc agaagtagat 1440

agcttaacct tttggagggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct tact 1544

<210> 975
<211> 1424
<212> DNA
<213> Haemophilus parahaemolyticus

<400> 975
cccaatgcaa gtcgaacggt aacagggatt agcttgctaa tttgctgacg agtggcggac 60

gggtgagtaa tgcttgggaa tctggcttat ggaggggggat aactacggga aactgtagct 120

aataccgcgt aaaatcttcg gattaaaggg tgggactttc gggccacctg ccataagatg 180

agcccaagtg ggattaggta gttggttagg taaaggctga ccaagccgac gatctctagc 240

tggtctgaga ggatgaccag ccacactgga actgagacac ggtccagact cctacgggag 300

gcagcagtgg ggaatattgc acaatggggg gaaccctgat gcagccatgc cgcgtgaatg 360

aagaaggcct tcgggttgta aagttctttc ggtgacgagg aaggttgata ggttaatagc 420

ctatcaaatt gacgttaatc acagaagaag caccggctaa ctccgtgcca gcagccgcgg 480

taatacgggg ggtgcgagcg ttaatcggaa taactgggcg taaagggcac gcaggcggtg 540

acttaagtga gatgtgaaag ccccgggctt aacctgggaa ttgcatttca tactgggtcg 600

ctagagtact ttagggaggg gtagaattcc acgtgtagcg gtgaaatgcg tagagatgtg 660

gaggaatacc gaaggcgaag gcagcccctt gggaatgtac tgacgctcat gtgcgaaagc 720

gtggggagca aacaggatta gataccctgg tagtccacgc tgtaaacgat gtcgatttgg 780

ggattgggct ttgagcttgg tgcccgtagc taacgtgata aatcgaccgc ctggggagta 840

cggccgcaag gttaaaactc aaatgaattg acgggggccc gcacaagcgg tggagcatgt 900

ggtttaattc gatgcaacgc gaagaacctt acctactctt gacatccatg gaatcttgta 960

gagatacgag agtgccttcg ggaaccatga gacaggtgct gcatggctgt cgtcagctcg 1020

tgttgtgaaa tgttgggtta agtcccgcaa cgagcgcaac ccttatcctt tgttgccagc 1080

gattaggtcg ggaactcaaa ggagactgcc agtgataaac tggaggaagg tggggatgac 1140

gtcaagtcat catggccctt acgagtaggg ctacacacgt gctacaatgg cgtatacaga 1200

gggaagcgag cctgcgaggg ggagcaaatc tcagaaagta cgtctaagtc cggattggag 1260

tctgcaactc gactccatga agtcggaatc gctagtaatc gcgaatcaga atgtcgcggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgggagtgg gttgtaccag 1380

aagtagatag cttaaccttc gggagggcgt tacccacggt agat 1424

<210> 976
<211> 1543
<212> DNA
<213> Haemophilus parainfluenzae

<400> 976
ttgaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtaacatgaa gaagcttgct tctttgatga cgagtggcgg acgggtgagt 120

aatgcttggg aatctagctt atggaggggg ataactacgg gaaactgtag ctaataccgc 180

gtagtatcgg aagatgaaag tgtgggacct tcgggccaca tgccatagga tgagcccaag 240

tgggattagg tagttggtga ggtaaaggct caccaagccg acgatctcta gctggtctga 300

gaggatgacc agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatatt gcgcaatggg ggcaaccctg acgcagccat gccgcgtgaa tgaagaaggc 420

cttcgggttg taaagttctt tcggtagcga ggaaggcatt tagtttaata gactaggtga 480

ttgacgttaa ctacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcgag cgttaatcgg aataactggg cgtaaagggc acgcaggcgg tgacttaagt 600

gaggtgtgaa agccccgggc ttaacctggg aattgcattt catactgggt cgctagagta 660

ctttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaata 720

ccgaaggcga aggcagcccc ttgggaatgt actgacgctc atgtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgattt gggggttgag 840

ctttaagctt ggcgcccgta gctaacgtga taaatcgacc gcctggggag tacggccgca 900

aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgcaac gcgaagaacc ttacctactc ttgacatcca gagaacattc cagagatgga 1020

ttggtgcctt cgggaactct gagacaggtg ctgcatggct gtcgtcagct cgtgttgtga 1080

aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca gcgattcggt 1140

cgggaactca aaggagactg ccggtgataa accggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca gagggaagcg 1260

agagtgcgag ctggagcgaa tctcacaaag tacgtctaag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgcaaatca gaatgttgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc agaagtagat 1440

agcttaacct tcgggggggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct tac 1543

<210> 977
<211> 1471
<212> DNA
<213> Haemophilus paraphrophaemolyticus

<220>
<221> modified_base
<222> (16)..(16)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (29)..(29)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (50)..(50)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (81)..(81)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (85)..(85)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (132)..(132)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (366)..(366)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (368)..(368)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (478)..(478)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (488)..(488)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (497)..(497)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (499)..(500)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (505)..(505)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (624)..(624)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (653)..(653)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (666)..(666)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (785)..(785)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (838)..(838)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (959)..(959)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1084)..(1084)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1161)..(1161)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1262)..(1262)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1452)..(1452)
<223> a, c, t, g, unknown or other

<400> 977
tgaagagttt gatcanggct cagattganc gctggcggca ggcttaacan atgcaagtcg 60

aacggtaaca gggattagct ngctnattgc tgacgagtgg cggacgggtg agtaatgctt 120

gggaatctgg cntatggagg gggataacta cgggaaactg tagctaatac cgcgtaatat 180

cggaagatta aagggtggga ctttcgggcc acctgccata agatgagccc aagtgggatt 240

aggtagttgg ttaggtaaag gctgaccaag ccgacgatct ctagctggtc tgagaggatg 300

accagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 360

attgcncnat ggggggaacc ctgatgcagc catgccgcgt gaatgaagaa ggccttcggg 420

ttgtaaagtt ctttcggtga cgaggaaggt tgataggtta atagcctatc aaattgangt 480

taattacnga agaagcncnn gctanctccg tgccagcagc cgcggtaata cggagggtgc 540

gagcgttaat cggaataact gggcgtaaag ggcacgcagg cggtgactta agtgagatgt 600

gaaagccccg ggcttaacct gggnattgca tttcatactg ggtcgctaga gtnctttagg 660

gagggntaga attccacgtg tagcggtgaa atgcgtagag atgtggagga ataccgaagg 720

cgaaggcagc cccttgggaa tgtactgacg ctcatgtgcg aaagcgtggg gagcaaacag 780

gattngatac cctggtagtc cacgctgtaa acgatgtcga tttggggatt gggctttnag 840

cttggtgccc gtagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggccgcacaa gcggtggagc atgtggttta attcgatgna 960

acgcgaagaa ccttacctac tcttgacatc catggaatct tgtagagata cgagagtgcc 1020

ttcgggaacc atgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt gaaatgttgg 1080

gttnagtccc gcaacgagcg caacccttat cctttgttgc cagcggtttg gccgggaact 1140

caaaggagac tgccagtgat naactggagg aaggtgggga tgacgtcaag tcatcatggc 1200

ccttacgagt agggctacac acgtgctaca atggcgtata cagagggaag caatcctgcg 1260

anggggagca aatctcagaa agtacgtcta agtccggatt ggagtctgca actcgactcc 1320

atgaagtcgg aatcgctagt aatcgcgaat cagaatgtcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca caccatggga gtgggttgta ccagaagtag atagcttaac 1440

cgcaaggggg gngtttacca cggtatgatt c 1471

<210> 978
<211> 1394
<212> DNA
<213> Haemophilus parasuis

<400> 978
taacacatgc aagtcgaacg gtagcaggaa gaagcttgct tctttgctga cgagtggcgg 60

acgggtgagt aatgcttggg aatctggctt atggaggggg ataactacgg gaaactgtag 120

ctaataccgc gtagtatctt cagatgaaag ggtgggaccg caaggccagt tgccataaga 180

tgagcccaag tgggattagg tagttggtgg ggtaaaggcc taccaagccg acgatctcta 240

gctggtctga gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg 300

aggcagcagt ggggaatatt gcacaatggg gggaaccctg atgcagccat gccgcgtgaa 360

tgaagaaggc cttcgggttg taaagttctt tcggtgatga ggaagggtag tgttttaata 420

gaacattaca ttgacgttag tcacagaaga agcaccggct aactccgtgc cagcagccgc 480

ggtaatacgg agggtgcgag cgttaatcgg aatgactggg cgtaaagggc acgcaggcgg 540

tgacttaagt gagatgtgaa agccccgagc ttaacttggg aattgcattt catactgggt 600

tgctagagta ttttagggag gggtagaatt ccacgtgtag cggtgaaatg cgtagagatg 660

tggaggaata ccgaaggcga aggcagcccc ttgggaaaat actgacgctc atgtgcgaaa 720

gcgtggggag caaacaggat tagataccct ggtagtccac gctgtaaacg ctgtcgattt 780

ggggattggg cttagagctt ggtgcccgta gctaacgtga taaatcgacc gcctggggag 840

tacggccgca aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat 900

gtggtttaat tcgatgcaac gcgaagaacc ttacctactc ttgacatcct aagaagaact 960

cagagatgag tttgtgcctt cgggaactta gagacaggtg ctgcatggct gtcgtcagct 1020

cgtgttgtga aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca 1080

gcgattcggt cgggaactca aaggagactg ccagtgataa actggaggaa ggtggggatg 1140

acgtcaagtc atcatggccc ttacgagtag ggctacacac gtgctacaat ggtgcataca 1200

gagggtgacg aagccgcgag gtggagtgaa tctcagaaag tgcatctaag tccggattgg 1260

agtctgcaac tcgactccat gaagtcggaa tcgctagtaa tcgcgaatca gaatgtcgcg 1320

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgtacc 1380

agaagtagat agct 1394

<210> 979
<211> 1543
<212> DNA
<213> Haemophilus somnus

<400> 979
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtaacgggga gggagattac tttctctgct gacgagtggc ggacgggtga 120

gtaaagcttg ggaatctggc gaatggaggg ggatagccac gggaaactgt gggtaatacc 180

gcgtaatgtc taaggaccaa aggggtggga ctgagaggcc acctgccatt tgatgagccc 240

aagtgggatt aggtagttgg tgaggtaagg gctcaccaag ctgacgatct ctagctggtc 300

tgagaggatg gccagccaca ctggaactga gacacggtcc agactcctac gggaggcagc 360

agtggggaat attgcgcaat gggggaaccc ctgacgcagc catgccgcgt gaatgaagaa 420

ggccttcggg ttgtaaagtt ctttcggtga tgaggaaggc gattagttta agagattaat 480

tgattgacga taatcacaga agaagcaccg gctaactccg tgccagcagc cgcggtaata 540

cggagggtgc gagcgttaat cggaatgact gggcgtaaag ggcacgcagg tggtgactta 600

agtgaggtgt gaaatccccg ggcttaacct gggaacagca tttcagactg ggtgactaga 660

gtactttagg gaggggtaga attccacgtg tagcggtgaa atgcgtagag atgtggagga 720

ataccgaagg cgaaggcagc cccttgggaa gatactgacg ctcgagtgcg aaagcgtggg 780

gagcaaacag gattagatac cctggtagtc cacgctgtaa acgatgtcga tttggggatt 840

gggtgaacac ttggtgcccg aagctaacgt gataaatcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc ctaagaagcc gccagagatg 1020

gtggtgtgcc tacgggagct tagagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcatgtta 1140

gggtgggaac tcaaaggaga ctgccggtga taaactggag gaaggtgggg atgacgtcaa 1200

gtcatcatgg cccttacgag tagggctaca cacgtgctac aatggcgtat acagagggag 1260

gcgagcctgc gagggtaagc gaagctcaga aagtacgtct aagtccggat tggagtctgg 1320

aactcgactc catgaagtcg gaatcgctag taatcgcgga tcagaatgtc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgt accagaagta 1440

gatagcttaa cgaaaggggg cgtttaccac ggtatggttc atgactgggg tgaagtcgta 1500

acaaggtaac cgtaggggaa cctgcggttg gatcacctcc tta 1543

<210> 980
<211> 1393
<212> DNA
<213> Haemophilus sp. 70334

<400> 980
gcaagtcgaa cggtagcagg agaaagcttg ctttcttgct gacgagtggc ggacgggtga 60

gtaatgcttg ggaatctggc ttatggaggg ggataactac gggaaactgt agctaatacc 120

gcgtaatatc gaaagattaa agtgtgggac cttcgggcca catgccatgg gatgagccca 180

agtgggatta ggtagttggt ggggtaaagg cctaccaagc ctgcgatctc tagctggtct 240

gagaggatgg ccagccacac tggaactgag acacggtcca gactcctacg ggaggcagca 300

gtggggaata ttgcgcaatg gggggaaccc tgacgcagcc atgccgcgtg aatgaagaag 360

gccttcgggt tgtaaagttc tttcggtatt gaggaaggtt gatgtgttaa tagtacatct 420

tattgacgtt aaatacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 480

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcacgcaggc ggttatttaa 540

gtgaggtgtg aaagccccgg gcttaacctg ggaattgcat ttcagactgg gtaactagag 600

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 660

taccgaaggc gaaggcagcc ccttgggaat gtactgacgc tcatgtgcga aagcgtgggg 720

agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgctgtcgat ttggggattg 780

ggcttagagc ttggtgcccg tagctaacgt gataaatcga ccgcctgggg agtacggccg 840

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgatgca acgcgaagaa ccttacctac tcttgacatc cagagaactt tccagagatg 960

gattggtgcc ttcgggaact ctgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1020

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgatttg 1080

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1140

tcatcatggc ccttacgagt agggctacac acgtgctaca atggcgtata cagagggtgg 1200

cgaaactgcg aggtggagcg aatctcagaa agtacgtcta agtccggatt ggagtctgca 1260

actcgactcc atgaagtcgg aatcgctagt aatcgcgaat cagaatgtcg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgta ccagaagtag 1380

atagcttaac cgc 1393

<210> 981
<211> 1513
<212> DNA
<213> Haemophilus sp. HK445

<400> 981
agagtttgat catggctcag attgaacgct ggcggcaggc ttaacacatg caagtcgaac 60

ggtaacaggr gaaagcttgc tttcttgctg acgagtggcg gacgggtgag taatgcttgg 120

gaatctggct tacggagggg gataactgcg ggaaactgca gctaataccg cgtaatatct 180

taggattaaa gggggcrttt gctccagccg tgagatgagc ccaagtggga ttaggtagtt 240

ggtgaggtaa tggctcacca agcctgcgat ctctagctgg tctgagagga tggccagcca 300

caccgggact gagacacggc ccggactcct acgggaggca gcagtgggga atattgcgca 360

atgggggaa ccctgacgca gccatgccgc gtgaatgaag aaggccttcg ggttgtaaag 420

ttctttcggt gacgaggaag gtacttaggt taatacccta agyaattgac gttaatcaca 480

gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt gcgagcgtta 540

atcggaataa ctgggcgtaa agggcacgca ggcggatttt taagtgaggt gtgaaagccc 600

ckggcttaac ctgggaattg catttcagac tgggaatcta gagtacttta gggaggggta 660

gaattccacg tgtagcggtg aaatgcgtag agatgtggag gaataccgaa ggcgaaggca 720

gccccttggg aatgtactga cgctcatgtg cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgctgt aaacgctgtc gatttggggg ttgggcttta agcttggcgc 840

ccgtagctaa cgtgataaat cgaccgcctg gggagtacgg ccgcaaggtt aaaactcaaa 900

tgaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa 960

gaaccttacc tactcttgac atccagagaa gagactagag atagtcttgt gccttcggga 1020

gctttgagac aggtgctgca tggctgtcgt cagctcgtgt tgtgaaatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tatcctttgt tgccagcgat taggtcggga actcaaagga 1140

gactgccggt gataaaccgg aggaaggtgg ggatgacgtc aagtcatcat ggcccttacg 1200

agtagggcta cacacgtgct acaatggcgt atacagaggg aagcgaagca gcgatgtgga 1260

gcgaatctca taaagtgcgt ctaagtccgg attggagtct gcaactcgac tccatgaagt 1320

cggaatcgct agtaatcgcg aatcagaatg tcgcggtgaa tacgttcccg ggccttgtac 1380

acaccgcccg tcacaccatg ggagtgggtt gtaccagaag tagatagctt aaccttcggg 1440

ggggcgttta ccacggtatg attcatgact ggggtgaagt cgtaacaagg taaccgtagg 1500

ggaacctgcg gct 1513

<210> 982
<211> 1361
<212> DNA
<213> Haemophilus sp. oral clone ASCA07

<220>
<221> modified_base
<222> (1337)..(1337)
<223> a, c, t, g, unknown or other

<400> 982
gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa tgcttgggaa tctggcttat ggaggggat aactacggga 120

aactgtagct aataccgcgt agtgaaagat gccatgagat gagcccaagt gggattaggt 180

agttggtggg gtaaaggcct accaagcctg cgatctctag ctggtctgag aggatggcca 240

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 300

cgcaatgggg ggaaccctga cgcagccatg ccgcgtgaat gaagaaggcc ttcgggttgt 360

aaagttcttt cggtattgag gatgacgtta aatacagaag aagcaccggc taactccgtg 420

ccagcagccg cggtaatacg gagggtgcga gcgttaatcg gaataactgg gcgtaaaggg 480

cacgcaggcg gttatttaag tgaggtgtga aagcccccgg cttaacctgg gaattgcatt 540

tcagacggga taactagagt actttaggga ggggtagaat cccacgtgta gcggtgaaat 600

gcgtagagat gtggaggaat acccggggcg aaggcagccc cttgggaata ctgacgctca 660

tgtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ctgtaaacgc 720

tgtcgatttg gggattgggc ttggtgcccg tagctaacgt gataaatcga ccgcctgggg 780

agtacggccg caaggttaaa actcaaatga attgaccggg gcccgcacaa gccgtggagc 840

atgtggttta attcgatgca acgcgaagaa ccttacctac tcttgacatc gacaggtgct 900

gcatggctgt cgtcagctcg tgttgtgaaa tgttgggtta agtcccgcaa cgagcgcaac 960

cttatccttt gttgccagcg atcgggaact caaaggagac tgccgtgata aacggaggaa 1020

ggtgggatga cgtcaagtca tcatggccct tacgagtagg gctacacacg tgctacaatg 1080

gcgtacagag ggtggcgaaa ctgcgaggtg gagcgaatct cagtacgtct aagtccggat 1140

ggagtctgca actcgactcc agaagtcgga atcgctagta atcgcgaatc agaatgtcgc 1200

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggttgtac 1260

cagaagtaga tgcttagggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1320

caaggtaacc gtagggnaac ctgcggctgg atcacctcct t 1361

<210> 983
<211> 1329
<212> DNA
<213> Haemophilus sp. oral clone ASCG06

<220>
<221> modified_base
<222> (579)..(579)
<223> a, c, t, g, unknown or other

<400> 983
gagtttgatt atggctcaga ttgaacgctg gcggcaggct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtga tgcttgggaa tctggcttat ggaggggat aactacggga 120

aactgtagct aataccgcga ggtgaaagat gccatgggat gagcccaagt gggattaggt 180

agttggtggg gtaaaggcct accaagcctg cgatctctag ctggtctgag aggatggcca 240

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 300

cgcaatgggg ggaaccctga cgcagccatg ccgcgtgaat gaagaagcct tcgggtgtaa 360

agttctttcg gtattgagga tgacgttaaa tacagaagaa gcaccggcta actccgtgcc 420

agcagccgcg gtaatacgga gggtgcgagc gttaatcgga ataactgggc gtaaagggca 480

cgcaggcggt tatttaagtg aggtgtgaaa gccccgggct taacctggga attgcatttc 540

agactgggta actagagtac tttagggagg ggtagaatnc cacgtgtagc ggtgaaatgc 600

gtagagatgt ggaggaatac cgaaggcgaa ggcagcccct tgggaatact gacgcacaag 660

tgccaaagcg tggggagcaa acaggattag ataccctggt agtccacgct gtaaacgtgc 720

cgatttgggg attgggcttg gtccccgtag ctaacgtgat aatcgaccgc ctggggagta 780

cggccgcaag gttaaaaccc aaatgaattg acgggggccc gcacaagcgg tggagcatgt 840

ggtttaattc gatgcaacgc gaagaacctt acctactctt gacatcgaca ggtgctgcat 900

ggctgtcgtc agctcgtgtt gtgaaatgtt gggttaagtc ccgcaacgag cgcaaccctt 960

atcctttgtt gccagcgatc gggaactcaa aggagactgc cagtgataaa ctggaggaag 1020

gtggggatga cgtcaagtca tcatggccct tacgagtagg gctacacacg tgctacaatg 1080

gcgtacagag ggtggcgaag ctgcgaggtg gagcgaatct cagtacgtct aagtccggat 1140

ggagtctgca actcgactcc agaagtcgga atcgctagta atcgcgaatc agaatgtcgc 1200

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggttgtac 1260

cagaagtaga tgcttagggc gtttaccacg gtatgattca tgactggggt gaagtcgtaa 1320

caaggtaac 1329

<210> 984
<211> 1536
<212> DNA
<213> Haemophilus sp. oral clone BJ021

<400> 984
ttaagagttt gatcatggct cagattgaac gctggcggca ggcttaacac atgcaagtcg 60

aacggtaaca gggattagct tgctaatttg ctgacgagtg gcggacgggt gagtaatgct 120

tgggaatctg gcttatggag ggggataact acgggaaact gtagctaata ccgcgtaaaa 180

tcttcggatt aaagggtggg actttcgggc cacctgccat gagatgagcc caagtgggat 240

taggtagttg gttaggtaaa ggctgaccaa gccgacgatc tctagctggt ctgagaggat 300

gaccagccac actggaactg agacacggtc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggggggaac cctgatgcag ccatgccgcg tgaatgaaga aggccttcgg 420

gttgtaaagt tctttcggtg acgaggaagg ttggtatgtt aatagcatat caaattgacg 480

ttaatcacag aagaagcacc ggctaactcc gtgccagcag ccgcggtaat acgggggggtg 540

cgagcgttaa tcggaataac tgggcgtaaa gggcacgcag gcggtgactt aagtgagatg 600

tgaaagcccc gggcttaacc tgggaattgc atttcatact gggtcgctag agtactttag 660

ggaggggtag aattccacgt gtagcggtga aatgcgtaga gatgtggagg aataccgaag 720

gcgaaggcag ccccttggga atgtactgac gctcatgtgc gaaagcgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgctgta aacgatgtcg atttggggat tgggctttaa 840

gcttggtgcc cgtagctaac gtgataaatc gaccgcctgg ggagtacggc cgcaaggtta 900

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacct actcttgaca tccatggaat cttgtagaga tacgagagtg 1020

ccttcgggaa ccatgagaca ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt gccagcggtt aggccgggaa 1140

ctcaaaggag actgccagtg ataaactgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcgta tacagaggga agcaatcctg 1260

cgaggggggag caaatctcag aaagtgcgtc taagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgcga atcagaatgt cgcggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggttg taccagaagt agatagctta 1440

accgcaaggg gggcgtttac cacggtatga ttcatgactg gggtgaagtc gtaacaaggt 1500

aaccgtaggg gaacctgcgg ctggaacacc tccttc 1536

<210> 985
<211> 1533
<212> DNA
<213> Haemophilus sp. oral clone BJ095

<400> 985
agagtttgat catggctcag attgaacgct ggcggcaggc ttaacacatg caagtcgaac 60

ggtagcagga gaaagcttgc tttcttgctg acgagtggcg gacgggtgag taatgcttgg 120

gaatctggct tatggagggg gataactacg ggaaactgca gctaataccg cgtagtatcg 180

gaagatgaaa gtgcgggacc gcaaggccgc atgccatgag atgagcccaa gtgggattag 240

gtagttggtg gggtaaaggc ctaccaagcc tgcgatctct agctggtctg agaggatggc 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcgcaatgg ggggaaccct gacgcagcca tgccgcgtga atgaagaagg ccttcgggtt 420

gtaaagttct ttcggtattg aggaaggagt gtatgttaat agcatacatt attgacgtta 480

aatacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcga 540

gcgttaatcg gaataactgg gcgtaaaggg cacgcaggcg gttatttaag tgaggtgtga 600

aagccctggg cttaacctgg gaattgcatt tcagactggg taactagagt actttaggga 660

ggggtagaat tccacgtgta gcggtgaaat gcgtagagat gtggaggaat accgaaggcg 720

aaggcagccc cttgggaatg tactgacgct catgtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgctgtaaac gatgtcgatt tggggattgg gctttaagct 840

tggtgcccgt agctaacgtg ataaatcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaaaaac cttacctact cttgacatcc atggaatcct gtagagatac gggagtgcct 1020

tcgggaacca tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcgatccgg tcgggaactc 1140

aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgagta gggctacaca cgtgctacaa tggcgtatac agagggtggc gatgccgcga 1260

ggtggagcga atctcagaaa gtacgtctaa gtccggattg gagtctgcaa ctcgactcca 1320

tgaagtcgga atcgctagta atcgcgaatc agaatgtcgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgtac cagaagtaga cagcttaacc 1440

gcaaggggg cgtttaccac ggtatgattc atgactgggg tgaagtcgta acaaggtaac 1500

cgtargggaa cctgcggctg gatcacctcc ttc 1533

<210> 986
<211> 1364
<212> DNA
<213> Haemophilus sp. oral clone JM053

<400> 986
gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa tgcttgggaa tctggcttat ggaggggat aacgacggga 120

aactgtcgct aataccgcgt agagaaagat gccatgagat gagcccaagt gggattaggt 180

agttggtggg gtaaaggcct accaagccga cgatctctag ctggtctgag aggatgacca 240

gccacaccgg gactgagaca cggcccggac tcctacggga ggcagcagtg gggaatattg 300

cgcaatgggg gcaaccctga cgcagccatg ccgcgtgaat gaagaaggcc ttcgggttgt 360

aaagttcttt cggtgacgag gatgacgtta atcacagaag aagcaccggc taactccgtg 420

ccagcagccg cggtaatacg gagggtgcga gcgttaatcg gaataactgg gcgtaaaggg 480

cacgcaggcg gctatttaag tgaggtgtga aatccccggg cttaacctgg gaattgcatt 540

tcagactggg tagctagagt actttaggga ggggtagaat tccacgtgta gcggtgaaat 600

gcgtagagat gtggaggaat accgaaggcg aaggcagccc cttgggaata ctgacgctca 660

tgtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ctgtaaacgc 720

tgtcgatttg gggattgggc ttggtgcccg tagctaacgt gataaatcga ccgcctgggg 780

agtacggccg caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgatgca acgcgaagaa ccttacctac tcttgacatc gacaggtgct 900

gcatggctgt cgtcagctcg tgttgtgaaa tgttgggtta agtcccgcaa cgagcgcaac 960

ccttatcctt tgttgccagc gatcgggaac tcaaaggaga ctgccggtga taaaccggag 1020

gaaggtgggg atgacgtcaa gtcatcatgg cccttacgag tagggctaca cacgtgctac 1080

aatggcgtac agagggtgac gaagccgcga ggtggagtga atctcagtac gtctaagtcc 1140

ggatggagtc tgcaactcga ctccagaagt cggaatccta gtaatcgcga atcagaatgt 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg 1260

taccagaagt agatgcttag ggcgtttacc acggtatgat tcatgactgg ggtgaagtcg 1320

taacaaggta accgtagggg aacctgcggt tggatcacct cctt 1364

<210> 987
<211> 1528
<212> DNA
<213> Haemophilus sp. oral taxon 851

<400> 987
agagtttgat catggctcag attgaacgct ggcggcaggc ttaacacatg caagtcgaac 60

ggtagcagga gaaagcttgc tttcttgctg acgagtggcg gacgggtgag taatgcttgg 120

gaatctggct tatggagggg gataactacg ggaaactgta gctaataccg cgtagtatcg 180

gaagatgaaa gtgcgggacc gcaaggccgc atgccatgag atgagcccaa gtgggattag 240

gtagttggtg gggtaaaggc ctaccaagcc tgcgatctct agctggtctg agaggatggc 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcgcaatgg ggggaaccct gacgcagcca tgccgcgtga atgaagaagg ccttcgggtt 420

gtaaagttct ttcggtattg aggaaggttg atgtgttaat agtacatcaa attgacgtta 480

aatacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcga 540

gcgttaatcg gaataactgg gcgtaaaggg cacgcaggcg gttatttaag tgaggtgtga 600

aagccccggg cttaacctgg gaattgcatt tcagactggg taactagagt actttaggga 660

ggggtagaat tccacgtgta gcggtgaaat gcgtagagat gtggaggaat accgaaggcg 720

aaggcagccc cttgggaatg tactgacgct catgtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgctgtaaac gctgtcgatt tggggattgg gcttaaagct 840

tggtgcccgt agctaacgtg ataaatcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctact cttgacatcc agagaacttt ccagagatgg attggtgcct 1020

tcgggaactc tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcgatttgg tcgggaactc 1140

aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgagta gggctacaca cgtgctacaa tggcgtatac agagggtggc gaagctgcga 1260

ggtggagcga atctcagaaa gtacgtctaa gtccggattg gagtctgcaa ctcgactcca 1320

tgaagtcgga atcgctagta atcgcgaatc agaatgtcgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgtac cagaagtaga tagcttaacc 1440

gcaaggggg cgtttaccac ggtatgattc atgactgggg tgaagtcgta acaaggtaac 1500

cgtaggggaa cctgcggttg gatcacct 1528

<210> 988
<211> 1522
<212> DNA
<213> Haemophilus sputorum

<400> 988
agagtttgat catggctcag attgaacgct ggcggcaggc ttaacacatg caagtcgaac 60

ggtaacagga agaaagcttg ctttctttgc tgacgagtgg cggacgggtg agtaatgctt 120

gggaatctgg cttatggagg gggataacta cgggaaactg tagctaatac cgcgtaatat 180

cgagagatta aagggtggga ccgcaaggcc acctgccatg agatgagccc aagtgggatt 240

aggtagttgg tgaggtaaag gctcaccaag ccgacgatct ctagctggtc tgagaggatg 300

accagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 360

attgcacaat gggggaacc ctgatgcagc catgccgcgt gaatgaagaa ggccttcggg 420

ttgtaaagtt ctttcggtag cgaggaaggc atttagttta atagactaga tgattgacgt 480

taactacaga agaagcaccg gctaactccg tgccagcagc cgcggtaata cgggggtgc 540

gagcgttaat cggaataact gggcgtaaag ggcacgcagg cggtgactta agtgagatgt 600

gaaagccccg ggcttaacct gggaattgca tttcatactg ggtcgctaga gtactttagg 660

gaggggtaga attccacgtg tagcggtgaa atgcgtagag atgtggagga ataccgaagg 720

cgaaggcagc cccttgggaa tgtactgacg ctcatgtgcg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgctgtaa acgatgtcga tttgggggtt gggctttaag 840

cttggcgccc gtagctaacg tgataaatcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat ccagagaact ttccagagat ggattggtgc 1020

cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcgatta ggtcgggaac 1140

tcaaaggaga ctgccggtga taaaccggag gaaggtgggg atgacgtcaa gtcatcatgg 1200

cccttacgag tagggctaca cacgtgctac aatggcgtat acagagggaa gcaatcctgc 1260

gaggggagc aaatctcaca aagtacgtct aagtccggat tggagtctgc aactcgactc 1320

catgaagtcg gaatcgctag taatcgcaaa tcagaatgtt gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc acaccatggg agtgggttgt accagaagta gatagcttaa 1440

ccttcggggg ggcgtttacc acggtatgat tcatgactgg ggtgaagtcg taacaaggta 1500

accgtagggg aacctgcggt tg 1522

<210> 989
<211> 1421
<212> DNA
<213> Hafnia alvei

<220>
<221> modified_base
<222> (421)..(421)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (538)..(538)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1359)..(1359)
<223> a, c, t, g, unknown or other

<400> 989
catgcaagtc gagcggtagc acaagagagc ttgctctctg ggtgacgagc ggcggacggg 60

tgagtaatgt ctgggaaact gcctgatgga gggggataac tactggaaac ggtagctaat 120

accgcatgac gtcttcggac caaagtgggg gaccttcggg cctcacgcca tcagatgtgc 180

ccagatggga ttagctagta ggtggggtaa tggctcacct aggcgacgat ctctagctgg 240

tctgagagga tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca 300

gcagtgggga atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag 360

aaggccttcg ggttgtaaag tactttcagc gaggaggaag gcattaaggt taataacctt 420

ngtgattgac gttactcgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa 480

tacggagggt gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggttngt 540

taagtcagat gtgaaatccc cgagcttaac ttgggaactg catttgaaac tggcaagcta 600

gagtcttgta gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag 660

gaataccggt ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgctgt aaacgatgtc gacttggagg 780

ttgtgccctt gaggcgtggc ttccggagct aacgcgttaa gtcgaccgcc tggggagtac 840

ggccgcaagg ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg 900

gtttaattcg atgcaacgcg aagaacctta cctactcttg acatccagag aatttgctag 960

agatagctta gtgccttcgg gaactctgag acaggtgctg catggctgtc gtcagctcgt 1020

gttgtgaaat gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg 1080

agtcatgtcg ggaactcaaa ggagactgcc ggtgataaac cggaggaagg tggggatgac 1140

gtcaagtcat catggccctt acgagtaggg ctacacacgt gctacaatgg catatacaaa 1200

gagaagcgaa ctcgcgagag caagcggacc tcataaagta tgtcgtagtc cggattggag 1260

tctgcaactc gactccatga agtcggaatc gctagtaatc gtagatcaga atgctacggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacanc atgggagtgg gttgcaaaag 1380

aagtaggtag cttaaccttc gggagggcgc ttaccacttt g 1421

<210> 990
<211> 1533
<212> DNA
<213> Halomonas elongata

<400> 990
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggaaacgatc ctagcttgct aggaggcgtc gagcggcgga cgggtgagta atgcatagga 120

atctgcccgg tagtggggga taacttgagg aaactcaagc taataccgca tacgccctac 180

gggggaaagc aggggctctt cggaccttgc gctatcggat gagcttatgt cggattagct 240

ggttggtgag gtaacggctc accaaggcga cgatccgtag ctggtctgag aggatgatca 300

gccacatcgg gactgagaca cggcccgaac tcctacggga ggcagcagtg gggaatattg 360

gacaatgggg gcaaccctga tccagccatg ccgcgtgtgt gaagaaggcc ctcgggttgt 420

aaagcacttt cagcgaggaa gaatgcttgt cggttaatac ccggcaaggg agacatcact 480

cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcgagc 540

gttaatcgga attactgggc gtaaagcgtg cgtaggcggc ttgataagcc ggttgtgaaa 600

gccccgggct caacctggga acggcatccg gaactgttag gctagagtgc aggagaggaa 660

ggtagaattc ccggtgtagc ggtgaaatgc gtagagatcg ggaggaatac cagtggcgaa 720

ggcggccttc tggactgaca ctgacgctga ggtacgaaag cgtgggtagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgtcgactag ccgttggggt cctcgagacc 840

tttgtggcgc agttaacgca ctaagtcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctacc cttgacatcg tgcgaacttt ccagagatgg attggtgcct 1020

tcgggagcgc acagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg taacgagcgc aacccttgtc cctatttgcc agcgattcgg tcgggaactc 1140

tagggagact gccggtgaca aaccggagga aggtggggac gacgtcaagt catcatggcc 1200

cttacgggta gggctacaca cgtgctacaa tggccggtac aatgggttgc aaagcggcga 1260

cgtggagcta atctcataaa gccggtctca gtccggatcg gagtctgcaa ctcgactccg 1320

tgaagtcgga atcgctagta atcgtgcatc agaatggcac ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tggactgcac cagaagtggt tagcctaact 1440

tcggagggcg atcaccacgg tgtggttcat gactggggtg aagtcgtaac aaggtagccg 1500

taggggaacc tgcggctgga tcacctcctt aat 1533

<210> 991
<211> 1296
<212> DNA
<213> Halomonas johnsoniae

<400> 991
attgaacgct ggcggcaggc ctaacacatg caagtcgagc gagcggcgga cgggtgagta 60

atgcatagga atctgcccga tagtggggga taacctgggg aaacccaggc taataccgca 120

tacggaaagc cgctatcgga tgagcctatg tcggattagc tagttggtga ggtaaaggct 180

caccaaggcg acgatccgta gctggtctga gaggatgatc agccacatcg ggactgagac 240

acggcccgaa ctcctacggg aggcagcagt ggggaatatt ggacaatggg gggaaccctg 300

atccagccat gccgcgtgtg tgaagaaggc cctcgggttg taaagcactt tcagtgagga 360

agaagacatc actcacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 420

ggagggtgcg agcgttaatc ggaattactg ggcgtaaagc gcgcgtaggt ggcttgataa 480

gccggttgtg aaagccccgg gctcaacctg ggaacggcat ccggaactgt caagctagag 540

tgcaggagag gaaggtagaa ttcccggtgt agcggtgaaa tgcgtagaga tcgggaggaa 600

taccagtggc gaaggcggcc ttctggactg actgacactg aggtgcgaaa gcgtgggtag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtcgacca gccgttgggt 720

actttgtggc gaagttaacg cgataagtcg accgcctggg gagtacggcc gcaaggttaa 780

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 840

aacgcgaaga accttaccta ctcttgacat cgacaggtgc tgcatggctg tcgtcagctc 900

gtgttgtgaa atgttgggtt aagtcccgta acgagcgcaa cccttgtcct tatttgccag 960

cgcgcgggaa ctctaaggag actgccggtg acaaaccgga ggaaggtggg gacgacgtca 1020

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggtcgg caaagggttg 1080

ccaactcgcg agagtgagcc aatcccgacc gatctcagtc cggacggagt ctgcaactcg 1140

actccggaag tcggaatcgc tagtaatcgt ggatcagaat gccacggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccat gggagtggac tgcaccagaa gtggttgcct 1260

agggcgatca ccacggtgtg gttcatgact ggggtg 1296

<210> 992
<211> 1430
<212> DNA
<213> Halorubrum lipolyticum

<400> 992
aggccattgc tattgggatt cgatttagcc atgctagtcg cacgagttca gactcgtggc 60

gaatagctca gtaacacgtg gccaaactac ccttcggagc acaataccct cgggaaactg 120

aggctaatag tgcataccac agtccacctg gaatgaggac tgtgccaaac gctccggcgc 180

cgaaggatgt ggctgcggcc gattaggtag acggtggggt aacggcccac cgtgccaata 240

atcggtacgg gtcatgagag tgagaacccg gagacggaat ctgagacaag attccgggcc 300

ctacggggcg cagcaggcgc gaaaccttta cactgcacgc cagtgcgata agggaatccc 360

aagtgcgtag gcatagagcc tacgcttttg tccaccgtag ggaggtggac gaataagggc 420

tgggcaagac cggtgccagc cgccgcggta ataccggcag cccgagtgat ggccgatctt 480

attgggccta aagcgtccgt agctggccgc acaagtccat cggaaaatcc acccgctcaa 540

cgggtgggcg tccggtggaa actgtgtggc ttgggaccgg aaggcgcgac gggtacgtcc 600

ggggtaggag tgaaatcccg taatcctgga cggaccgccg atggcgaaag cacgtcgcga 660

ggacggatcc gacagtgagg gacgaaagcc agggtctcga accggattag atacccgggt 720

agtcctggcc gtaaacaatg tctgttaggt gtggctccca ctacgagtgg gtgctgtgcc 780

gtagggaagc cgctaaacag accgcctggg aagtacgtcc gcaaggatga aacttaaagg 840

aattggcggg ggagcactac aaccggagga gcctgcggtt taattggact caacgccgga 900

catctcacca gcatcgactg taataatgac gatcaggttg atgaccttat ccgagtttca 960

gagaggaggt gcatggccgc cgtcagctcg taccgtgagg cgtcctgtta agtcaggcaa 1020

cgagcgagac ccgcatcctt acttgccagc agcactgcga agtggctggg gacagtaggg 1080

agaccgccgt ggccaacacg gaggaaggaa cgggcaacgg taggtcagta tgccccgaat 1140

gtgctgggca acacgcgggc tacaatggtc gagacaaagg gttccaactc cgaaaggaga 1200

cggtaatctc agaaactcga tcgtagttcg gattgtgggc tgcaactcgc ccacatgaag 1260

ctggattcgg tagtaatcgc gtgtcacaag cgcgcggtga atacgtccct gctccttgca 1320

cacaccgccc gtcaaagcac ccgagtgagg tccggatgag gcgcgtcaca cgcgtcgaat 1380

ctgggcttcg caaggggget taagtcgtaa caaggtagcc gtaggggaat 1430

<210> 993
<211> 1506
<212> DNA
<213> Helicobacter bilis

<400> 993
tttatggaga gtttgatcct ggctcagagt gaacgctggc ggcgtgccta atacatgcaa 60

gtcgaacgat gaagcttcta gcttgctaga agtggattag tggcgcacgg gtgagtaatg 120

cataggttat gtgcccttta gtctgggata gccactggaa acggtgatta atactggata 180

ctccctacgg gggaaaggtt tttcgctaaa ggatcagcct atgtcctatc agcttgttgg 240

tgaggtaatg gctcaccaag gctatgacgg gtatccggcc tgagagggtg atcggacaca 300

ctggaactga gacacggtcc agactcctac gggaggcagc agtagggaat attgctcaat 360

gggggaaacc ctgaagcagc aacgccgcgt ggaggatgaa ggttttagga ttgtaaactc 420

cttttgttag agaagattat gacggtatct aacgaataag caccggctaa ctccgtgcca 480

gcagccgcgg taatacggag ggtgcaagcg ttactcggaa tcactgggcg taaagagcgc 540

gtaggcgggt ggtcaagtca gatgtgaaat cctgtagctt aactacagaa ctgcatttga 600

aactgaccat ctagagtatg ggagaggtag gtggaattct tggtgtaggg gtaaaatccg 660

tagagatcaa gaggaatact cattgcgaag gcgacctgct ggaacattac tgacgctgat 720

gcgcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cctaaacgat 780

gaatgctagt tgttgccctg cttgtcaggg cagtaatgca gctaacgcat taagcattcc 840

gcctggggag tacggtcgca agattaaaac tcaaaggaat agacggggac ccgcacaagc 900

ggtggagcat gtggtttaat tcgaagctac gcgaagaacc ttacctaggc ttgacattga 960

tagaatccgc tagagatagt ggagtgctgg cttgccagag cttgaaaaca ggtgctgcac 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc 1080

gtccttagtt gctagcagct cggctgagca ctctaaggag actgccttcg taaggaggag 1140

gaaggtgagg acgacgtcaa gtcatcatgg cccttacgcc tagggctaca cacgtgctac 1200

aatgggacat acaaaaagat gcaataccgc gaggtggagc aaatctctaa aatgtctctc 1260

agttcggatt gtagtctgca actcgactac atgaagctgg aatcgctagt aatcgtgaat 1320

cagccatgtc acggtgaata cgttcccggg tcttgtactc accgcccgtc acaccatggg 1380

agttgtattc gccttaagtc gggatactaa attggttacc gcccacggcg gatgcagcga 1440

ctggggtgaa gtcgtaacaa ggtaaccgta ggtgaacctg cggttggatc acctcctttc 1500

tagaga 1506

<210> 994
<211> 1499
<212> DNA
<213> Helicobacter canadensis

<400> 994
ttctatggag agtttgatcc tggctcagag tgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacga tgaagcttct agcttgctag aagtggatta gtggcgcacg ggtgagtaat 120

gcataggtta tgtgcccttt agtctgggat agccactgga aacggtgatt aatactagat 180

actccctacg ggggaaagtt tttcgctaaa ggatcagcct atgtcctatc agcttgttgg 240

tgaggtaatg gctcaccaag gctatgacgg gtatccggcc tgagagggtg atcggacaca 300

ctggaactga gacacggtcc agactcctac gggaggcagc agtagggaat attgctcaat 360

gggggaaacc ctgaagcagc aacgccgcgt ggaggatgaa ggttttcgga ttgtaaactc 420

cttttgttag agaagattat gacggtatct aacgaataag caccggctaa ctccgtgcca 480

gcagccgcgg taatacggag ggtgcaagcg ttactcggaa tcactgggcg taaagagcgc 540

gtaggcgggg tagcaagtca gatgtgaaat cctatggctt aaccatagaa ctgcatttga 600

aactgttact ctagagtatg ggagaggtag gtggaattct tggtgtaggg gtaaaatccg 660

tagagatcaa gaggaatact cattgcgaag gcgacctgct ggaacattac tgacgctgat 720

gcgcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cctaaacgat 780

gaatgctagt tgttgtgagg cttgtccttg cagtaatgca gctaacgcat taagcattcc 840

gcctggggag tacggtcgca agattaaaac tcaaaggaat agacggggac ccgcacaagc 900

ggtggagcat gtggtttaat tcgaagatac gcgaagaacc ttacctaggc ttgacattga 960

tagaatctac tagagatagt ggagtgccct tttagggagc ttgaaaacag gtgctgcacg 1020

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg 1080

tccttagttg ctagcagttt ggctgagcac tctaaggaga ctgccttcgt aaggaggagg 1140

aaggtgagga tgacgtcaag tcatcatggc ccttacgcct agggctacac acgtgctaca 1200

atggggtgca caaagagaag caatactgcg aagtggagcc aatctctaaa acatctctca 1260

gttcggattg tagtctgcaa ctcgactaca tgaagctgga atcgctagta atcgtgaatc 1320

agccatgtca cggtgaatac gttcccgggt cttgtactca ccgcccgtca caccatggga 1380

gttgtattcg ccttaagtcg gaatactaaa ctagttaccg cccacggcgg atgcagcgac 1440

tggggtgaag tcgtaacaag gtaaccgtag gtgaacctgc ggttggatca cctcctttc 1499

<210> 995
<211> 1502
<212> DNA
<213> Helicobacter cinaedi

<400> 995
ttttatggag agtttgatcc tggctcagag tgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacga tgaagctttt agcttgctag aagtggatta gtggcgcacg ggtgagtaat 120

gcataggtta tgtgcccttt agtctgggat agccactgga aacggtgatt aatactggat 180

actccctacg ggggaaaggt ttttcgctaa aggatcagcc tatgtcctat cagcttgttg 240

gtgaggtaat ggctcaccaa ggctatgacg ggtatccggc ctgagagggt gatcggacac 300

actggaactg agacacggtc cagactccta cgggaggcag cagtagggaa tattgctcaa 360

tgggggaaac cctgaagcag caacgccgcg tggaggatga aggttttagg attgtaaact 420

ccttttgtaa gagaagatta tgacggtatc ttacgaataa gcaccggcta actccgtgcc 480

agcagccgcg gtaatacgga gggtgcaagc gttactcgga atcactgggc gtaaagagtg 540

cgtaggcggg tagtcaagtc agatgtgaaa tcctgtagct taactacaga actgcatttg 600

aaactgacta tctagagtat gggagaggta ggtggaattc ttggtgtagg ggtaaaatcc 660

gtagagatca agaggaatac tcattgcgaa ggcgacctgc tggaacatta ctgacgctga 720

tgcgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccctaaacga 780

tgaatgctag ttgttgccct gcttgtcagg gcagtaatgc agctaacgca ttaagcattc 840

cgcctgggga gtacggtcgc aagattaaaa ctcaaaggaa tagacgggga cccgcacaag 900

cggtggagca tgtggtttaa ttcgagtata cgcgaagaac cttacctagg cttgacattg 960

atagaatccg ctagagatag tggagtgttg gcttgccaga gcttgaaaac aggtgctgca 1020

cggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

cgtccttagt tgctagcagc tcggctgagc actctaagga gactgccttc gtaaggagga 1140

ggaaggtgag gacgacgtca agtcatcatg gcccttacgc ctagggctac acacgtgcta 1200

caatgggaca tacaaaaaga tgcaatatcg cgagatggag caaatctcta aaatgtctct 1260

cagttcggat tgtagtctgc aactcgacta cataaagctg gaatcgctag taatcgcaaa 1320

tcagcaatgt tgcggtgaat acgttcccgg gtcttgtact caccgcccgt cacaccatgg 1380

gagttgtatt cgccttaagt cgggatacta aattggttac cgcccacggc ggatgcagcg 1440

actggggtga agtcgtaaca aggtaaccgt aggtgaacct gcggttggat cacctccttt 1500

ct 1502

<210> 996
<211> 1508
<212> DNA
<213> Helicobacter pullorum

<400> 996
ttttatggag agtttgatcc tggctcagag tgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacga tgaagctttt agcttgctag aagtggatta gtggcgcacg ggtgagtaat 120

gcataggtta tgtgcccttt agtctgggat agccactgga aacggtgatt aatactagat 180

actccctacg ggggaaagtt tttcgctaaa ggatcagcct atgtcctatc agcttgttgg 240

tgaggtaatg gctcaccaag gctatgacgg gtatccggcc tgagagggtg atcggacaca 300

ctggaactga gacacggtcc agactcctac gggaggcagc agtagggaat attgctcaat 360

gggggaaacc ctgaagcagc aacgccgcgt ggaggatgaa ggttttcgga ttgtaaactc 420

cttttgttag agaagataat gacggtatct aacgaataag caccggctaa ctccgtgcca 480

gcagccgcgg taatacggag ggtgcaagcg ttactcggaa tcactgggcg taaagagcgc 540

gtaggcgggg tagtaagtca gatgtgaaat cctatggctt aaccatagaa ctgcatttga 600

aactactact ctagagtatg ggagaggtag gtggaattct tggtgtaggg gtaaaatccg 660

tagagatcaa gaggaatact cattgcgaag gcgacctgct ggaacattac tgacgctgat 720

gcgcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cctaaacgat 780

gaatgctagt tgttgtgagg cttgtccttg cagtaatgca gctaacgcat taagcattcc 840

gcctggggag tacggtcgca agattaaaac tcaaaggaat agacggggac ccgcacaagc 900

ggtggagcat gtggtttaat tcgatgatac gcgaagaacc ttacctaggc ttgacattga 960

tagaatctgc tagagatagc ggagtgctgg cttgccagag cttgaaaaca ggtgctgcac 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc 1080

gtccttagtt gctagcagtt cggctgagca ctctaaggag actgccttcg taaggaggag 1140

gaaggtgagg atgacgtcaa gtcatcatgg cccttacgcc tagggctaca cacgtgctac 1200

aatggggtgt acaaagagaa gcaatactgc gaagtggagc caatctctaa aacatctctc 1260

agttcggatt gtagtctgca actcgactac atgaagctgg aatcgctagt aatcgcaaat 1320

cagccatgtt gcggtgaata cgttcccggg tcttgtactc accgcccgtc acaccatggg 1380

agttgtattc gccttaagtc ggaatactaa actagttacc gcccacggcg gatgcagcga 1440

ctggggtgaa gtcgtaacaa ggtaaccgta ggtgaacctg cggttggatc acctcctttc 1500

aagagaaa 1508

<210> 997
<211> 1550
<212> DNA
<213> Helicobacter pylori

<400> 997
atcaaaaaac aaaagagctt taggacaaac acttttatgg agagtttgat cctggctcag 60

agtgaacgct ggcggcgtgc ctaatacatg caagtcgaac gatgaagctt tctagcttgc 120

tagaaggctg attagtggcg cacgggtgag taacgcatag gtcatgtgcc tcttagtttg 180

ggatagccat tggaaacgat gattaatacc agatactccc tacgggggaa agatttatcg 240

ctaagagatc agcctatgtc ctatcagctt gttggtaagg taatggctta ccaaggctat 300

gacgggtatc cggcctgaga gggtgaacgg acacactgga actgagacac ggtccagact 360

cctacgggag gcagcagtag ggaatattgc tcaatggggg aaaccctgaa gcagcaacgc 420

cgcgtggagg atgaaggttt taggattgta aactcctttt gttagagaag ataatgacgg 480

tatctaacga ataagcaccg gctaactccg tgccagcagc cgcggtaata cggagggtgc 540

aagcgttact cggaatcact gggcgtaaag agcgcgtagg cgggatagtc agtcaggtgt 600

gaaatcctat ggcttaacca tagaactgca tttgaaacta ctattctaga gtgtgggaga 660

ggtaggtgga attcttggtg taggggtaaa atccgtagag atcaagagga atactcattg 720

cgaaggcgac ctgctggaac attactgacg ctgattgcgc gaaagcgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgcccta aacgatggat gctagttgtt ggagggctta 840

gtctctccag taatgcagct aacgcattaa gcatcccgcc tggggagtac ggtcgcaaga 900

ttaaaactca aaggaataga cggggacccg cacaagcggt ggagcatgtg gtttaattcg 960

aagatacacg aagaacctta cctaggcttg acattgagag aatccgctag aaatagtgga 1020

gtgtctggct tgccagacct tgaaaacagg tgctgcacgg ctgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccccct tcttagttgc taacaggtca 1140

tgctgagaac tctaaggata ctgcctccgt aaggaggagg aaggtgggga cgacgtcaag 1200

tcatcatggc ccttacgcct agggctacac acgtgctaca atggggtgca caaagagaag 1260

caatactgcg aagtggagcc aatcttcaaa acatctctca gttcggattg taggctgcaa 1320

ctcgcctgca tgaagctgga atcgctagta atcgcaaatc agccatgttg cggtgaatac 1380

gttcccgggt cttgtactca ccgcccgtca caccatggga gttgtgtttg ccttaagtca 1440

ggatgctaaa ttggctactg cccacggcac acacagcgac tggggtgaag tcgtaacaag 1500

gtaaccgtag gtgaacctgc ggttggatca cctcctttct agagaaaagc 1550

<210> 998
<211> 1456
<212> DNA
<213> Helicobacter sp. None

<400> 998
tagtgaacgc tggcggcgtg cctaatacat gcaagtcgaa cgatgaagct tttagcttgc 60

tagaagtgga ttagtggcgc acgggtgagt aatgcatagg ttatgtgccc tttagtctgg 120

gatagccact ggaaacggtg attaatactg gatactccct gcgggggaaa ggtttttcgc 180

tagaggatca gcctatgtcc tatcagcttg ttggtgaggt aatggctcac caagactatg 240

acgggtatcc ggcctgagag ggtgatcgga cacactggaa ctgagacacg gtccagactc 300

ctacgggagg cagcagtagg gaatattgct caatggggga aaccctgaag cagcaacgcc 360

gcgtggagga tgaaggtttt aggattgtaa actccttttg taagagaaga ttatgacggt 420

atcttacgaa taagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgta 480

agcgttactc ggaatcactg ggcgtaaaga gtgcgtaggc gggtagtcaa gtcagatgtg 540

aaatcctgta gcttaactac agaactgcat ttgaaactga ctatctagag tatgggagag 600

gtaggtggaa ttcttggtgt aggggtaaaa tccgtagaga tcaagaggaa tactcattgc 660

gaaggcgacc tgctggaaca ttactgacgc tgatgcgcga aagcgtgggg agcaaacagg 720

attagatacc ctggtagtcc acgccctaaa cgatgaatgc tagttgttgc cctgcttgtc 780

agggcagtaa tgcagctaac gcattaagca ttccgcctgg ggagtacggt cgcaagatta 840

aaactcaaag gaatagacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 900

ctacgcgaag aaccttacct aggcttgaca ttgatagaat ctgctagaga tagcggagtg 960

ctggcttgcc agagcttgaa aacaggtgct gcacggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac cctcgtcctt agttgttagc agctcggctg 1080

agcactctaa ggagactgcc ttcgcaagga ggaggaaggt gaggacgacg tcaagtcatc 1140

atggccctta cgcctagggc tacacacgtg ctacaatggg acatacaaaa agatgcaata 1200

tcgcgagatg gagcaaatct ctaaaatgtc tctcagttcg gattgtagtc tgcaactcga 1260

ctacataaag ctggaatcgc tagtaatcgc aaatcagcaa tgttgcggtg aatacgttcc 1320

cgggtcttgt actcaccgcc cgtcacacca tgggagttgt attcgcctta agtcgggata 1380

ctaaattggt taccgcccac ggcggatgca gcgactgggg tgaagtcgta acaaggtaac 1440

cgtgtcatag ttgttt 1456

<210> 999
<211> 1507
<212> DNA
<213> Helicobacter winghamensis

<400> 999
ttttatggag agtttgatcc tggctcagag tgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacga tgaagcttct agcttgctag aagtggatta gtggcgcacg ggtgagtaat 120

gcataggtta tgtgcccttt agtctgggat agccactgga aacggtgatt aataccggat 180

attccctacg ggggaaaggt ttttcgctaa aggatcagcc tatgtcctat cagcttgttg 240

gtgaggtaat ggctcaccaa ggctatgacg ggtatccggc ctgagagggt gatcggacac 300

actggaactg agacacggtc cagactccta cgggaggcag cagtagggaa tattgctcaa 360

tgggggaaac cctgaagcag caacgccgcg tggaggatga aggttttcgg attgtaaact 420

cctttttgtta gagaagatta tgacggtatc taacgaataa gcaccggcta actccgtgcc 480

agcagccgcg gtaatacgga gggtgcaagc gttactcgga atcactgggc gtaaagagcg 540

cgtaggcggg ataataagtc agatgtgaaa tcctatggct taaccataga actgcatttg 600

aaactattat tctagagtat gggagaggta ggtggaattc ttggtgtagg ggtaaaatcc 660

gtagagatca agaggaatac tcattgcgaa ggcgacctgc tggaacatta ctgacgctga 720

tgcgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccctaaacga 780

tgaatgctag ttgttggggt gcttgtcact ccagtaatgc agctaacgca ttaagcattc 840

cgcctgggga gtacggtcgc aagattaaaa ctcaaaggaa tagacgggga cccgcacaag 900

cggtggagca tgtggtttaa ttcgaagata cgcgaagaac cttacctagg cttgacattg 960

atagaatccg ctagagatag tggagtgcta gcttgctaga acttgaaaac aggtgctgca 1020

cggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

cgtccttagt tgctaactat tcggtagagc actctaagga gactgccttc gtaaggagga 1140

ggaaggtgag gatgacgtca agtcatcatg gcccttacgc ctagggctac acacgtgcta 1200

caatggtatg tacaaagaga agcaataccg cgaggtggag caaatctata aaacatatct 1260

cagttcggat tgtagtctgc aactcgacta catgaagctg gaatcgctag taatcgcaaa 1320

tcagcaatgt tgcggtgaat acgttcccgg gtcttgtact caccgcccgt cacaccatgg 1380

gagttgtatt cgccttaagt cggaatgcca aactggctac cgcccacggc ggatgcagcg 1440

actggggtga agtcgtaaca aggtaaccgt aggtgaacct gcggttggat cacctccttt 1500

caagaga 1507

<210> 1000
<211> 1510
<212> DNA
<213> Heliobacterium modesticaldum

<400> 1000
gatcctggct caggacgaac gctggcggca tgcctaacac atgcaagtcg aacggagagc 60

tgaagtttcg atggaggctc ttagtggcgg acgggtgagt aacgcgtgga taacctgcct 120

gagagtgggg gataacagcc cgaaagggct gctaataccg cataacgttg tccggggaca 180

tccccggata accaaaggag caatccgctg tcagatgggt ccgcgtccga ttagctagtt 240

ggcggggtaa gagcccacca aggcaacgat cggtagccgg cctgagaggg tgaacggcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga atcttccgca 360

atgggcgaaa gcctgacgga gcaatgccgc gtgggggacg aaggtcttcg gattgtaaac 420

ccttgtcttc agggaagaag aatgacggta cctgaggagg aagccccggc taactacgtg 480

ccagcagccg cggtaatacg taggggcga gcgttgtccg gaattactgg gcgtaaagcg 540

cgtgcaggcg gacctttaag tctgaggtga aagaccggag ctcaactccg gggcggcctt 600

ggaaactgga ggtcttgagg gatggagagg acagtggaat tcccggtgta gcggtgaaat 660

gcgtagatat cgggaggaac cccagtggcg aaggcgactg tctggacatt acctgacgct 720

gaggcgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac 780

gatgagtgct aggtgttggg ggtatcgacc cctccagtgc cgcagtcaac acaataagca 840

ctccgcctgg ggagtacggc cgcaaggttg aaactcaaag gaattgacgg gggcccgcac 900

aagcggtgga gcatgtggtt taattcgacg caacgcgaag aaccttacca aggcttgaca 960

tcctccgaac cttgcagaga tgcgagggtg cccttcgggg agcggagaga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttatcctcag ttgccagcga gagagacggg gactctgggg agactgcccg ggacgaccgg 1140

gaggaaggcg gggatgacgt caaatcatca tgccccttat gtcttgggct acacacgtgc 1200

tacaatgggc ggtacaaacc gaggcgaagc cgcgaggcgg agcgaaccgg agaaagccgc 1260

tcacagttcg gattgctctc tgcaactcga gagcatgaag gcggaatcgc tagtaatcgc 1320

gggtcagcat accgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac 1380

gaaagtcggc aacacccgaa gtcggtgcgc taaccgcaag gaggcagccg ccgaaggtgg 1440

ggtcgatgat tggggtgaag tcgtaacaag gtagccgtat cggaaggtgc ggctggatca 1500

cctcctttct 1510

<210> 1001
<211> 1528
<212> DNA
<213> Herbaspirillum seropedicae

<400> 1001
agagtttgat cctggctcag attgaacgct ggcggcatgc cttacacatg caagtcgaac 60

ggcagcatag gagcttgctc ctgatggcga gtggcgaacg ggtgagtaat atatcggaac 120

gtgccctaga gtgggggata actagtcgaa agattagcta ataccgcata cgatctacgg 180

atgaaagtgg gggatcgcaa gacctcatgc tcctggagcg gccgatatct gattagctag 240

ttggtggggt aaaagcctac caaggcgacg atcagtagct ggtctgagag gacgaccagc 300

cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg gaattttgga 360

caatgggggc aaccctgatc cagcaatgcc gcgtgagtga agaaggcctt cgggttgtaa 420

agctcttttg tcagggaaga aacggttttg gctaatatcc agaactaatg acggtacctg 480

aagaataagc accggctaac tacgtgccag cagccgcggt aatacgtagg gtgcaagcgt 540

taatcggaat tactgggcgt aaagcgtgcg caggcggttg tgtaagacag atgtgaaatc 600

cccgggctca acctgggaat tgcatttgtg actgcacggc tagagtgtgt cagaggggg 660

tagaattcca cgtgtagcag tgaaatgcgt agatatgtgg aggaataccg atggcgaagg 720

cagccccctg ggataacact gacgctcatg cacgaaagcg tggggagcaa acaggattag 780

ataccctggt agtccacgcc ctaaacgatg tctactagtt gtcgggtctt aattgacttg 840

gtaacgcagc taacgcgtga agtagaccgc ctggggagta cggtcgcaag attaaaactc 900

aaaggaattg acggggaccc gcacaagcgg tggatgatgt ggattaattc gatgcaacgc 960

gaaaaacctt acctaccctt gacatggtcg gaatcctgaa gagatttggg agtgctcgaa 1020

agagaaccgg cgcacaggtg ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt 1080

taagtccccg caacgagcgc aacccttgtc attagttgct acgaaagggc actctaatga 1140

gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aagtcctcat ggcccttatg 1200

ggtagggctt cacacgtcat acaatggtac atacagaggg ccgccaaccc gcgaggggag 1260

agctaatccc agaaagtgta tcgtagtccg gattggagtc tgcaactcga ctccatgaag 1320

ttggaatcgc tagtaatcgc ggatcagcat gtcgcggtga atacgttccc gggtcttgta 1380

cacaccgccc gtcacaccat gggagcgggt tttaccagaa gtgggtagcc taaccgtaag 1440

gagggcgctc accacggtag gattcgtgac tggggtgaag tcgtaacaag gtagccgtat 1500

cggaaggtgc ggctggatca cctccttt 1528

<210> 1002
<211> 1489
<212> DNA
<213> Herbaspirillum sp. JC206

<400> 1002
agagtttgat cctggctcag attgaacgct ggcggcatgc cttacacatg caagtcgaac 60

ggcagcgcgg gcttcggcct ggcggcgagt ggcgaacggg tgagtaatat atcggaacgt 120

gccctagagt gggggataac tagtcgaaag attagctaat accgcatacg atctacggat 180

gaaagtgggg gaccgcaagg cctcacgctc ctggagcggc cgatatctga ttagctagtt 240

ggtggggtaa aggcctacca aggcgacgat cagtagctgg tctgagagga cgaccagcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga attttggaca 360

atgggggcaa ccctgatcca gcaatgccgc gtgtgtgaag aaggccttcg ggttgtaaag 420

cacttttgtc tgggaagaaa tcccttgggc taatacctcg aggggatgac ggtaccggaa 480

gaataagcac cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgtta 540

atcggaatta ctgggcgtaa agcgtgcgca ggcggttgtg caagacagat gtgaaatccc 600

cgggcttaac ctgggaactg catttgtgac tgcacggcta gagtgtgtca gaggggggta 660

gaattccacg tgtagcagtg aaatgcgtag agatgtggag gaataccgat ggcgaaggca 720

gccccctggg ataacactga cgctcatgca cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgccct aaacgatgtc tactagttgt cgggtcttaa ttgacttggt 840

aacgcagcta acgcgtgaag tagaccgcct ggggagtacg gtcgcaagat taaaactcaa 900

aggaattgac ggggacccgc acaagcggtg gatgatgtgg attaattcga tgcaacgcga 960

aaaaccttac ctacccttga catggtcgga atcctccaga gatgggggag tgcccgaaag 1020

ggaaccgacg cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttgtcatt agttgctacg aaagggcact ctaatgagac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaag tcctcatggc ccttatgggt 1200

agggcttcac acgtcataca atggtacata cagagggccg ccaacccgcg agggggagct 1260

aatcccagaa agtgtatcgt agtccggatt gcagtctgca actcgactgc atgaagttgg 1320

aatcgctagt aatcgcggat cagcatgtcg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gcgggtttta ccagaagtgg gtagcctaac cgcaaggagg 1440

gcgcttacca cggtaggatt cgtgactggg gtgaagtcgt aacaaggta 1489

<210> 1003
<211> 1361
<212> DNA
<213> Histophilus somni

<400> 1003
ctttctctgc tgacgagtgg cggacgggtg agtaaagctt gggaatctgg cgaatggagg 60

gggatagcca cgggaaactg tgggtaatac cgcgtaaggt ctaaggacta aaggggtggg 120

actgagaggc cacctgccat ttgatgagcc caagtgggat taggtagttg gtgaggtaag 180

ggctcaccaa gctgacgatc tctagctggt ctgagaggat ggccagccac actggaactg 240

agacacggtc cagactccta cgggaggcag cagtggggaa tattgcgcaa tgggggaac 300

cctgacgcag ccatgccgcg tgaatgaaga aggccttcgg gttgtaaagt tctttcggtg 360

atgaggaagg cgattagttt aagagattaa ttgattgacg ataatcacag aagaagcacc 420

ggctaactcc gtgccagcag ccgcggtaat acggagggtg cgagcgttaa tcggaatgac 480

tgggcgtaaa gggcacgcag gtggtgactt aagtgaggtg tgaaatcccc gggcttaacc 540

tgggaacagc atttcagact gggtgactag agtactttag ggaggggtag aattccacgt 600

gtagcggtga aatgcgtaga gatgtggagg aataccgaag gcgaaggcag ccccttggga 660

agatactgac gctcgagtgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 720

ccacgctgta aacgatgtcg atttggggat tgggtgaata cttggtgccc gaagctaacg 780

tgataaatcg accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg 840

ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta 900

ctcttgacat cctaagaagc cgccagagat ggtggtgtgc ctacgggagc ttagagacag 960

gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc 1020

gcaaccctta tcctttgttg ccagcatgtt agggtgggaa ctcaaaggag actgccggtg 1080

ataaactgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1140

acacgtgcta caatggcgta tacagaggga ggcgagcctg cgagggtaag cgaagctcag 1200

aaagtacgtc taagtccgga ttggagtctg gaactcgact ccatgaagtc ggaatcgcta 1260

gtaatcgcgg atcagaatgt cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1320

cacaccatgg gagtgggttg taccagaagt agatagctta a 1361

<210> 1004
<211> 1332
<212> DNA

<213> Holdemania filiformis

<400> 1004
gcgaacgggt gagtaataca taagcaatct gcccatcggc ctgggataac agttggaaac 60

gactgctaat accggatagg tgatgaagag gcatctctcg atcattaaag ttgggataca 120

acacggatgg atgagcttat ggcgtattag ctagtaggtg aggtaacggc tcacctaggc 180

gatgatacgt agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa 240

actcctacgg gaggcagcag tagggaattt tcggcaatgg gcgaaagcct gaccgagcaa 300

cgccgcgtga gtgaagaagg ccttcgggtt gtaaagctct gttgtgaagg aagaacggct 360

catacaggga atggtatggg agtgacggta ctttaccaga aacccggcta actacgtgcc 420

acagccgcgg taatacgtag gtggcgagcg ttatccggaa ttattgggcg taaagggtgc 480

gcaggcggtt tgttaagttt aaggtgaaag cgtggggctt aaccccatat agtaaaactg 540

acagactaag tacaggagag ggcaatggaa ttccatgtgt agcggtaaaa tgcgtagata 600

tatggaggaa caccagtggc gaaggcggtt gcctggcctg taactgacgc tcatgcacga 660

aagcgtgggg agcaatagat taatacccta tagtccacgc cgtaaacgat gagaactaag 720

tgttggggaa actcatgctg cagttaacgc aataagttct ccgcctgggg agtatgcacg 780

caagtgtgaa actcagagga attgacgggg gcccgcacaa gcggtggagt atgtggttta 840

attcgacgca acgcgaagaa ccttaccagg tcttgacatc ccctgcaaag acatagagat 900

atgttggagg ttatcaggga gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 960

tgttgggtta agtcccgcaa cgagcgcaac ccttgtcttt agttgctaac attaagttga 1020

ggactctaga gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc 1080

atgcccctta tgacctgggc tacacacgta ctacaatggc ggatacaacg agaagcaaga 1140

cagtgatgtg gagcaaaact cagaaagtcc gtctcagttc ggattgaagt ctgcaacccg 1200

acttcatgaa gccggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttct 1260

cgggccttgt acacaccgcc cgtcaaacca tgagagttgg caatacccga agccggtggc 1320

ctaacctcgc aa 1332

<210> 1005
<211> 1510
<212> DNA
<213> Hydrogenoanaerobacterium saccharovorans

<400> 1005
gagtttgatc atggctcagg acgaacgctg gcggcgcgcc taacacatgc aagtcgaacg 60

gaactgttcg gatgaagttt tcggatggat gaagaacagt ttagtggcgg acgggtgagt 120

aacacgtgag caacctgcct ttcagagggg aataacattc ggaaacgaat gctaataccg 180

cataatgcaa cgagatggca tcatcttgct gccaaagatt tatcgctgaa agatgggctc 240

gcgcccgatt agctagttgg tgaggtaatg gcccaccaag gcaacgatcg gtagccggac 300

tgagaggttg atcggccaca ttgggactga gacacggccc agactcctac gggaggcagc 360

agtgggggat attgcacaat gggcgaaagc ctgatgcagc gacgccgcgt gagggaagac 420

ggttttcgga ttgtaaacct ctgtcttcag ggacgataat gacggtacct gaggaggaag 480

caccggctaa ctacgtgcca gcagccgcgg taatacgtag ggtgcaagcg ttgtccggaa 540

ttactgggtg taaagggagc gtaggcggga ttgtaagttg gatgtgtaat gtaccggctc 600

aaccggtaac ttgcattcaa aactgcagtt cttgagtgaa gtagaggcag gcggaattcc 660

tagtgtagcg gtgaaatgcg tagatattag gaggaacacc agtggcgaag gcggcctgct 720

gggcttttac tgacgctgag gctcgaaagc atgggtagca aacaggatta gataccctgg 780

tagtccatgc cgtaaacgat gattactagg tgtgggtgtg caagcatccg tgccgcagct 840

aacgcaataa gtaatccacc tggggagtac ggccgcaagg ctgaaactca aaggaattga 900

cgggggcccg cacaagcagt ggattatgtg gtttaattcg aagcaacgcg aagaacctta 960

ccaggtcttg acatcccttg cataccatag agatatggga agcccttcgg ggcaaggaga 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttactattag ttgctacgca agagcactct aataggactg ccgttgacaa 1140

aacggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac 1200

gtaatacaat gacgataaac agagggtagc gaagccgcga ggtggagcca atccccaaaa 1260

gtcgtctcag ttcggattgc aggctgcaac tcgcctgcat gaagtcggaa ttgctagtaa 1320

tcgcaggtca gcatactgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca 1380

ccatgggagt cggtaacacc cgaagccagt agtctaaccg caaggaggac gctgccgaag 1440

gtgggattga tgactggggt gaagtcgtaa caaggtagcc gtatcggaag gtgcggctgg 1500

atcacctcct 1510

<210> 1006
<211> 1507
<212> DNA
<213> Hyperthermus butylicus

<400> 1006
actccggttg atcctgccgg acccgaccgc tatcggggtg ggactaagcc atgggagtcg 60

tgcgcccccg gatgcggggg cgcggcggac ggctgagtaa cacgtggcta acctaccctc 120

gggacgggga taaccccggg aaactggggc taatccccga taggcgaggg ggcctggaac 180

gggtccctcg ccgaaagggc gcgcggagct tccccgcgcg ccgcccgagg atggggctgc 240

ggcccatcag gtagttggcg gggtaacggc ccgccaagcc gataacgggt aggggccgtg 300

ggagcgggac cccccagatg ggcactgaga caagggccca ggccctacgg ggcgcaccag 360

gcgcgaaacc tccgcaatgc gggcaaccgt gacggggtca ccccgagtgc cgccgataag 420

gcggctgttc cccgctgtaa gaaggcgggg gagtaagcgg ggggcaagtc tggtgtcagc 480

cgccgcggta ataccagccc cgcgagcggt cgggatgctt actgggccta aagcgcccgt 540

agccggcccg gtaagtcccc ccctaaagcc ccgggctcaa cccggggagt ggggggggata 600

ctaccgggct agggggcggg agaggccgag ggtactcccg gggtaggggc gaaatccgat 660

aatcccggga ggaccaccag tggcgaaggc gctcggctgg aacgcgcccg acggtgaggg 720

gcgaaagccg ggggagcaaa ccggattaga tacccgggta gtcccggctg taaacgatgc 780

gggctaggtg ttgggcgggc ttggagcccg cccagtgccg cagggaagcc gttaagcccg 840

ccgcctgggg agtacggccg caaggctgaa acttaaagga attggcgggg gagcaccaca 900

aggggtggag cctgcggctt aattggagtc aacgccggga atcttaccgg gggcgacagc 960

aggatgacgg ccaggctgac gaccttgccc gacgcgctga gaggaggtgc atggccgtcg 1020

ccagctcgtg ccgtgaggtg tccggttaag tccggcaacg agcgagaccc ccacccctag 1080

ttgctacccc gggggccacc ccgggggcac actaggggga ctgccgccgt ccaaggcgga 1140

ggaaggaggg ggccacggca ggtcagcatg ccccgaatcc cccgggctgc acgcgggcta 1200

caatggcggg gacagcggga tccgaccccg aaaggggggag gcaatccctt aaaccccgcc 1260

gcagttggga tcgagggctg caactcgccc tcgtgaacgc ggaatcccta gtaaccgcgc 1320

gttagcatcg cgcggtgaat acgtccctgc tccttgcaca caccgcccgt cgctccaccc 1380

gagcggggga ggggtgaggc cctgcccctg ggggcaaccc cgggggtggg gtcgaacccc 1440

tcccccgcga ggggggagaa gtcgtaacaa ggtagccgta ggggaacctg cggctggatc 1500

acctcct 1507

<210> 1007
<211> 1333
<212> DNA
<213> Hyphomicrobium sulfonivorans

<400> 1007
gagtttgatc ctggctcaga acgaacgatg gcggcaggcc taacacatgc aagtcgaacg 60

agtggcagac gggtgagtaa cgcgcgggaa ccttcccaat ggtgcggaat agcccaggga 120

aacttggagt aataccgcat aaggaaagtc gccattggat gggcccgcgt cgattagcta 180

gttggtaggg taacggccta ccaaggcgac gatccgtagc tggtttgaga gaatgaccag 240

ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatcttgg 300

acaatgggcg caagcctgat ccagccatgc cgcgtgagtg acgaaggcct tagggttgta 360

aagctctttt gccggggacg atgacggtac ccggagaata agtcccggct aacttcgtgc 420

cagcagccgc ggtaatacga aggggactag cgttgttcgg aattactggg cgtaaagcgc 480

acgtaggcgg attattaagt caggggtgaa atcccggggc tcaacctcgg aactgccttt 540

gatactggta atctagagtc cgatagaggt gggtggaatt cctagtgtag aggtgaaatt 600

cgtagatatt aggaagaaca ccagtggcga aggcggccca ctggatcgac tgacgctgag 660

gtgcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 720

ggatgctagc cgtcggcatg tcggtggcgc agctaacgca ttaagcatcc cgcctgggga 780

gtacggccgc aaggttaaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 840

tgtggtttaa ttcgacgcaa cgcgaagaac cttaccagct cttgacatgc acaggtgctg 900

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

ctcgccatta gttgccatca tgggcactct agtgggactg ccggtgataa gccggaggaa 1020

ggtggggatg acgtcaagtc atcatggccc ttacgggctg ggctacacac gtgctacaat 1080

ggcggtcagt gggcagcaac acagcgatgt gaagctaatc tcagccgtct cagttcggat 1140

ggtctctgca actcgagacc agaagttgga atcgctagta atcgcggatc agcatgccgc 1200

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag ttggttctac 1260

ccgaaggcga tcgctaggca gtcgaccacg gtagggtcag cgactggggt gaagtcgtaa 1320

caaggtaacc gta 1333

<210> 1008
<211> 1448
<212> DNA
<213> Hyphomonas neptunium

<400> 1008
agagtttgat tctggctcag aacgaacgct ggcggcaggc ctaacacatg caagtcgaac 60

gatatagtgg cagacgggtg agtaacgcgt gggaacgtac ctttcactac ggaatagctc 120

tgggaaactg gtggtaatac cgtatacgcc cttaggggga aagatttatc ggtgaaagat 180

cggcccgcgt tggattagct agttggtgag gtaatggctc acaaaggcga cgatccatag 240

ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac tcctacggga 300

ggcagcagtg gggaatcttg cacaatgggc gaaagcctga tgcagccatg ccgcgtgaat 360

gatgaaggcc ttagggttgt aaaattcttt cgtcagggat gataatgacc gtacctgaag 420

aagaagcccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg ctagcgttgt 480

tcggaattac tgggcgtaaa gcgcacgtag gcggactttt aagtcaggtg tgaaatcccg 540

aggctcaacc tcggaactgc atttgaaact ggaagtctgg agatcaggag aggttagcgg 600

aataccgagt gtagaggtga aattcgtaga tattcggtgg aacaccagtg gcgaaggcgg 660

ctaactggac tgatactgac gctgaggtgc gaaagtgtgg ggagcaaaca ggattagata 720

ccctggtagt ccacaccgta aacgatgaga gctagttgtt ggcaggcatg cctgtcggtg 780

acgcagttaa cacattaagc tctccgcctg gggagtacgg ccgcaaggtt aaaactcaaa 840

gaaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgca 900

gaaccttacc tacccttgac atgtctagta tggtttccgg agacggattc cttcagttcg 960

gctggctaga acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt 1020

aagtcccgca acgagcgcaa ccctcatcct tagttgccat cacgtttggg tgggcactct 1080

aaggaaactg ccggtggcaa gccggaggaa ggtggggatg acgtcaagtc ctcatggccc 1140

ttacgggtag ggctacacac gtgctacaat ggcagtgaca atgggataat cccaaaaagc 1200

tgtctcagtt cggattgtcg tctgcaactc gacggcatga aggtggaatc gctagtaatc 1260

gtggatcagc atgccacggt gaatacgttc ccgggccttg tacacaccgc ccgtcacatc 1320

atgggaattg gttctacccg aagatcgtgc gctaacttcg gaggcagcga gccacggtag 1380

gatcagtaac tgggatgaag tcgtaacaag gtagccgtag gggaacctgc ggctggatca 1440

cctccttt 1448

<210> 1009
<211> 1287
<212> DNA
<213> Ignatzschineria indica

<400> 1009
ttaacacatg caagtcgaac gagtggcgga cgggtgagta atgcatagga atctaccttt 60

tagtctagga taactacccg aaagggtggc taatactgga tgtgtaaagg cgctaagaga 120

tgagcctatg tgggattagc tagttggtga ggtaacggct caccaaggcg acgatctcta 180

gctggtttga gaggatgatc agccacactg ggactgagac acggcccaga ctcctacggg 240

aggcagcagt ggggaatatt ggacaatggg cgaaagcctg atccagcaat accgcgtgtg 300

tgaagaaggc cctagggttg taaagcactt ttgttaggga gaatgatgtt acctaaagaa 360

taagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttaatc 420

ggaattactg ggcgtaaagg gcgcgtaggt ggtatcttaa gttgggtgtg aaatccccgg 480

gctcaacctg ggaattgcat ccaaaactgg ggtgctagag tgtggtagag ggtagcggaa 540

tttctggtgt agcggtgaaa tgcgtagata tcagaaggaa catcaatggc gaaggcagct 600

acctgggcca actgacgctg aggcgcgaaa gcgtggggag caaacaggat tagataccct 660

ggtagtccac gctataaacg atgacaactt gttgatgggg cttcgttgac ggagctaacg 720

cgttaagttg tccgcctggg gagtacggtc gcaaggctga aactcaaagg aattgacggg 780

gacccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttacctg 840

gtcttgacat cgacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttcggtt 900

aagtccggca acgagcgcaa cccttgtcct tatttgccag cacgtgggaa ctctaaggag 960

actgccggtg ataaaccgga ggaaggtagg gacgacgtca agtcatcatg gcccttatga 1020

ccagggctac acacgtgcta caatggtcgg caatgggttg ccaaaccgcg aggtggagct 1080

aatcccaccc gatcccagtc cggatgtagt ctgcaactcg actacagaag tcggaatcgc 1140

tagtaatcgt ggatcagaat gccacggtga atacgttccc gggtcttgta cacaccgccc 1200

gtcacaccat ggaagttgat tgctccagaa gtaggtgctt agggcgctta ccacggagtg 1260

gtcgatgact ggggtgaagt cgtaaca 1287

<210> 1010
<211> 1317
<212> DNA
<213> Ignatzschineria sp. NML 95-0260

<400> 1010
acgctggcgg tatgcttaac acatgcaagt cgaacgagtg gcggacgggt gagtaatgca 60

taggaatcta ccttttagtc taggataact acccgaaagg gtggctaata ctggatgtgt 120

aaaggcgcta agagatgagc ctatgtggga ttagctagtt ggtgaggtaa tggctcacca 180

aggcgacgat ctctagctgg tttgagagga tgatcagcca cactgggact gagacacggc 240

ccagactcct acgggaggca gcagtgggga atattggaca atgggcgcaa gcctgatcca 300

gcaataccgc gtgtgtgaag aaggccctag ggttgtaaag cacttttgtt agggagaatg 360

atgttaccta aagaataagc accggctaac tccgtgccag cagccgcggt aatacggagg 420

gtgcaagcgt taatcggaat tactgggcgt aaagggcgcg taggtggtac tttaagttgg 480

gtgtgaaatc cccgggctca acctgggaat tgcatccaaa actggggtgc tagagtgtgg 540

tagagggtag cggaatttct ggtgtagcgg tgaaatgcgt agatatcaga aggaacatca 600

atggcgaagg cagctacctg ggccaactga cgctgaggcg cgaaagcgtg gggagcaaac 660

aggattagat accctggtag tccacgctgt aaacgatgac aacttgttga tggggcttcg 720

ttgacggagc taacgcgtta agttgtccgc ctggggagta cggtcgcaag gctgaaactc 780

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc 840

gaagaacctt acctggtctt gacatcgaca ggtgctgcat ggctgtcgtc agctcgtgtc 900

gtgagatgtt cggttaagtc cggcaacgag cgcaaccctt gtccttattt gccagcacgt 960

gggaactcta aggagactgc cggtgataaa ccggaggaag gtagggacga cgtcaagtca 1020

tcatggccct tatgaccagg gctacacacg tgctacaatg gtcggcaatg ggttgccaag 1080

ccgcgaggtg gagctaatct catccgatcc cagtccggat gtagtctgca actcgactac 1140

agaagtcgga atcgctagta atcgtggatc agaatgccac ggtgaatacg ttcccgggtc 1200

ttgtacacac cgcccgtcac accatggaag ttgattgctc cagaagtagg tgcttagggc 1260

gcttaccacg gagtggtcga tgactggggt gaagtcgtaa caaggtagcc gtagggg 1317

<210> 1011
<211> 1469
<212> DNA
<213> Ignicoccus islandicus

<220>
<221> modified_base
<222> (1377)..(1380)
<223> a, c, t, g, unknown or other

<400> 1011
cggacccgac cgctatcggg gtaaggctaa gccatgggag tcgaacgccc gccgccgcgg 60

gcgtggcgga cggctgagta acacgtggct aacctaccct cgggaggggg ataacaccgg 120

gaaactggtg ctaatccccc ataggggcgg tggcctggaa gggtaccgcc ccgaaagggg 180

gaggcggggg ttatcgccgc ctctccgccc gaggatgcgg ctgcgcccta tcaggtagtt 240

ggcggggtaa cggcccgcca agcctaagac gggtaggggc cgtgggagcg ggagccccca 300

gatgggcact gagacaaggg cccaggccct acggggcgca ccaggcgcga aaactcgcca 360

atgcgggcaa ccgtgacggg gttaccccga gtgcccccat tacgggggct tttccccgct 420

gtaaacaggc gggggtaata agcggggggc aagtctggtg tcagccgccg cggtaatacc 480

agccccgcga gtggtcggga cgtttattgg gcctaaagcg cccgtagccg gcctggtagg 540

tcccctccta aaacccgggg ctcaaccccg ggggtggagg ggaaaccacc aggctagggg 600

gcgggagagg ccgagggtac tcccggggta ggggcgaaat ccgataatcc cgggaggacc 660

gccagtggcg aaggcgctcg gctggaacgc gcccgacggt gaggggcgaa agccggggga 720

gcgaaccgga ttagataccg ggtagtcccg gctgtaaacg atgcgggcta ggtgttgggt 780

gggcttcgag cccgcccagt gccgcaggga agccgttaag cccgccgcct ggggagtacg 840

gccgcaaggc tgaaacttaa aggaattggc gggggagcac cacaaggggt ggcaggtgcg 900

gcttaattgg agtcaacgcc gggaacctca ccgggggcga cagcaggatg aaggtcaggc 960

tgaagacctt acctgacgcg ctgagaggag gtgcatggcc gtcgccagct cgtgccgtga 1020

ggtgtccggt taagtccggc aacgagcgag acccccaccc ctacttgcta cccggggctc 1080

cggccccggg gcacagtagg gggactgccg ccgtataagg cggaggaagg agggggctat 1140

ggcaggtcag catgccccga aacccccggg ctgcacgcgg gctacaatgg cggggacagc 1200

gggttgcgac cccgaaaggg ggagcaaatc cctcaaaccc cgccgaggtt gggatcgagg 1260

gctgcaactc gccctcgtga acgcggaatc cctagtaacc gcacgttagc atcgtgcggt 1320

gaacacgtcc ctgctccttg cacacaccgc ccgtcgctcc acccgagggg acgggtnnnn 1380

aggcccccgt agggaaactc ccgggtatcc tcgaactccc tcctctcgag gggggagaag 1440

tcgtaacaag gtagccgtag gggaacctg 1469

<210> 1012
<211> 1414
<212> DNA
<213> Inquilinus limosus

<400> 1012
ttgaatcctg gctcagaacg aacgctggcg gcaggcctaa cacatgcaag tcgaacgccc 60

cgcaagggga gtggcgcacg ggtgagtaac acgtgggaac ctaccttctg gtacggaaca 120

accaagggaa actttggcta ataccgtata cgacctccgg gtgaaagatt tatctgccgg 180

aagaggggcc ccgcgtccga ttaggtagtt ggtggggtaa ccggcctacc aagccgacga 240

tcggtagctg gtctgagagg atgaccagcc acactgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtgggg aatattggac aatgggcgca agcctgatcc agccatgccg 360

cgtgagtgat gaaggccttc gggttgtaaa gctctttcac ccacgacgat gatgacggta 420

gtgggagaag aagccccggc taacttcgtg ccagcagccg cggtaatacg aaggggcaa 480

gcgttgttcg gaatgactgg gcgtaaaggg cgcgtaggcg gttcgttgcg tcagatgtga 540

aagccccggg ctcaacctgg gaactgcatt tgatacgggc gggcttgaat ccaagagagg 600

gtggtggaat tcccagtgta gaggtgaaat tcgtagatat tgggaagaac accagtggcg 660

aaggcggcca cctggcttgg cattgacgct gaggcgcgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgccgtaaac gatgtgtgct agccgtcggg cagcttgctg 780

ttcggtggcg cagctaacgc gataagcaca ccgcctgggg agtacggtcg caagattaaa 840

actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 900

acgcgcagaa ccttaccaac ccttgacatg gggagtgtgg gcctgagaga tcgggtccgg 960

gtccttcagt tcggctggct cccacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caaccctcct cttcagttgc catcattgag 1080

ttgggcactc tggagatact gccggtgaca agccggagga aggcggggat gacgtcaagt 1140

cctcatggcc cttacgggtt gggctacaca cgtgctacaa tggcggtgac agtgggcagc 1200

gaaggggcga cctggagcta atccccaaaa gccgtctcag ttcggattgc actctgcaac 1260

tcgggtgcat gaagttggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt tggttttacc cgaagacggt 1380

gcgctgaccc gcaagggagg cagccggcca cggt 1414

<210> 1013
<211> 1473
<212> DNA
<213> Janibacter limosus

<400> 1013
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtgaagctc cagcttgctg 60

gagtggatca gtggcgaacg ggtgagtaac acgtgagcaa cctgccccag actctggaat 120

aagcgctgga aacggcgtct aatactggat acgagaccaa cctgcatggg tatggtctgg 180

aaagtttttc ggtttgggat gggctcgcgg cctatcagct tgttggtgag gtaatggctc 240

accaaggcga cgacgggtag ccggcctgag agggcgaccg gccacactgg gactgagaca 300

cggcccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc gaaagcctga 360

tgcagcgacg ccgcgtgagg gatgacggcc ttcgggttgt aaacctcttt cagcagggaa 420

gaagcgaaag tgacggtacc tgcagaagaa gcaccggcta actacgtgcc agcagccgcg 480

gtaatacgta gggtgcgagc gttgtccgga attattgggc gtaaagagct tgtaggcggt 540

ttgtcgcgtc tgctgtgaaa atccggggct caaccccgga cttgcagtgg gtacgggcag 600

actagagtgt ggtaggggag actggaattc ctggtgtagc ggtgaaatgc gcagatatca 660

ggaggaacac cgatggcgaa ggcaggtctc tgggccacta ctgacgctga gaagcgaaag 720

catggggagc gaacaggatt agataccctg gtagtccatg ccgtaaacgt tgggaactag 780

gtgtgggtct cattccacga gatccgtgcc gcagctaacg cattaagttc cccgcctggg 840

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 900

catgcggatt aattcgatgc aacgcgaaga accttaccaa ggcttgacat ataccggaaa 960

cttccagaga tggttgcccc ttttaggtcg gtatacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccctcgtt ctatgttgcc 1080

agcacgtaat ggtggggact catggaagac tgccggggtc aactcggagg aaggtgggga 1140

tgacgtcaaa tcatcatgcc ccttatgtct tgggcttcac gcatgctaca atggccggta 1200

caaagggctg cgaaaccgca aggtggagcg aatcccaaaa aaccggtctc agttcggatt 1260

ggggtctgca actcgacccc atgaagtcgg agtcgctagt aatcgcagat cagcaacgct 1320

gcggtgaata cgttcccggg ccttgtacac accgcccgtc aagtcacgaa agtcggtaac 1380

acccgaagcc ggtggcccaa cccttgtggg gggagccgtc gaaggtggga ctggcgattg 1440

ggactaagtc gtaacaaggt agccgtaccg gaa 1473

<210> 1014
<211> 1389
<212> DNA
<213> Janibacter melonis

<400> 1014
cgaacggtga actttggagc ttgctctaag gggatcagtg gcgaacgggt gagtaacacg 60

tgagtaacct gccccggact ctggaataag cgctggaaac ggcgtctaat accggatacg 120

agacgcaacc gcatggttag tgtctggaaa gtttttcggt ctgggatgga ctcgcggcct 180

atcagcttgt tggtgaggta atggctcacc aaggcgacga cgggtagccg gcctgagagg 240

gcgaccggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatgggcgaa agcctgatgc agcgacgccg cgtgagggat gacggccttc 360

gggttgtaaa cctctttcag cagggaagaa gcgaaagtga cggtacctgc agaagaagca 420

ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt gtccggaatt 480

attgggcgta aagagcttgt aggcggtttg tcgcgtctgc tgtgaaaatc cggggctcaa 540

ccccggactt gcagtgggta cgggcagact agagtgtggt aggggagact ggaattcctg 600

gtgtagcggt gaaatgcgca gatatcagga ggaacaccga tggcgaaggc aggtctctgg 660

gccactactg acgctgagaa gcgaaagcat ggggagcgaa caggattaga taccctggta 720

gtccatgccg taaacgttgg gcgctaggtg tgggactcat tccacgagtt ccgtgccgca 780

gctaacgcat taagcgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 840

tgacgggggc ccgcacaagc ggcggagcat gcggattaat tcgatgcaac gcgaagaacc 900

ttaccaaggc ttgacatata ccggaaacat ccagagatgg gtgccccttt tggtcggtat 960

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1020

gagcgcaacc ctcgttctat gttgccagca cgtgatggtg gggactcata ggagactgcc 1080

ggggtcaact cggaggaagg tggggatgac gtcaaatcat catgcccctt atgtcttggg 1140

cttcacgcat gctacaatgg ccggtacaaa gggctgcgat accgcaaggt ggagcgaatc 1200

ccaaaaaacc ggtctcagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1260

gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcaagt cacgaaagtc ggtaacaccc gaagccggtg gcccaaccct tgtgggggga 1380

gccgtcgaa 1389

<210> 1015
<211> 1496

<212> DNA
<213> Janthinobacterium sp. SY12

<400> 1015
tagagtttga tcatggctca gattgaacgc tggcggcatg ccttacacat gcaagtcgaa 60

cggcagcacg gagcttgctc tggtggcgag tggcgaacgg gtgagtaata tatcggaacg 120

taccctggag tgggggataa cgtagcgaaa gttacgctaa taccgcatac gatctacgga 180

tgaaagtggg ggatcgcaag acctcatgct cgtggagcgg ccgatatctg attagctagt 240

tggtagggta aaagcctacc aaggcatcga tcagtagctg gtctgagagg acgaccagcc 300

acactggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg aattttggac 360

aatgggcgaa agcctgatcc agcaatgccg cgtgagtgaa gaaggccttc gggttgtaaa 420

gctcttttgt cagggaagaa acggtgaggg ctaatatccc ttgctaatga cggtacctga 480

agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg tgcaagcgtt 540

aatcggaatt actgggcgta aagcgtgcgc aggcggcttt gtaagtctga tgtgaaatcc 600

ccgggctcaa cctgggaatt gcattggaga ctgcaaggct agaatctggc agaggggggt 660

agaattccac gtgtagcagt gaaatgcgta gatatgtgga ggaacaccga tggcgaaggc 720

agccccctgg gtcaagattg acgctcatgc acgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccc taaacgatgt ctactagttg tcgggtctta attgacttgg 840

taacgcagct aacgcgtgaa gtagaccgcc tggggagtac ggtcgcaaga ttaaaactca 900

aaggaattga cggggacccg cacaagcggt ggatgatgtg gattaattcg atgcaacgcg 960

aaaaacctta cctacccttg acatggctgg aatccctgag agattgggga gtgctcgaaa 1020

gagaaccagt acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa cccttgtcat tagttgctac gaaagggcac tctaatgaga 1140

ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg cccttacggg 1200

tagggcttca cacgtcatac aatggtacat acagagcgcc gccaacccgc gaggggagc 1260

taatcgcaga aagtgtatcg tagtccggat tgtagtctgc aactcgactg catgaagttg 1320

gaatcgctag taatcgcgga tcagcatgtc gcggtgaata cgttcccggg tcttgtacac 1380

accgcccgtc acaccatggg agcgggtttt accagaagta ggtagcttaa ccgcaaggag 1440

ggcgcttacc acggtaggat tcgtgactgg ggtgaagtcg taacaaggta gccgta 1496

<210> 1016
<211> 1478
<212> DNA
<213> Johnsonella ignava

<220>
<221> modified_base
<222> (37)..(37)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (86)..(86)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (408)..(408)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (452)..(452)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (477)..(477)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (480)..(480)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1338)..(1338)
<223> a, c, t, g, unknown or other

<400> 1016
tgaacgctgg cggcgtgctt aacacatgca agtcgancgg agacttttc agtgcaacct 60

tcggggagca agagaagtct tagtgncgga cgggtgagta acgcgtgggc aacctgcctc 120

gcaccgtggg ataacagggg gaagctcctg ctaataccgc ataaagtata tagacgcatg 180

tcaatataca aaaagggata ccggtgagag atgggcccgc gtccgattag atagttggca 240

ggatagcagc ctaccaagtc aacgatcggt agccggcttg agagagtgga cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat tggacaatgg 360

gggcaaccct gatccagcga cgccgcgtga gtgaagaagt atctcggnac gtaaagctct 420

atcagcaggg aagaaaaaag acggtacctg antaagaagc cccggctaac tacgtgncan 480

cagccgcggt aatacgtagg gggcaagcgt tatccggaat tactgggtgt aaagggagcg 540

tagacggcta tgcaagtctg gagtgaaatg ccggggctca accccggagc tgctctggaa 600

actgcgtggc ttgagtgtcg gaggggcagg cggaattccc agtgtagcgg tgaaatgcgt 660

agatattggg aggaacaccg gcggcgaagg cggcctgctg gacgacaact gacgttgagg 720

ctcgaaggcg tgggtagcaa acaggattag ataccctggt agtccacgca gtaaacgatg 780

aatactaggt gtcggggagt taaatttccg gtgccggcgc aaacgcaata agtattccac 840

ctggggagta cgttcgcaag aatgaaactc aaaggaattg acggggaccc gcacaagcgg 900

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaagcctt gacatgccgg 960

tgaaggggga gtaaaatcct ctgccccttg gggcaccgga cacaggtggt gcatggttgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcattccc 1080

ggtagccagc agtaagatgg ggactccggg gagactgccg aggaagactc ggaggaaggc 1140

ggggatgacg tcaaatcatc atgcccctta tggtttgggc tacacacgtg ctacaatggc 1200

gcagacagag ggaagcaagg ccgcgaggca gagcaaatct caaaaactgc gtctcagttc 1260

ggattgcagg ctgcaactcg cctgcatgaa gccggaatcg ctagtaatcg cagatcagaa 1320

tgctgcggtg aatacgtncc cgggtcttgt acacaccgcc cgtcacacca tgggagtcgg 1380

caatgcccga agtcagtggc ccaaccgtaa ggagggagct gccgaaggca gggcggatga 1440

ccggggtgaa gtcgtaacaa ggtagccgta tcggaagg 1478

<210> 1017
<211> 1523
<212> DNA
<213> Jonquetella anthropi

<400> 1017
gagagtttga tcctggctca ggataaacgc tggcggcgtg cttaacacat gcaagttgga 60

cgggaatact cgaggaagag acttcggtta atttttggg tatgagagta gcggacgggt 120

gagtaatgca taagaatcta tccatcagag ggggacaact gcgggaaacc ggagctaata 180

ccccgtaagc cggaaggtga aagggagcaa tccgctgatg gaggagcttg tgtcctatca 240

ggtagttggt gaggtaagag ctcaccaagc cgaagacggg tagccgggct gagaggttgt 300

acggccacat tggaactgag agacggtcca gactcctacg ggaggcagca gtggggaata 360

ttgggcaatg ggcgaaagcc tgacccagcg acgccgcgtg agggaagacg gccttcgggt 420

tgtaaacctc tgttgcaggg gaagaaggaa gtgacggtac cctgcgagga agctccggca 480

aactacgtgc cagcagccgc ggtaatacgt agggagcgag cgttatccgg aattactggg 540

cgtaaagggc gcgtaggcgg aatgacaagt cagcaagtga aagcgtgggg ctcaacccca 600

tgatgcggct gaaactgtta ttctagaggc atggagaggc aaacggaatt cccggtgtag 660

cggtgaaatg cgtagatatc gggaagaaca ccagtggcga aggcggtttg ctggccatga 720

actgacgctc atagcgcgaa agctagggta gcaaacggga ttagataccc cggtagtcct 780

agcagtaaac gatgtatgct gggtgtgggt gtagcgatac atccgtgccg aagttaacgc 840

gataagcata ccgcctgggg agtacggtcg caagattgaa actcaaagga attgacgggg 900

gcccgcacaa gcggtggagc acgtggttta attcgatgca aaccgaagaa ccttacctgg 960

gcttgacatg taaggaaagg tgtatggaga cgtacaagtg tactgcttcg gtagtacgcc 1020

ttacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

caacgagcgc aacccctatt gccagttgct aacaggtaga gctgagcact caggcgagac 1140

tgccgccgac aaggtggagg aaggtgggga tgacgtcaag tcatcatggc ccttatgccc 1200

agggccacac acatgctaca atggccggta caaagggaag cgaggctgcg aagcggagcg 1260

aaccccaaaa gccggtccca gttcggattg cagtctgcaa ctcgactgca tgaagttgga 1320

atcgctagta atcgcgaatc agcgaagtcg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca caccatccga gttggatgca ctccaagtcg gtatctcaac cgcaaggggg 1440

gagccgccca aagtgtgtct ggtgaggagg gtgaagtcgt aacaaggtag ccgtaccgga 1500

aggtgcggct ggatcacctc ctt 1523

<210> 1018
<211> 1414
<212> DNA
<213> Kerstersia gyiorum

<400> 1018
gcgggatgct ttacacatgc aagtcgaacg gcagcacgag gagcttgctc cttggtggcg 60

agtggcgaac gggtgagtaa tatatcggaa catgcccagt agcgggggat aactactcga 120

aagagtggct aataccgcat acgtcctacg ggagaaagca ggggaccttc gggccttgca 180

ctattggagt ggccgagatc ggattagcta gttggtgggg taaaggccta ccaaggcgac 240

gatccgtagc tggtttgaga ggacgaccag ccacactggg actgagacac ggcccagact 300

cctacgggag gcagcagtgg ggaattttgg acaatggggg aaaccctgat ccagccatcc 360

cgcgtgtgcg atgaaggcct tcgggttgta aagcactttt gtcaggaaag aaatcgcccg 420

ggataatacc tcgggtggat gacggtacct gaagaataag caccggctaa ctacgtgcca 480

gcagccgcgg taatacgtag ggtgcaagcg ttaatcggaa ttactgggcg taaagcgtgc 540

gcaggcggtt cggaaagaaa gatgtgaaat cccagggctt aaccttggaa ctgcattttt 600

aactaccggg ctagagtgtg tcagaggggg gtggaattcc gcgtgtagca gtgaaatgcg 660

tagatatgcg gaggaacacc gatggcgaag gcagcccccc gggataacac tgacgctcat 720

gcacgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cctaaacgat 780

gtcaactagc tgttggggcc ttcgggcctt agtagcgcag ctaacgcgtg aagttgaccg 840

cctggggagt acggtcgcaa gattaaaact caaaggaatt gacggggacc cgcacaagcg 900

gtggatgatg tggattaatt cgatgcaacg cgaaaaacct tacctaccct tgacatgtct 960

ggaatcccga agagatttgg gagtgctcgc aagagaaccg gaacacaggt gctgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgtc 1080

attagttgct acgaaagggc actctaatga gactgccggt gacaaaccgg aggaaggtgg 1140

ggatgacgtc aagtcctcat ggcccttatg ggtagggctt cacacgtcat acaatggtcg 1200

ggacagaggg ttgccaaacc gcgaggtgga gctaatctca gaaacccgat cgtagtccgg 1260

attgtagtct gcaactcgac tacatgaagt cggaatcgct agtaatcgcg gatcagaatg 1320

tcgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccatg ggagtgggtt 1380

ctaccagaag tagttagcct aaccgcaagg aggg 1414

<210> 1019
<211> 1541
<212> DNA
<213> Kingella denitrificans

<400> 1019
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcggacg gcagcggggg tgcttgcacc tgccggcgag tggcgaacgg gtgagtaaca 120

tattggaatg taccgagtag tgggggataa ccaatcgaaa gattggctaa taccgcatac 180

gtcctgaggg ggaaagcagg ggatcttcgg accttgcgct atttgagcag ccaatatctg 240

attagctagt tggtggggta aaggcccacc aaggcgacga tcagtagcgg gtctgagagg 300

atgatccgcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aattttggac aatgggggca accctgatcc agccatgccg cgtgtctgaa gaaggccttc 420

gggttgtaaa ggacttttgt tagggaagaa aagggaagtg ttaataccac tttttgttga 480

cggtacctaa agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 540

tgcgagcgtt aatcggaatt actgggcgta aagcgagcgc agacggttac ttaagcagga 600

tgtgaaatcc ccgggctcaa cctgggaact gcgttctgaa ctgggtagct agagtatgtc 660

agagggggt agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga 720

tggcgaaggc agccccctgg gataatactg acgttcatgc tcgaaagcgt gggtagcaaa 780

caggattaga taccctggta gtccacgccc taaacgatgt cgattagctg ttgggcaact 840

tgattgctta gtagcgtagc taacgcgtga aatcgaccgc ctggggagta cggtcgcaag 900

attaaaactc aaaggaattg acggggaccc gcacaagcgg tggatgatgt ggattaattc 960

gatgcaacgc gaagaacctt acctggtctt gacatgtacg gaagaactca gagacgagtt 1020

tgtgccttcg ggagccgtaa cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1080

tgttgggtta agtcccgcaa cgagcgcaac ccttgtcatt agttgccatc atttagttgg 1140

gcactctaat gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaagtcctc 1200

atggcccttа tgaccagggc ttcacacgtc atacaatggt cggtacagag ggtagccaag 1260

ccgcgaggtg gagccaatcc cagaaaaccg atcgtagtcc ggattgcact ctgcaactcg 1320

agtgcatgaa gtcggaatcg ctagtaatcg caggtcagca tactgcggtg aatacgttcc 1380

cgggtcttgt acacaccgcc cgtcacacca tgggagtggg ggataccaga agtaggtagg 1440

gtaaccgcaa ggagcccgct taccacggta tgcttcatga ctggggtgaa gtcgtaacaa 1500

ggtagccgta ggggaacctg cggctggatc acctcctttc t 1541

<210> 1020
<211> 1288
<212> DNA
<213> Kingella genomosp. P1 oral cone MB2_C20

<400> 1020
cgctggcggc atgctttaca catgcaagtc gaacgagtgg cgaacgggtg agtaagatat 60

tggaacgtac cgagtaatgg gggataacta tccgaaagga tagctaatac cgcatacgga 120

aagacgttat tcgagcggcc aataactgat tagctagttg gaggggtaaa ggcccaccaa 180

ggcgacgatc agtagcgggt ctgagaggat gatccgccac actgggactg agacacggcc 240

cagactccta cgggaggcag cagtggggaa ttttggacaa tgggcgcaag cctgatccag 300

ccatgccgcg tgtctgaaga aggccttcgg gttgtaaagg acttttgtta gggaagatga 360

cggtacctaa agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 420

tgcgagcgtt aatcggaatt actgggcgta aagcgagcgc agacggttta ttaagcaaga 480

tgtgaaatcc ccgagcttaa cttgggaact gcgttttgaa ctggtaggct agagtatgtc 540

agaggggggt agaattccac gtgtagcagt gaaatgcgta gatatcaaga agaataccta 600

ttgcgaaggc gatctgctgg aactactgac gctaatgcgt gaaagcgtgg ggagcaaaca 660

ggattagata ccctggtagt ccacgcccta aacgatgtat accggttgtt gctgcggcag 720

taatccacct aacggattaa gtataccgcc tggggagtac ggtcgcaaga ttaaaactca 780

aaggaataga cggggacccg cacaagcggt ggatgatgtg gattaattcg atgcaacgcg 840

aagaacctta cctggtcttg acatgcacag gtgctgcatg gctgtcgtca gctcgtgtcg 900

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tcattagttg ccaccatggg 960

cactctaatg agactgccgg tgacaaaccg gaggaaggtg gggatgacgt caagtcctca 1020

tggcccttat gaccagggct tcacacgtca tacaatggtc ggcagagggt agccaaaccg 1080

cgaggtggag ccaatctcag ccgatcgtag tccggatgca ctctgcaact cgagtgcaga 1140

agtcggaatc gctagtaatc gcaggtcagc atactgcggt gaatacgttc ccgggtcttg 1200

tacacaccgc ccgtcacacc atgggagtgg gggataccag aagtaggtgg ctaggccgct 1260

taccacggta tgtttcatga ctggggtg 1288

<210> 1021
<211> 1541
<212> DNA
<213> Kingella kingae

<400> 1021
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcggacg gcagcacgag tacttgtact tggtggcgag tggcgaacgg gtgagtaata 120

tattggaacg taccgagtaa tgggggataa ctatccgaaa ggatagctaa taccgcatac 180

gctttgagaa ggaaagcagg ggatcttcgg accttgcgtt attcgagcgg ccaataactg 240

attagctagt tggtggggta agggcccacc aaggcgacga tcagtagtgg gtctgagagg 300

atgatccgcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aattttggac aatgggcgaa agcctgatcc agccatgccg cgtgtctgaa gaaggccttc 420

gggttgtaaa ggacttttgt tagggaagaa aaggttgatg ctaatatcat taactgatga 480

cggtacctaa agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg 540

tgcgagcgtt aatcggaatt actgggcgta aagcgagcgc agacggttag ttaagcaaga 600

tgtgaaatcc ccgagctcaa cttgggaact gcgttttgaa ctggctagct agagtgtgtc 660

agaggggggt agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga 720

tggcgaaggc agccccctgg gataacactg acgttcatgc tcgaaagcgt gggtagcaaa 780

caggattaga taccctggta gtccacgccc taaacgatgt caattagctg ttgggcaact 840

tgattgctta gtagcgtagc taacgcgtga aattgaccgc ctggggagta cggtcgcaag 900

attaaaactc aaaggaattg acggggaccc gcacaagcgg tggatgatgt ggattaattc 960

gatgcaacgc gaagaacctt acctggtctt gacatgtacg gaagagagta gagatactct 1020

tgtgccttcg ggagccgtag cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1080

tgttgggtta agtcccgcaa cgagcgcaac ccttgtcatt agttgccatc attaagttgg 1140

gcactctaat gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaagtcctc 1200

atggcccttа tgaccagggc ttcacacgtc atacaatggt cggtacagag ggtagccaag 1260

ccgcgaggtg gagccaatcc cagaaaaccg atcgtagtcc ggattgcact ctgcaactcg 1320

agtgcatgaa gtcggaatcg ctagtaatcg caggtcagca tactgcggtg aatacgttcc 1380

cgggtcttgt acacaccgcc cgtcacacca tgggagtggg ggataccaga agtagatagg 1440

gtaaccgcaa ggagcccgtt taccacggta tgtttcatga ctggggtgaa gtcgtaacaa 1500

ggtagccgta ggggaacctg cggctggatc acctcctttc t 1541

<210> 1022
<211> 1547
<212> DNA
<213> Kingella oralis

<400> 1022
aacataagag tttgatcctg gctcagattg aacgctggcg gcatgcttta cacatgcaag 60

tcgaacggca gcacgaaaga gcttgctctt ttggtggcga gtggcgaacg ggtgagtaat 120

gcatcggaac gtaccgagta atgggggata actatccgaa aggatagcta ataccgcata 180

cgctttgaga aggaaagtgg gggctcttcg gacctcacgt tattcgagcg gccgatgtct 240

gattagctag ttggtggggt aaaggcctac caaggcgacg atcagtagcg ggtctgagag 300

gatgatccgc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 360

gaattttgga caatgggcgc aagcctgatc cagccatgcc gcgtgtctga agaaggcctt 420

cgggttgtaa aggacttttg ttagggaaga aaaggatagt gttaatacca ttatctgctg 480

acggtaccta aagaataagc accggctaac tacgtgccag cagccgcggt aatacgtagg 540

gtgcgagcgt taatcggaat tactgggcgt aaagcgagcg cagacggttt attaagcaag 600

atgtgaaatc cccgagctta acttgggaac tgcgttttga actggtaagc tagagtatgt 660

cagaggggg tagaattcca cgtgtagcag tgaaatgcgt agagatgtgg aggaataccg 720

atggcgaagg cagccccctg ggataatact gacgttcatg ctcgaaagcg tgggtagcaa 780

acaggattag ataccctggt agtccacgcc ctaaacgatg tcaattagct gttgggcaac 840

atgattgctt agtagcgtag ctaacgcgtg aaattgaccg cctggggagt acggtcgcaa 900

gattaaaact caaaggaatt gacggggacc cgcacaagcg gtggatgatg tggattaatt 960

cgatgcaacg cgaagaacct tacctggtct tgacatgtac ggaatcttcc agagacggaa 1020

gagtgccttc gggagccgta acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgtcat tagttgccac cattcagttg 1140

ggcactctaa tgagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct 1200

catggccctt atgaccaggg cttcacacgt catacaatgg tcggtacaga gggtagccaa 1260

gccgcgaggt ggagccaatc tcagaaaacc gatcgtagtc cggattgcac tctgcaactc 1320

gagtgcatga agtcggaatc gctagtaatc gcaggtcagc atactgcggt gaatacgttc 1380

ccgggtcttg tacacaccgc ccgtcacacc atgggagtgg gggataccag aagtaggtag 1440

gctaaccgca aggaggccgc ttaccacggt atgtttcatg actggggtga agtcgtaaca 1500

aggtagccgt aggggaacct gcggctggat cacctccttt ctagaga 1547

<210> 1023
<211> 1360
<212> DNA
<213> Kingella sp. oral clone ID059

<400> 1023
gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc aagtcggacg 60

agtggcgaac gggtgagtaa tatattggaa cgtaccgagt agtgggggat aactaagcga 120

aagtttggct aataccgcat acggaaaggc gctatttgag cggccaatat ctgattagct 180

agttggtggg gtaagggctt accaaggcga tgatcagtag cgggtctgag aggatgatcc 240

gccacactgg gactgagaga cggcccagac tcctacggga ggcagcagtg gggaattttg 300

gacaatgggg gcaaccctga tccagccatg ccgcgtgtct gaagaaggcc ttcgggttgt 360

aaaggacttt tgttagggaa gatgacggta cctaaagaat aagcaccggc taactacgtg 420

ccagcagccg cggtaatacg tagggtgcga gcgttaatcg gaattactgg gcgtaaagcg 480

agcgcagacg gttatttaag tcagatgtga aatccccgag cttaacttgg gaactgcgtt 540

tgaaactggg taactagagt atgtcagagg ggggtagaat tccacgtgta gcagtgaaat 600

gcgtagagat gtggaggaat accgatggcg aaggcagccc cctgggataa ctgacgttca 660

tgctcgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg ccctaaacga 720

tgtcaattag ctgttggtgc attagtagcg aagctaacgc gtgaaattga ccgcctgggg 780

agtacggtcg caagattaaa actcaaagga attgacgggg acccgcacaa gcgatggatg 840

atgtggatta attcgatgca acgcgaagaa ccttacctgg tcttgacatg cacaggtgct 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccttgtcatt agttgccatc atgggcactc taatgagact gccggtgaca aaccggagga 1020

aggtggggat gacgtcaagt cctcatggcc cttatgacca gggcttcaca cgtcatacaa 1080

tggtcggcag agggtagcca agccgcgagg tggagccaat cccaaccgat cgtagtccgg 1140

atgcactctg caactcgagt gcagaagtcg gaatcgctag taatcgcagg tcagcatact 1200

gcggtgaata cgttcccggg tcttgtacac accgcccgtc acaccatggg agtgggggat 1260

accagaagta ggtgaatagt tcgcttacca cggtatgttt catgactggg gtgaagtcgt 1320

aacaaggtag ccgtagggga acctgcggct ggaacacctc 1360

<210> 1024

<211> 1021
<212> DNA
<213> Klebsiella oxytoca

<220>
<221> modified_base
<222> (741)..(742)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (969)..(969)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (974)..(975)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (985)..(985)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1001)..(1001)
<223> a, c, t, g, unknown or other

<400> 1024
gcacagagag cttgctctcg ggtgacgagt ggcggacggg tgagtaatgt ctgggaaact 60

gcctgatgga gggggataac tactggaaac ggtagctaat accgcataac gtcgcaagac 120

caaagagggg gaccttcggg cctcttgcca tcagatgtgc ccagatggga ttagctagta 180

ggtggggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga tgaccagcca 240

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattgcaca 300

atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg ggttgtaaag 360

tactttcagc ggggaggaag ggagtaaggt taataacctt gttcattgac gttacccgca 420

gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt gcaagcgtta 480

atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat gtgaaatccc 540

cgggctcaac ctgggaactg cattcgaaac tggcaggctg gagtcttgta gagggggta 600

gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg 660

gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgctgt nncgatgtcg acttggaggt tgttcccttg aggagtggct 780

tccggagcta acgcgttaag tcgaccgcct ggggagtacg gccgcaaggt taaaactcaa 840

atgaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgcaacgcga 900

agaaccttac ctactcttga catccagaga acttagcaga gatgctttgg tgccttcggg 960

aactctgana cagnngctgc atggntgtcg tcagctcgtg ntgtgaaatg ttgggttaag 1020

t 1021

<210> 1025
<211> 1399
<212> DNA
<213> Klebsiella pneumoniae

<400> 1025
tcgagcggta gcacagagag cttgctctcg ggtgacgagc ggcggacggg tgagtaatgt 60

ctgggaaact gcctgatgga gggggataac tactggaaac ggtagctaat accgcataac 120

gtcgcaagac caaagtgggg gaccttcggg cctcatgcca tcagatgtgc ccagatggga 180

ttagctagta ggtggggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga 240

tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtgtgaag aaggccttcg 360

ggttgtaaag cactttcagc ggggaggaag gcgttaaggt taataacctt gtcgattgac 420

gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 480

gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat 540

gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggcta gagtcttgta 600

gagggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 660

ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgccgt aaacgatgtc gatttggagg ttgtgccctt 780

gaggcgtggc ttccggagct aacgcgttaa atcgaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaacgcg aagaacctta cctggtcttg acatccacag aactttaggc ggtctgtcta 960

gtcgcatgtg gaactgtgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gttcggccgg 1080

gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc 1140

atggcccttа cgaccagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc 1200

tcgcgagagc aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg 1260

actccatgaa gtcggaatcg ctagtaatcg tagatcagaa tgctacggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1380

ttaaccttcg ggagggcgc 1399

<210> 1026
<211> 1277
<212> DNA
<213> Klebsiella sp. AS10

<400> 1026
cagattgaac gctggcggca ggcctaacac atgcaagtcg aacgagtggc ggacgggtga 60

gtaatgtctg ggaaactgcc tgatggaggg ggataactac tggaaacggt agctaatacc 120

gcataaccaa agttgccatc agatgtgccc agatgggatt agctagtagg tggggtaacg 180

gctcacctag gcgacgatcc ctagctggtc tgagaggatg accagccaca ctggaactga 240

gacacggtcc agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc 300

ctgatgcagc catgccgcgt gtatgaagaa ggccttcggg ttgtaaagta ctttcagcgg 360

ggaggatgac gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa 420

tacggagggt gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt 480

caagtcggat gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggctg 540

gagtcttgta gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag 600

gaataccggt ggcgaaggcg gccccctgga caaactgacg ctcaggtgcg aaagcgtggg 660

gagcaaacag gattagatac cctggtagtc cacgctgtaa acgatgtcga cttggaggtt 720

gttagtggct tccggagcta acgcgttaag tcgaccgcct ggggagtacg gccgcaaggt 780

taaaactcaa atgaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 840

tgcaacgcga agaaccttac ctactcttga catcgacagg tgctgcatgg ctgtcgtcag 900

ctcgtgttgt gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc 960

cagcggccgg gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg 1020

tcaagtcatc atggcccttа cgagtagggc tacacacgtg ctacaatggc atacaaagag 1080

aagcgacctc gcgagagcaa gcggacctca ttatgtcgta gtccggatgg agtctgcaac 1140

tcgactccag aagtcggaat cgctagtaat cgtggatcag aatgccacgg tgaatacgtt 1200

cccgggcctt gtacacaccg cccgtcacac catgggagtg ggttgcaaaa gaagtaggtg 1260

cttagggcgc ttaccac 1277

<210> 1027
<211> 1398
<212> DNA
<213> Klebsiella sp. Co9935

<400> 1027
tcgaacggta gcacagagag cttgctctcg ggtgacgagt ggcggacggg tgagtaatgt 60

ctgggaaact gcccgatgga gggggataac tactggaaac ggtagctaat accgcataac 120

gtcgcaagac caaagagggg gaccttcggg cctcttgcca tcggatgtgc ccagatggga 180

ttagcttgta ggtgaggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga 240

tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg 360

ggttgtaaag tactttcagc ggggaggaag ggagtgaggt taataacctt attcattgac 420

gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 480

gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat 540

gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggctg gagtcttgta 600

gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 660

ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtc gacttggagg ttgttccctt 780

gaggagtggc ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaacgcg aagaacctta cctactcttg acatccagag aatttagcag agatgctttg 960

gtgccttcgg gaaccgtgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg attcggtcgg 1080

gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc 1140

atggccctta cgagtagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc 1200

tcgcgagagc aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg 1260

actccatgaa gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1380

ttaaccttcg ggagggcg 1398

<210> 1028
<211> 1282
<212> DNA
<213> Klebsiella sp. OBRC7

<400> 1028
tggctcagat tgaacgctgg cggcaggcct aacacatgca agtcgaacga gtggcggacg 60

ggtgagtaat gtctgggaaa ctgcctgatg gaggggggata actactggaa acggtagcta 120

ataccgcata accaaagttg ccatcagatg tgcccagatg ggattagcta gtaggtgggg 180

taacggctca cctaggcgac gatccctagc tggtctgaga ggatgaccag ccacactgga 240

actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg 300

caagcctgat gcagccatgc cgcgtgtatg aagaaggcct tcgggttgta aagtactttc 360

agcggggagg atgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc 420

ggtaatacgg agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg 480

tctgtcaagt cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca 540

ggctggagtc ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc 600

tggaggaata ccggtggcga aggcggcccc ctggacaaac tgacgctcag gtgcgaaagc 660

gtggggagca aacaggatta gataccctgg tagtccacgc tgtaaacgat gtcgacttgg 720

aggttgttag tggcttccgg agctaacgcg ttaagtcgac cgcctgggga gtacggccgc 780

aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 840

ttcgatgcaa cgcgaagaac cttacctact cttgacatcg acaggtgctg catggctgtc 900

gtcagctcgt gttgtgaaat gttgggttaa gtcccgcaac gagcgcaacc cttatccttt 960

gttgccagcg gccgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga 1020

tgacgtcaag tcatcatggc ccttacgagt agggctacac acgtgctaca atggcataca 1080

aagagaagcg acctcgcgag agcaagcgga cctcattatg tcgtagtccg gatggagtct 1140

gcaactcgac tccagaagtc ggaatcgcta gtaatcgtgg atcagaatgc cacggtgaat 1200

acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt 1260

aggtgcttag ggcgcttacc ac 1282

<210> 1029
<211> 1237
<212> DNA
<213> Klebsiella sp. SP-BA

<220>
<221> modified_base
<222> (358)..(358)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (369)..(370)
<223> a, c, t, g, unknown or other

<400> 1029
aagtcgagcg agcggcggac gggtgagtaa tgtctgggaa actgcctgat ggaggggat 60

aactactgga aacggtagct aataccgcat aatcaaagat gccatcagat gtgcccagat 120

gggattagct agtaggtggg gtaacggctc acctaggcga cgatccctag ctggtctgag 180

aggatgacca gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg 240

gggaatattg cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt gaagaaggcc 300

ttcgggttgt aaagcacttt cagcggggag gatgacgtta cccgcagaag aagcaccngc 360

taactccgnn ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg 420

gcgtaaagcg cacgcaggcg gtctgtcaag tcggatgtga aatccccggg ctcaacctgg 480

gaactgcatt cgaaactggc aggctagagt cttgtagagg ggggtagaat tccaggtgta 540

gcggtgaaat gcgtagagat ctggaggaat accggtggcg aaggcggccc cctggacaaa 600

ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 660

ccgtaaacga tgtcgatttg gaggttgtgc gtggcttccg gagctaacgc gttaaatcga 720

ccgcctgggg agtacggccg caaggttaaa actcaaatga attgacgggg gcccgcacaa 780

gcggtggagc atgtggttta attcgatgca acgcgaagaa ccttacctgg tcttgacatc 840

gacaggtgct gcatggctgt cgtcagctcg tgttgtgaaa tgttgggtta agtcccgcaa 900

cgagcgcaac ccttatcctt tgttgccagc ggccgggaac tcaaaggaga ctgccagtga 960

taaactggag gaaggtgggg atgacgtcaa gtcatcatgg cccttacgac cagggctaca 1020

cacgtgctac aatggcatac aaagagaagc gacctcgcga gagcaagcgg acctcattat 1080

gtcgtagtcc ggatggagtc tgcaactcga ctccagaagt cggaatcgct agtaatcgta 1140

gatcagaatg ctacggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg 1200

ggagtgggtt gcaaaagaag taggtgctta gggcgct 1237

<210> 1030
<211> 1509
<212> DNA
<213> Klebsiella sp. SRC_DSD11

<400> 1030
ccgcagagtt tgatcctggc tcagattgaa cgctggcggc aggcctaaca catgcaagtc 60

gagcggtagc acagagagct tgctctcggg tgacgagcgg cggacgggtg agtaatgtct 120

gggaaactgc ctgatggagg gggataacta ctggaaacgg tagctaatac cgcataacgt 180

cgcaagacca aagtggggga ccttcgggcc tcatgccatc agatgtgccc agatgggatt 240

agctagtagg tggggtaacg gctcacctag gcgacgatcc ctagccggtc tgagaggatg 300

accagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 360

attgcacaat gggcgcaagc ctgatgcagc catgccgcgt gtgtgaagaa ggccttcggg 420

ttgtaaagca ctttcagcgg ggaggaaggc gtcaaggtta ataaccttgg cgattgacgt 480

tacccgcaga agaagcaccg gctaactccg tgccagcagc cgcggtaata cggagggtgc 540

aagcgttaat cggaattact gggcgtaaag cgcacgcagg cggtctgtca agtcggatgt 600

gaaatccccg ggctcaacct gggaactgca ttcgaaactg gcaggctaga gtcttgtaga 660

gggggtaga attccaggtg tagcggtgaa atgcgtagag atctggagga ataccggtgg 720

cgaaggcggc cccctggaca aagactgacg ctcaggtgcg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccgtaa acgatgtcga tttggaggtt gtgcccttga 840

ggcgtggctt ccggagctaa cgcgttaaat cgaccgcctg gggagtacgg ccgcaaggtt 900

aaaactcaaa tgaattgacg gggcccgca caagcggtgg agcatgtggt ttaattcgat 960

gcaacgcgaa gaaccttacc tggtcttgac atccacagaa ctttccagag atggattggt 1020

gccttcggga actgtgagac aggtgctgca tggctgtcgt cagctcgtgt tgtgaaatgt 1080

tgggttaagt cccgcaacga gcgcaaccct tatcctttgt tgccagcggt ccggccggga 1140

actcaaagga gactgccagt gataaactgg aggaaggtgg ggatgacgtc aagtcatcat 1200

ggcccttacg accagggcta cacacgtgct acaatggcat atacaaagag aagcgacctc 1260

gcgagagcaa gcggacctca taaagtatgt cgtagtccgg attggagtct gcaactcgac 1320

tccatgaagt cggaatcgct agtaatcgta gatcagaatg ctacggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gcaaaagaag taggtagctt 1440

aaccttcggg agggcgctta ccactttgtg attcatgact ggggtgaagt cgtaacaagg 1500

taaccgtag 1509

<210> 1031
<211> 1006
<212> DNA
<213> Klebsiella sp. SRC_DSD12

<220>
<221> modified_base
<222> (952)..(952)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (957)..(957)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (962)..(962)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (971)..(973)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (984)..(985)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (995)..(995)
<223> a, c, t, g, unknown or other

<400> 1031
tcgagcggta gcacagagag cttgctctcg ggtgacgagc ggcggacggg tgagtaatgt 60

ctgggaaact gcctgatgga gggggataac tactggaaac ggtagctaat accgcataat 120

gtcgcaagac caaagtgggg gaccttcggg cctcatgcca tcagatgtgc ccagatggga 180

ttagctagta ggtggggtaa cggctcacct aggcgacgat ccctagctgg tctgagagga 240

tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtgtgaag aaggccttcg 360

ggttgtaaag cactttcagc ggggaggaag gcggtgaggt taataacctt gtcgattgac 420

gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 480

gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat 540

gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggcta gagtcttgta 600

gagggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 660

ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgccgt aaacgatgtc gatttggagg ttgtgccctt 780

gaggcgtggc ttccggagct aacgcgttaa atcgaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaacgcg aagaacctta cctggtcttg acatccacag aactttccag anatggnttg 960

gngccttcgg nnntgtgaga cagnngctgc atggntgtcg tcagct 1006

<210> 1032
<211> 1504
<212> DNA
<213> Klebsiella sp. SRC_DSD15

<400> 1032
agagtttgat cctggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggtagcacag agagcttgct ctcgggtgac gagcggcgga cgggtgagta atgtctggga 120

aactgcctga tggaggggga taactactgg aaacggtagc taataccgca taacgtcgca 180

agaccaaagt gggggacctt cgggcctcat gccatcagat gtgcccagat gggattagct 240

agtaggtggg gtaacggctc acctaggcga cgatccctag ccggtctgag aggatgacca 300

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt gaagaaggcc ttcgggttgt 420

aaagcacttt cagcggggag gaaggcgtca aggttaataa ccttggcgat tgacgttacc 480

cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 540

gttaatcgga attactgggc gtaaagcgca cgcaggcggt ctgtcaagtc ggatgtgaaa 600

tccccgggct caacctggga actgcattcg aaactggcag gctagagtct tgtagagggg 660

ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa 720

ggcggccccc tggacaaaga ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgtcgatttg gaggttgtgc ccttgaggcg 840

tggcttccgg agctaacgcg ttaaatcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctggt cttgacatcc acagaacttt ccagagatgg attggtgcct 1020

tcgggaactg tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcggtccgg ccgggaactc 1140

aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgacca gggctacaca cgtgctacaa tggcatatac aaagagaagc gacctcgcga 1260

gagcaagcgg acctcataaa gtatgtcgta gtccggattg gagtctgcaa ctcgactcca 1320

tgaagtcgga atcgctagta atcgtagatc agaatgctac ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgcaa aagaagtagg tagcttaacc 1440

ttcgggaggg cgcttaccac tttgtgattc atgactgggg tgaagtcgta acaaggtaac 1500

cgta 1504

<210> 1033
<211> 1506
<212> DNA
<213> Klebsiella sp. SRC_DSD1

<400> 1033
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggtagcacag agagcttgct ctcgggtgac gagcggcgga cgggtgagta atgtctggga 120

aactgcctga tggaggggga taactactgg aaacggtagc taataccgca taatgtcgca 180

agaccaaagt gggggacctt cgggcctcat gccatcagat gtgcccagat gggattagct 240

agtaggtggg gtaacggctc acctaggcga cgatccctag ctggtctgag aggatgacca 300

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt gaagaaggcc ttcgggttgt 420

aaagcacttt cagcggggag gaaggcggtg aggttaataa cctcatcgat tgacgttacc 480

cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 540

gttaatcgga attactgggc gtaaagcgca cgcaggcggt ctgtcaagtc ggatgtgaaa 600

tccccgggct caacctggga actgcattcg aaactggcag gctagagtct tgtagagggg 660

ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa 720

ggcggccccc tggacaaaga ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgtcgatttg gaggttgtgc ccttgaggcg 840

tggcttccgg agctaacgcg ttaaatcgac cgcctggggg agtacggccg caaggttaaa 900

actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgatgca 960

acgcgaagaa ccttacctgg tcttgacatc cacagaactt tccagagatg gattggtgcc 1020

ttcgggaact gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt gaaatgttgg 1080

gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcggtccg gccgggaact 1140

caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag tcatcatggc 1200

ccttacgacc agggctacac acgtgctaca atggcatata caaagagaag cgacctcgcg 1260

agagcaagcg gacctcataa agtatgtcgt agtccggatt ggagtctgca actcgactcc 1320

atgaagtcgg aatcgctagt aatcgtagat cagaatgcta cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag gtagcttaac 1440

cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt aacaaggtaa 1500

ccgtag 1506

<210> 1034
<211> 1506
<212> DNA
<213> Klebsiella sp. SRC_DSD2

<400> 1034
agagtttgat cctggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggtagcacag agagcttgct ctcgggtgac gagcggcgga cgggtgagta atgtctggga 120

aactgcctga tggagggggga taactactgg aaacggtagc taataccgca taacgtcgca 180

agaccaaagt gggggacctt cgggcctcat gccatcagat gtgcccagat gggattagct 240

agtaggtggg gtaacggctc acctaggcga cgatccctag ccggtctgag aggatgacca 300

gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt gaagaaggcc ttcgggttgt 420

aaagcacttt cagcggggag gaaggcgtca aggttaataa ccttggcgat tgacgttacc 480

cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 540

gttaatcgga attactgggc gtaaagcgca cgcaggcggt ctgtcaagtc ggatgtgaaa 600

tccccgggct caacctggga actgcattcg aaactggcag gctagagtct tgtagagggg 660

ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa 720

ggcggccccc tggacaaaga ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgtcgatttg gaggttgtgc ccttgaggcg 840

tggcttccgg agctaacgcg ttaaatcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctggt cttgacatcc acagaacttt ccagagatgg attggtgcct 1020

tcgggaactg tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcggtccgg ccgggaactc 1140

aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgacca gggctacaca cgtgctacaa tggcatatac aaagagaagc gacctcgcga 1260

gagcaagcgg acctcataaa gtatgtcgta gtccggattg gagtctgcaa ctcgactcca 1320

tgaagtcgga atcgctagta atcgtagatc agaatgctac ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgcaa aagaagtagg tagcttaacc 1440

ttcgggaggg cgcttaccac tttgtgattc atgactgggg tgaagtcgta acaaggtaac 1500

cgtagc 1506

<210> 1035
<211> 1497
<212> DNA
<213> Klebsiella sp. SRC_DSD6

<400> 1035
agagtttgat cctggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggtagcacag agagcttgct ctcgggtgac gagcggcgga cgggtgagta atgtctggga 120

aactgcctga tggagggggga taactacgga aacggtagct aataccgcat aatgtcgcaa 180

gaccaaagtg ggggaccttc gggcctcatg ccatcagatg tgcccagatg ggattagcta 240

gtaggtgggg taacggctca cctaggcgac gatccctagc tggtctgaga ggatgaccag 300

ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg caagcctgat gcagccatgc cgcgtgtgtg aagaaggcct tcgggttgta 420

aagcactttc agcggggagg aaggcgttaa ggttaataac cttggcgatt gacgttaccc 480

gcagaagaag caccggctaa ctccgtgcca gcagccgcgg taatacggag ggtgcaagcg 540

ttaatcggaa ttactgggcg taaagcgcac gcaggcggtc tgtcaagtcg gatgtgaaat 600

ccccgggctc aacctgggaa ctgcattcga aactggcagg ctagagtctt gtagaggggg 660

tagaattcca ggtgtagcgg tgaaatgcgt agagatctgg gggaataccg gtggcgaagc 720

ggcccccctgg acaaagactg acgctcagtg cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tcccgccgta aacatgtcga tttggaggtt gtgcccttga ggcgtggctt 840

ccggagctaa cgcgttaaat cgacccctgg ggagtacggc cgcaaggtta aaactcaaat 900

gaattgacgg gggcccgcac aagcggtgga gcatgtggtt aattcgatgc aacgcgaaga 960

accttacctg gtcttgacat ccacagaact ttccagagat ggattggtgc ctcgggaact 1020

gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt gaaatgttgg gttaagtccc 1080

gcaacgagcg caacccttat cctttgttgc cagcggttag gccgggaact caaaggagac 1140

tgccagtgat aaactggagg aaggtgggga tgacgtcaag tcatcatggc ccttacgacc 1200

agggctacac acgtgctaca atggcatata caaagagaag cgacctcgcg agagcaagcg 1260

gacctcataa agtatgtcgt agtccggatt ggagtctgca actcgactcc atgaagtcgg 1320

aattgctagt aatcgtagat cagaatgcta cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca caccatggga gtgggttgca aaagaagtag gtagcttaac cttcgggagg 1440

gcgcttacca ctttgtgatt catgactggg gtgaaatcgt aacaaggtag ccgtagc 1497

<210> 1036
<211> 1420
<212> DNA
<213> Klebsiella sp. enrichment culture clone SRC_DSD25

<400> 1036
tcgggtgacg agcggcggac gggtgagtaa tgtctgggaa actgcctgat ggagggggat 60

aactactgga aacggtagct aataccgcat aatgtcgcaa gaccaaagtg ggggaccttc 120

gggcctcatg ccatcagatg tgcccagatg ggattagcta gtaggtgggg taacggctca 180

cctaggcgac gatccctagc tggtctgaga ggatgaccag ccacactgga actgagacac 240

ggtccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg caagcctgat 300

gcagccatgc cgcgtgtgtg aagaaggcct tcgggttgta aagcactttc agcggggagg 360

aaggcgttaa ggttaataac cttggcgatt gacgttaccc gcagaagaag caccggctaa 420

ctccgtgcca gcagccgcgg taatacggag ggtgcaagcg ttaatcggaa ttactgggcg 480

taaagcgcac gcaggcggtc tgtcaagtcg gatgtgaaat ccccgggctc aacctgggaa 540

ctgcattcga aactggcagg ctagagtctt gtagaggggg gtagaattcc aggtgtagcg 600

gtgaaatgcg tagagatctg ggggaatacc ggtggcgaaa gcggcccccc ggacaaagac 660

tgacgctcag tgcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 720

gtaaacgatg tcgatttgga ggttgtgccc ttgaggcgtg gcttccggag ctaacgcgtt 780

aaatcgaccg cctggggagt acggccgcaa ggttaaaact caaatgaatt gacgggggcc 840

cgcacaagcg gtggagcatg tggtttaatt cgatgcaacg cgaagaacct tacctggtct 900

tgacatccac agaactttcc agagatggat tggtgccttc gggaactgtg agacaggtgc 960

tgcatggctg tcgtcagctc gtgttgtgaa atgttgggtt aagtcccgca acgagcgcaa 1020

cccttatcct ttgttgccag cggttaggcc gggaactcaa aggagactgc cagtgataaa 1080

ctggaggaag gtggggatga cgtcaagtca tcatggccct tacgaccagg gctacacacg 1140

tgctacaatg gcatatacaa agagaagcga cctcgcgaga gcaagcggac ctcataaagt 1200

atgtcgtagt ccggattgga gtctgcaact cgactccatg aagtcggaat tgctagtaat 1260

cgtagatcag aatgctacgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac 1320

catgggagtg ggttgcaaaa gaagtaggta gcttaacctt cgggagggcg cttaccactt 1380

tgtgattcat gactggggtg aaatcgtaac aaggtagccg 1420

<210> 1037
<211> 934
<212> DNA
<213> Klebsiella variicola

<220>
<221> modified_base
<222> (705)..(706)
<223> a, c, t, g, unknown or other

<400> 1037
cggtagcaca gagagcttgc tctcgggtga cgagcggcgg acgggtgagt aatgtctggg 60

aaactgcctg atggaggggg ataactactg gaaacggtag ctaataccgc ataatgtcgc 120

aagaccaaag tgggggacct tcgggcctca tgccatcaga tgtgcccaga tgggattagc 180

tggtaggtgg ggtaacggct cacctaggcg acgatcccta gctggtctga gaggatgacc 240

agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cgcaagcctg atgcagccat gccgcgtgtg tgaagaaggc cttcgggttg 360

taaagcactt tcagcgggga ggaaggcggt gaggttaata acctcatcga ttgacgttac 420

ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg agggtgcaag 480

cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt cggatgtgaa 540

atccccgggc tcaacctggg aactgcattc gaaactggca ggctagagtc ttgtagaggg 600

gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata ccggtggcga 660

aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtnngagc aaacaggatt 720

agataccctg gtagtccacg ctgtaaacga tgtcgatttg gaggttgtgc ccttgaggcg 780

tggcttccgg agctaacgcg ttaaatcgac cgcctgggga gtacggccgc aaggttaaaa 840

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 900

cgcgaagaac cttacctggt cttgacatcc acag 934

<210> 1038
<211> 1387
<212> DNA
<213> Kluyvera ascorbata

<220>
<221> modified_base
<222> (964)..(965)
<223> a, c, t, g, unknown or other

<400> 1038
gcacagagag cttgctcttg ggtgacgagt ggcggacggg tgagtaatgt ctgggaaact 60

gcccgatgga gggggataac tactggaaac ggtagctaat accgcataac gtcgcaagac 120

caaagtgggg gaccttcggg cctcacacca tcggatgtgc ccagatggga ttagctagta 180

ggtgaggtaa tggctcacct aggcgacgat ccctagctgg tctgagagga tgaccagcca 240

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattgcaca 300

atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg ggttgtaaag 360

tactttcagc gaggaggaag gcgttaaggt taataacctt aacgattgac gttactcgca 420

gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt gcaagcgtta 480

atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat gtgaaatccc 540

cgggctcaac ctgggaactg cattcgaaac tggcaggcta gagtcttgta gaggggggta 600

gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt ggcgaaggcg 660

gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgtc tatttgaagg ttgttccctt gaggagtggc 780

tttcggagct aacgcgttaa atagaccgcc tggggagtac ggccgcaagg ttaaaactca 840

aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg atgcaacgcg 900

aagaacctta cctactcttg acatccagag aaattgggag agatgctttc gcgccttcgg 960

ggtnnatgag acagtggctg catgggtgtc gtcagctcgt gttgtgaaat gttgggttaa 1020

gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gttcggccgg gaactcaaag 1080

gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc atggcccttа 1140

cgagtagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc tcgcgagagc 1200

aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg actccatgaa 1260

gtcggaatcg ctagtaatcg tagatcagaa tgctacggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc ttaaccttcg 1380

ggagggc 1387

<210> 1039
<211> 1395
<212> DNA
<213> Kluyvera cryocrescens

<400> 1039
tcgaacggta gcacagagag cttgctcttg ggtgacgagt ggcggacggg tgagtaatgt 60

ctgggaaact gcccgatgga gggggataac tactggaaac ggtagctaat accgcataac 120

gtcgcaagac caaagtgggg gaccttcggg cctcacacca tcggatgtgc ccagatggga 180

ttagctagta ggtggggtaa tggctcacct aggcgacgat ccctagctgg tctgagagga 240

tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg 360

ggttgtaaag tactttcagc gaggaggaag gcattaaggt taataacctt ggtgattgac 420

gttactcgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 480

gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt caagtcggat 540

gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggcta gagtcttgta 600

gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 660

ggcgaaggcg gcccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgccgt aaacgatgtc gacttggagg ttgtgccctt 780

gaggcgtggc ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaacgcg aagaacctta cctactcttg acatccagag aacttagcag acatgctttg 960

gtgccttcgg gaactctgag acagcaggcg gtcggtcaag tcggatgtga attcccaagg 1020

ctcggcttag gacccgcaac gagcgcaacc cttatccttt gttgccagcg gttcggccgg 1080

gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc 1140

atggccctta cgagtagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc 1200

tcgcgagagc aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg 1260

actccatgaa gtcggaatcg ctagtaatcg tagatcagaa tgctacggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1380

ttaaccttcg ggagg 1395

<210> 1040
<211> 1482
<212> DNA
<213> Kocuria marina

<400> 1040
agagtttgat catggctcag gaccaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gctgaagctt ggtgcttgca ctgggtggat gagtggcgaa cgggtgagta atacgtgagt 120

aacctgccct tgactctggg ataagcctgg gaaactgggt ctaatactgg atatgacctc 180

ctgtcgcatg gtgggggtg gaaagggttt gtactggttg tggatgggct cacggcctat 240

cagcttgttg gtggggtaat ggcctaccaa ggcgacgacg ggtatccggc ccgagagggt 300

gaccggccac cctgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgagggatga cggccttcgg 420

gttgtaaacc tctttcagca cggaagaagc gaaagtgacg gtacgtgcag aagaagcgcc 480

ggctaactac gtgccagcag ccgcggtaat acgtaaggcg caagcgttgt ccggaattat 540

tgggcgtaca gagctcgtag gcggtttgtc gcgtctgctg tgaaagcccg gggcttaacc 600

ccgggtgtgc agtgggtacg ggcagacttg agtgcagtag gggagactgg aactcctggt 660

gtagcggtga aatgcgcaca tatcaggaag aacaccgatg gcgaaggcag gtctctgggc 720

tgttactgac gctgacgagc taaagcatgg ggagcgaact ggattggata ccctggtagt 780

ccatgccgta aacattgggc actaggtgtg ggggacattc cacgttttcc gcgccgtagc 840

taacgcatta agtgccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg 900

acaggcgccc gtacaagggg cggggcatgg ggattatttg gatgcaactc gaagaacttt 960

tccagggctt gacatacacc ggatcggctc agagatgagt ttccctcctt ttggggctgg 1020

tgtacaggtg gtgcatggtt gtcgtcagct ggtgtcgtga gatgtggggt taagtcccgc 1080

aacgagcgca accctcgttc tatgttgcca gcacgtgatg gtggggactc ataggagact 1140

gccggggtca actcggagga aggtggggat gacgtcaaat catcatgccc cttatgtctt 1200

gggcttcacg catgctacaa tggccagtac aatgggttgc gataccgtga ggtggagcta 1260

atcccaaaaa gctggtctca gttcggatcg tggtctgcaa ctcgaccacg tgaagtcgga 1320

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca agtcacgaaa gttggtaaca cccgaagccg gtggcctaac ccttgtgggg 1440

ggagccgtcg aaggtgggac tggcgattgg gactaagtcg ta 1482

<210> 1041
<211> 1419
<212> DNA
<213> Kocuria palustris

<400> 1041
ggcggcgtct tacacatgca gtcgaacgct gaagcaccag cttgctggtg tggatgagtg 60

gcgaacgggt gagtaatacg tgagtaacct gcccttgact ctgggataag cccgggaaac 120

tgggtctaat actggatgct acatgtcacc gcatggtggt gtgtggaaag ggtttactgg 180

tcttggatgg gctcacggcc tatcagcttg ttggtgaggt aatggctcac caaggcgacg 240

acgggtagcc ggcctgagag ggtgaccggc cacactggga ctgagacacg gcccagactc 300

ctacgggagg cagcagtggg gaatattgca caatgggcga aagcctgatg cagcgacgcc 360

gcgtgaggga tgacggcctt cgggttgtaa acctctttca gcagggaaga agccacaagt 420

gacggtacct gcagaagaag cgccggctaa ctacgtgcca gcagccgcgg taatacgtag 480

ggcgcaagcg ttgtccggaa ttattgggcg taaagagctc gtaggcggtt tgtcgcgtct 540

gctgtgaaag cccggggctt aaccccgggt gtgcagtggg tacgggcaga ctagagtgca 600

gtaggggaga ctggaattcc tggtgtagcg gtggaatgcg cagatatcag gaggaacacc 660

gatggcgaag gcaggtctct gggctgttac tgacgctgag gagcgaaagc atggggagcg 720

aacaggatta gataccctgg tagtccatgc cgtaaacgtt gggcactagg tgtgggggac 780

attccacgtt ttccgcgccg tagctaacgc attaagtgcc ccgcctgggg agtacggccg 840

caaggctaaa actcaaagga attgacgggg gcccgcacaa gcggcggagc atgcggatta 900

attcgatgca acgcgaagaa ccttaccaag gcttgacata taccggatcg ttccagagat 960

ggttcttccc ctttggggtc ggtatacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caaccctcgt tccatgttgc cagcacgtga 1080

tggtggggac tcatgggaga ctgccggggt caactcggag gaaggtgggg atgacgtcaa 1140

atcatcatgc cccttatgtc ttgggcttca cgcatgctac aatggccggt acaaagggtt 1200

gcgatactgt gaggtggagc taatcccaaa aagccggtct cagttcggat tgaggtctgc 1260

aactcgacct catgaagtcg gagtcgctag taatcgcaga tcagcaacgc tgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt caagtcacga aagtcggtaa cacccgaagc 1380

cggtggccca acccttgtgg agggagccgt cgaaggtgg 1419

<210> 1042
<211> 1454
<212> DNA
<213> Kocuria rhizophila

<400> 1042
ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa cgctgaagct tggtgcttgc 60

actgggtgga tgagtggcga acgggtgagt aatacgtgag taacctgccc ttgactctgg 120

gataagcctg ggaaactggg tctaatactg gatacgacat gtcaccgcat ggtggtgtgt 180

ggaaagggtt ttactggttt tggatgggct cacggcctat cagcttgttg gtggggtaat 240

ggctcaccaa ggcgacgacg ggtagccggc ctgagagggt gaccggccac actgggactg 300

agacacggcc cagactccta cgggaggcag cagtggggaa tattgcacaa tgggcggaag 360

cctgatgcag cgacgccgcg tgagggatga cggccttcgg gttgtaaacc tctttcagca 420

cggaagaagc gaaagtgacg gtacgtgcag aagaagcgcc ggctaactac gtgccagcag 480

ccgcggtaat acgtagggcg caagcgttgt ccggaattat tgggcgtaaa gagctcgtag 540

gcggtttgtc gcgtctgctg tgaaagcccg gggcttaacc ccgggtgtgc agtgggtacg 600

ggcagacttg agtgcagtag gggagactgg aattcctggt gtagcggtga aatgcgcaga 660

tatcaggagg aacaccgatg gcgaaggcag gtctctgggc tgttactgac gctgaggagc 720

gaaagcatgg ggagcgaaca ggattagata ccctggtagt ccatgccgta aacgttgggc 780

actaggtgtg gggaacattc cacgttttcc gcgccgtagc taacgcatta agtgccccgc 840

ctggggagta cggccgcaag gctaaaactc aaaggaattg acgggggccc gcacaagcgg 900

cggagcatgc ggattaattc gatgcaacgc gaagaacctt accaaggctt gacatacacc 960

ggaccgggcc agagatggtc tttcccccttt gtggggctgg tgtacaggtg gtgcatggtt 1020

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgttc 1080

tatgttgcca gcacgtgatg gtggggactc ataggagact gccggggtca actcggagga 1140

aggtgaggat gacgtcaaat catcatgccc cttatgtctt gggcttcacg catgctacaa 1200

tggccagtac aatgggttgc gatgccgcga ggtggagcta atcccaaaaa gctggtctca 1260

gttcggatcg tggtctgcaa ctcgaccacg tgaagtcgga gtcgctagta atcgcagatc 1320

agcaacgctg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca agtcacgaaa 1380

gttggtaaca cccgaagccg gtggcctaac ccttgtgggg ggagccgtcg aaggtgggac 1440

tggcgattgg gact 1454

<210> 1043
<211> 1481
<212> DNA
<213> Kocuria rosea

<400> 1043
atcctggctc aggacgaacg ctggcggcgt gcttaacaca tgcaagtcga acgatgatgc 60

ccagcttgct gggcggatta gtggcgaacg ggtgagtaat acgtgagtaa cctgcccttg 120

actctgggat aagcctggga aactgggtct aatactggat actacctctt accgcatggt 180

gggtggtgga aagggtttta ctggttttgg atgggctcac ggcctatcag cttgttggtg 240

gggtaatggc tcaccaagcc gacgacgggt agccggcctg agagggtgac cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg 360

gcggaagcct gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt gtaaacctct 420

ttcagtaggg aagaagcgag agtgacggta cctgcagaag aagcgccggc taactacgtg 480

ccagcagccg cggtaatacg tagggcgcaa gcgttgtccg gaattattgg gcgtaaagag 540

ctcgtaggcg gtttgtcgcg tctgctgtga aagcccgggg cttaaccccg ggtctgcagt 600

gggtacgggc agactagagt gcagtagggg agactggaat tcctggtgta gcggtgaaat 660

gcgcagatat caggaggaac accgatggcg aaggcaggtc tctgggctgt tactgacgct 720

gaggagcgaa agcatgggga gcgaacagga ttagataccc tggtagtcca tgccgtaaac 780

gttgggcact aggtgtgggg gacattccac gttttccgcg ccgtagctaa cgcattaagt 840

gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca 900

caagcggcgg agcatgcgga ttaattcgat gcaacgcgaa gaaccttacc aaggcttgac 960

attcaccgga ccgccccaga gatggggttt cccttcgggg ctggtggaca ggtggtgcat 1020

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc 1080

gttctatgtt gccagcacgt gatggtgggg actcatagga gactgccggg gtcaactcgg 1140

aggaaggtgg ggatgacgtc aaatcatcat gccccttatg tcttgggctt cacgcatgct 1200

acaatggccg gtacaaaggg ttgcgatact gtgaggtgga gctaatccca aaaagccggt 1260

ctcagttcgg attgaggtct gcaactcgac ctcatgaagt cggagtcgct agtaatcgca 1320

gatcagcaac gctgcggtga atacgttccc gggccttgta cacaccgccc gtcaagtcac 1380

gaaagttggt aacacccgaa gccggtggcc taaccccttg tgggagggag ccgtcgaagg 1440

tgggactggc gattgggact aagtcgtaac aaggtagccg t 1481

<210> 1044
<211> 1333
<212> DNA
<213> Kocuria varians

<220>
<221> modified_base
<222> (1040)..(1040)

<223> a, c, t, g, unknown or other

<400> 1044
cgctgaagct tggtgcttgc actgggtgga tgagtggcga acgggtgagt aatacgtgag 60

taacctgccc ttaactctgg gataagcctg ggaaactggg tctaatactg gatatgacat 120

gtcactgcat ggtggcgtgt ggaaagggtt ttactggttt tggatgggct cacggcctat 180

cagcttgttg gtggggtaat ggcccaccaa ggcgacgacg ggtagccggc ctgagagggt 240

gaccggccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 300

tattgcacaa tgggcgaaag cctgatgcag cgacgccgcg tgagggatga cggccttcgg 360

gttgtaaacc tctttcagca cggaagaagc gagagtgacg gtacgtgcag aagaagcgcc 420

ggctaactac gtgccagcag ccgcggtaat acgtagggcg caagcgttgt ccggaattat 480

tgggcgtaaa gagctcgtag gcggtttgtc gcgtctgctg tgaaagcccg gggcttaacc 540

ccgggtgtgc agtgggtacg ggcagacttg agtgcagtag gggagactgg aattcctggt 600

gtagcggtga aatgcgcaga tatcaggaag aacaccgatg gcgaaggcag gtctctgggc 660

tgttactgac gctgaggagc gaaagcatgg ggagcgaaca ggattagata ccctggtagt 720

ccatgccgta aacgttgggc actaggtgtg ggggacattc cacgttttcc gcgccgtagc 780

taacgcatta agtgccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg 840

acgggggccc gcacaagcgg cggagcatgc ggattaattc gatgcaacgc gaagaacctt 900

accaaggctt gacatacacc ggaccggtcc agagatggat cttccccctt gtggggctgg 960

tgtacaggtg gtgcatggtt gtcgtcagct cgtgtcgtaa gatgttgggt taagtcccgc 1020

aacgagcgca accctcgttn tatgttgcca gcacgtgatg gtggggactc ataggagact 1080

gccggggtca actcggagga aggtggggat gacgtcaaat catcatgccc cttatgtctt 1140

gggcttcacg catgctacaa tggccggtac aatgggttgc gataccgtga ggtggagcta 1200

atcccaaaaa gccggtctca gttcggatcg tggtctgcaa ctcgaccacg tgaagtcgga 1260

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca 1320

ccgcccgtca agt 1333

<210> 1045
<211> 1493
<212> DNA
<213> Lachnobacterium bovis

<220>
<221> modified_base
<222> (85)..(85)
<223> a, c, t, g, unknown or other

<400> 1045
gagtttgatc atggctcagg atgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

aagcacatta tttgaattct tcggnaggaa gataatgcga ctgagtggcg gacgggtgag 120

taacgcgtgg gtaacctgcc atgtacaggg ggacaacagt tggaaacggc tgctaatacc 180

gcataagcgc acgagattgc atgatctagt gtgaaaaact ccggtggtat atgatggacc 240

cgcgtctgat tagctagttg gtaaggtaac ggcttaccaa ggcgacgatc agtagccgac 300

ctgagagggt gaccggccac attgggactg agacacggcc cagactccta cgggaggcag 360

cagtggggaa tattgcacaa tgggcgaaag cctgatgcag cgacgccgcg tgaacgaaga 420

agtatttcgg tatgtaaagt tctatcagca gggaagaaaa aatgacggta cctgactaag 480

aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcaa gcgttatccg 540

gatttactgg gtgtaaaggg agcgcaggcg gcccggcaag tctgatgtga aaacccaagg 600

ctcaaccatg ggattgcatt ggaaactgtc gagctagagt atcggagggg taagtggaat 660

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcggctt 720

actggacgat aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatgaatact aggtgtcggg tgttatgaac attcggtgcc 840

ggcgcaaacg caataagtat tccacctggg gagtacgttc gcaagaatga aactcaaagg 900

aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccaa gtcttgacat cccaatgaca agctatgtaa tgtagcctct cttcggagca 1020

ttggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg tccttagtag ccagcagtaa gatgggcact ctagggagac 1140

tgccagggat aacctggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgact 1200

tgggctacac acgtgctaca atggcgtaaa caaagtgaag cgagatggtg acattaagca 1260

aatcacaaaa ataacgtctc agttcggact gtagtctgca actcgactac acgaagctgg 1320

aatcgctagt aatcgcagat cagaatgctg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gttggtaatg cccgaagccg gtgacctaac cgtaaggaag 1440

gagccgtcga aggcaggatc gataactggg gtgaagtcgt aacaaggtaa cca 1493

<210> 1046
<211> 1518
<212> DNA
<213> Lachnospira multipara

<400> 1046
tttgatcctg gctcaggatg aacgctggcg gcgtgcttaa cacatgcaag tcgaacgaag 60

caacwtatca cgattccttc gggatgacga tttgttgact gagtggcgga cgggtgagta 120

acgcgtgggt aacctgcctt atacaggggg atagcagctg gaaacggctg ataataccgc 180

ataagcgcac ggcatcgcat gatgcagtgt gaaaaactcc ggtggtataa gatggacccg 240

cgtctgatta gctagttggt gaggtaacgg cccaccaagg caacgatcag tagccgacct 300

gagagggtga ccggccacat tgggactgag acacggccca gactcctacg ggaggcagca 360

gtggggaata ttgcacaatg gaggaaactc tgatgcagcg acgccgcgtg agcgaagaag 420

tatttcggta tgtaaagctc tatcagcagg gaagataatg acggtacctg actaagaagc 480

tccggctaaa tacgtgccag cagccgcggt aatacgtatg gagcaagcgt tatccggatt 540

tactgggtgt aaagggagtg taggtggcaa agcaagtcag tagtgaaaat ccggggctca 600

acctcggaac tgctattgaa actgtttagc tagagtgcag gagaggtaag tggaattcct 660

agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg cggcttactg 720

gactgtaact gacactgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt 780

agtccacgcc gtaaacgatg aatactaggt gttgggtctc ataagagatt cggtgccgca 840

gctaacgcaa taagtattcc acctggggag tacgttcgca agaatgaaac tcaaaggaat 900

tgacggggac ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttacctagtc ttgacatccc gatgaccrag tatgtaatgt actctttctt cggaacatcg 1020

gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccctattt ctagtagcca gcagttcggc tgggcactct agagagactg 1140

ccagggataa cctggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgactag 1200

ggctacacac gtgctacaat ggcgtaaaca aagtgaagcg agagtgtgag cttaagcaaa 1260

tcacaaaaat aacgtctcag ttcggattgt agtctgcaac tcgactacat gaagctggaa 1320

tcgctagtaa tcgcagatca gaatgctgcg gtgaatacgt tcccgggtct tgtacacacc 1380

gcccgtcaca ccatgggagt cgaaaatgcc cgaagtcggt gacctaacgt aagaaggagc 1440

cgccgaaggc aggtttgata actggggtga agtcgtaaca aggtagccgt atcggaaggt 1500

gcggctggat cacctcct 1518

<210> 1047
<211> 1383
<212> DNA
<213> Lachnospira pectinoschiza

<220>
<221> modified_base
<222> (11)..(12)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (22)..(23)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (30)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (37)..(40)
<223> a, c, t, g, unknown or other

<400> 1047

cgaagcattt nncnacggat tnnttcggan ntgaagnnnn ttatgactga gtggcggacg 60

ggtgagtaac gcgtgggtaa cctgcctcac acaggggat agcagttgga aacggctgat 120

aataccgcat aagcgcacag taccgcatgg tacagtgtga aaaactccgg tggtgtgaga 180

tggacccgcg tctgattagc ttgttggcag ggtaacggcc taccaaggca acgatcagta 240

gccgacctga gagggtgacc ggccacattg ggactgagac acggcccaga ctcctacggg 300

aggcagcagt ggggaatatt gcacaatgga ggaaactctg atgcagcgac gccgcgtgag 360

tgaagaagta attcgttatg taaagctcta tcagcaggga agatagtgac ggtacctgac 420

taagaagctc cggctaaata cgtgccagca gccgcggtaa tacgtatgga gcaagcgtta 480

tccggattta ctgggtgtaa agggagtgta ggtggcatca caagtcagaa gtgaaagccc 540

ggggctcaac cccgggactg cttttgaaac tgtggagctg gagtgcagga gaggcaagtg 600

gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg 660

gcttgctgga ctgtaactga cactgaggct cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgaa tactaggtgt cggggctcat aagagcttcg 780

gtgccgcagc aaacgcaata agtattccac ctggggagta cgttcgcaag aatgaaactc 840

aaaggaattg acggggaccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 900

aagaacctta ccaagtcttg acatcctctt gcccggtcag taatgtgacc ttttcttcgg 960

aacaagagtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1020

gtcccgcaac gagcgcaacc cctattctta gtagccagca tataaggtgg gcactctagg 1080

aagactgcca gggataacct ggaggaaggt ggggatgacg tcaaatcatc atgccccttа 1140

tgacttgggc tacacacgtg ctacaatggc gtaaacaaag tgaagcgaga gtgtgagctt 1200

aagcaaatca caaaaataac gtctcagttc ggattgtagt ctgcaactcg actacatgaa 1260

gctggaatcg ctagtaatcg cgaatcagaa tgtcgcggtg aatacgttcc cgggtcttgt 1320

acacaccgcc cgtcacacca tgggagtcgg aaatgcccga agtcggtgac ctaacgaaag 1380

aag 1383

<210> 1048
<211> 1519
<212> DNA
<213> Lachnospiraceae bacterium 1_1_57FAA

<400> 1048
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgagc 60

gaagcacttt gcttagattc ttcggatgaa gaggattgtg actgagcggc ggacgggtga 120

gtaacgcgtg ggtaacctgc ctcatacagg gggataacag ttagaaatga ctgctaatac 180

cgcataagac cacagcaccg catggtgcgg gggtaaaaac tccggtggta tgagatggac 240

ccgcgtctga ttagctagtt ggtaaggtaa cggcttacca aggcgacgat cagtagccga 300

cctgagaggg tgaccggcca cattgggact gagacacggc ccaaactcct acgggaggca 360

gcagtgggga atattgcaca atgggggaaa ccctgatgca gcgacgccgc gtgagcgaag 420

aagtatttcg gtatgtaaag ctctatcagc agggaagaaa atgacggtac ctgactaaga 480

agcaccggct aaatacgtgc cagcagccgc ggtaatacgt atggtgcaag cgttatccgg 540

atttactggg tgtaaaggga gcgtagacgg atgggcaagt ctgatgtgaa aacccggggc 600

tcaaccccgg gactgcattg gaaactgttc atctagagtg ctggagaggt aagtggaatt 660

cctagtgtag cggtgaaatg cgtagatatt aggaggaaca ccagtggcga aggcggctta 720

ctggacagta actgacgttg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgactacta ggtgtcgggt ggcaaagcca ttcggtgccg 840

cagcaaacgc aataagtagt ccacctgggg agtacgttcg caagaatgaa actcaaagga 900

attgacgggg acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttacctgc tcttgacatc ccgctgaccg gacggtaatg cgtccttccc ttcggggcag 1020

cggagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccctat ctttagtagc cagcggccag gccgggcact ctagagagac 1140

tgccggggat aacccggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgagc 1200

agggctacac acgtgctaca atggcgtaaa caaagggaag cgagaccgcg aggtggagca 1260

aatcccaaaa ataacgtctc agttcggatt gtagtctgca actcgactac atgaagctgg 1320

aatcgctagt aatcgcgaat cagaatgtcg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gtcagtaacg cccgaagtca gtgacccaac cgtaaggagg 1440

gagctgccga aggcgggacc gataactggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtgcggct ggatcacct 1519

<210> 1049
<211> 1384
<212> DNA
<213> Lachnospiraceae bacterium 1_4_56FAA

<220>
<221> modified_base
<222> (33)..(33)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (229)..(229)
<223> a, c, t, g, unknown or other

<400> 1049
tcgaacgaag cactttaccg gatttcttcg gantgaaagt tttgtgactg agtggcggac 60

gggtgagtaa cgcgtgggta acctgcctca tacaggggga taacagttag aaatgactgc 120

taataccgca taagaccaca ggattgcatg gtccggtggt aaaaactccg gtggtatgag 180

atggacccgc gtctgattag ctagttggtg gggtaacggc ttaccaagnc gacgatcagt 240

agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa actcctacgg 300

gaggcagcag tggggaatat tgcacaatgg gggaaaccct gatgcagcga cgccgcgtga 360

gcgatgaagt atttcggtat gtaaagctct atcagcaggg aagaaaagac ggtacctgct 420

aagaagcacc ggctaaatac gtgccagcag ccgcggtaat acgtatggtg caagcgttat 480

ccggatttac tgggtgtaaa gggagcgtag acggagaggc aagtctgatg tgaaaacccg 540

gggctcaacc ccgggactgc attggaaact gtttttctag agtgtcggag aggtaagtgg 600

aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg gcgaaggcgg 660

cttactggac gatgactgac gttgaggctc gaaagcgtgg ggagcaaaca ggattagata 720

ccctggtagt ccacgccgta aacgatgact gctaggtgtc gggaggcaaa gcctttcggt 780

gccgcagcaa acgcaataag cagtccacct ggggagtacg ttcgcaagaa tgaaactcaa 840

aggaattgac ggggacccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 900

agaaccttac ctgcccttga catccggctg actggcgagt aatgtcgcct ttccttcggg 960

acagccgaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1020

tcccgcaacg agcgcaaccc ttatctttag tagccagcat ttcggatggg cactctagag 1080

agactgccag ggataacctg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1140

gggcagggct acacacgtgc tacaatggcg taaacaaagg gaggcaagcc tgcgagggtg 1200

agcaaatccc aaaaataacg tctcagttcg gattgtagtc tgcaactcga ctacatgaag 1260

ctggaatcgc tagtaatcgc gaatcagaat gtcgcggtga atacgttccc gggtcttgta 1320

cacaccgccc gtcacaccat gggagttggt aacgcccgaa gtcagtgacc caaccgtaag 1380

gagg 1384

<210> 1050
<211> 1528
<212> DNA
<213> Lachnospiraceae bacterium 2_1_46FAA

<400> 1050
gagagtttga tcctggctca ggatgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cgaagcgctt tcgattgaat cttcggagga aagaggaagt gactgagtgg cggacgggtg 120

agtaacgcgt gggtaacctg cctcatacag ggggataaca gttagaaatg gctgctaata 180

ccgcataagc atacagcacc gcatggtgca gtgtgaaaaa ctccggtggt atgagatgga 240

cccgcgtctg attaggtagt tggtggggta acggcctacc aagccgacga tcagtagccg 300

acctgagagg gtgaccggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

agcagtgggg aatattgcac aatgggggaa accctgatgc agcgacgccg cgtgaaggaa 420

gaagtatttc ggtatgtaaa cttctatcag cagggaagaa aatgacggta cctgactaag 480

aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcaa gcgttatccg 540

gatttactgg gtgtaaaggg agcgtagacg gaagtgcaag tctgaagtga aagcccgggg 600

ctcaaccccg tgactgcttt ggaaactgtg cttctagagt gtcggagagg taagcggaat 660

tcctagtgta gcggtgaaat gcgtagatat taggaggaac atcagtggcg aaggcggctt 720

actggacgat aactgacgtt gaggctcgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatgactact aggtgtcggg gtacaaagta cttcggtgcc 840

gcagccaacg caataagtag tccacctggg gagtacgttc gcaagaatga aactcaaagg 900

aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttacctg gtcttgacat ctccctgact ggacagtaat gtgtcctttc tttcgggaca 1020

gggaagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaaccccta tcttcagtag ccagcaagta aagttgggca ctctggagag 1140

actgccaggg ataacctgga ggaaggtggg gacgacgtca aatcatcatg ccccttatga 1200

ccagggctac acacgtgcta caatggcgta aacaaaggga agcaagcatg tgagtgtgag 1260

caaatctcaa aaataacgtc tcagttcgga ttgtagtctg caactcgact acatgaagct 1320

ggaatcgcta gtaatcgcga atcagaatgt cgcggtgaat acgttcccgg gtcttgtaca 1380

caccgcccgt cacaccatgg gagttggtaa cgcccgaagt cagtgaccta accgaaagga 1440

aggagctgcc gaaggtggga ctgataactg gggtgaagtc gtaacaaggt agccgtatcg 1500

gaaggtgcgg ctggatcacc tcctttct 1528

<210> 1051
<211> 1361
<212> DNA
<213> Lachnospiraceae bacterium 2_1_58FAA

<400> 1051
cgaagcactt ttgcggattt cttcggattg aagcaattgt gactgagcgg cggacgggtg 60

agtaacgcgt gggtaacctg cctcatacag ggggataaca gttggaaacg gctgctaata 120

ccgcataagc gcacagtacc gcatggtacc gtgtgaaaaa ctccggtggt atgagatgga 180

cccgcgtctg attagctagt tggtggggta acggcctacc aaggcgacga tcagtagccg 240

acctgagagg gtgaccggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 300

agcagtgggg aatattgcac aatgggggaa accctgatgc agcgacgccg cgtgagcgat 360

aagtatttcg gtatgtaaag ctctatcagc agggaagaaa atgacggtac ctgctaagaa 420

gccgctaact acgtgccagc agccgcggta atacgtaggg ggcaagcgtt atccggattt 480

actgggtgta aagggagcgt agacggcatg gcaagccaga tgtgaaagcc cggggctcaa 540

ccccgggact gcatttggaa ctgtcaggct agagtgtcgg agaggaaagc ggaattccta 600

gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc ggctttctgg 660

acgatgactg acgttgaggc tcgaaagcgt ggggagcaaa caggattaga taccctggta 720

gtccacgccg taaacgatga atactaggtg tcgggtggca aagccattcg gtgccgcagc 780

aaacgcaata agtattccac ctggggagta cgttcgcaag aatgaaactc aaaggaattg 840

atggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt 900

acctggtctt gacatccctc tgaccgctct ttaatcggag ctttccttcg ggacagagga 960

gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1020

cgagcgcaac ccctatcttt agtagccagc atttaagatg ggcactctag agagactgcc 1080

agggataacc tggaggaagg tggggatgac gtcaaatcat catgcccctt atgaccaggg 1140

ctacacacgt gctacaatgg cgtaaacaaa gggaagcgag cccgcgaggg ggagcaaatc 1200

ccaaaaataa cgtctcagtt cggattgtag tctgcaactc gactacatga agctggaatc 1260

gctagtaatc gcgaatcaga atgtcgcggt gaatacgttc ccgggtcttg tacacaccgc 1320

ccgtcacacc atgggagtca gtaacgcccg aagtcagtga c 1361

<210> 1052
<211> 1373
<212> DNA
<213> Lachnospiraceae bacterium 3_1_57FAA_CT1

<400> 1052
aggaagtttt cggatggaat cggcgtaact tagtggcgga cgggtgagta acgcgtggga 60

aacctgccct gtaccggggg ataacactta gaaataggtg ctaataccgc ataagcgcac 120

agcttcacat gaggcagtgt gaaaaactcc ggtggtacag gatggtcccg cgtctgatta 180

gccagttggc agggtaacgg cctaccaaag cgacgatcag tagccggcct gagagggtga 240

acggccacat tgggactgag acacggccca aactcctacg ggaggcagca gtggggaata 300

ttgcacaatg ggggaaaccc tgatgcagcg acgccgcgtg agtgaagaag tatttcggta 360

tgtaaagctc tatcagcagg gaagaaaatg acggtacctg actaagaagc cccggcaact 420

acgtgccagc agccgcggta atacgtaggg ggcaagcgtt atccggattt actgggtgta 480

aagggagcgt agacggcatg acaagccaga tgtgaaaacc cagggctcaa ccctgggact 540

gcatttggaa ctgccaggct ggagtgcagg agaggtaagc ggaattccta gtgtagcggt 600

gaaatgcgta gatattagga ggaacaccag tggcgaaggc ggcttactgg actgtaactg 660

acgttgaggc tcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgcgg 720

taaacgatga ttgctaggtg taggtgggta tggacccatc ggtgccgcag ctaacgcaat 780

aagcaatcca cctggggagt acgttcgcaa gaatgaaact caaaggaatt gacggggacc 840

cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaagtct 900

tgacatccca atgacgtgtc cgtaacgggg cattctcttc ggagcattgg agacaggggg 960

agcatggcgg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1020

cccttatcct tagtagccag caggtaaagc tgggcactct agggagactg ccggggataa 1080

cccggaggaa ggcggggatg acgtcaaatc atcatgcccc ttatgatttg ggctacacac 1140

gtgctacaat ggcgtaaaca aagggaagcg agacagtgat gttgagcaaa tcccagaaat 1200

aacgtctcag ttcggattgt agtctgcaac tcgactacat gaagctggaa tcgctagtaa 1260

tcgcgaatca gcatgtcgcg gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca 1320

ccatgggagt tggaaatgcc cgaagcctgt gacctaaccg caagggagga gca 1373

<210> 1053

<211> 1370
<212> DNA
<213> Lachnospiraceae bacterium 4_1_37FAA

<400> 1053
attcttcgga aggaagctca agtgactgag tggcggacgg gtgagtaacg cgtgggtaac 60

ctgcctcata caggggggata acagttagaa atgactgcta ataccgcata agcacacgtg 120

atcgcatgat cgagtgtgaa aaactccggt ggtatgagat ggacccgcgt ctgattagct 180

tgttggtggg gtaacggccc accaaggcga cgatcagtag ccggcctgag agggtgaacg 240

gccacattgg gactgagaca cggcccaaac tcctacggga ggcagcagtg gggaatattg 300

cacaatgggg gaaaccctga tgcagcgacg ccgcgtgaag gatgaagtat ttcggtatgt 360

aaacttctat cagcagggaa gaaaatgacg gtacctgact aagaagcccc ggctaactac 420

gtgccagcag ccgcggtaat acgtaggggg caagcgttat ccggatttac tgggtgtaaa 480

gggagcgtag acggcagtgc aagtctgaag tgaaagcccg gggctcaacc ccgggactgc 540

tttggaaact gtgcagctgg agtgtcggag aggcaagcgg aattcctagt gtagcggtga 600

aatgcgtaga tattaggagg aacaccagtg gcgaaggcgg cttgctggac gataactgac 660

gttgaggctc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 720

aacgatgact actaggtgtc ggggagcaaa gctcttcggt gccgcagcca acgcaataag 780

tagtccacct ggggagtacg ttcgcaagaa tgaaactcaa aggaattgac ggggacccgc 840

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac ctgctcttga 900

catccctctg aacgctcatt aatcgggctc ttccccgggg ctgcttggga aacggtgcag 960

ctggagtgtc ggagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1020

ctatcttcag tagccagcat taaggatggg cactctggag agactgccag ggataacctg 1080

gaggaaggtg gggatgacgt caaatcatca tgcccttat gagcagggct acacacgtgc 1140

tacaatggcg taaacaaagg gaagcagagt cgtgaggccg agcaaatccc aaaaataacg 1200

tctcagttcg gattgtagtc tgcaactcga ctacatgaag ctggaatcgc tagtaatcgc 1260

gaatcagaat gtcgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat 1320

gggagtcagt aacgcccgaa gtcagtgacc caaccgtaag gagggagctg 1370

<210> 1054
<211> 1357
<212> DNA
<213> Lachnospiraceae bacterium 5_1_57FAA

<400> 1054
cgaagcgcct ggccccgact tcttcggaat gaggagcctt gcgactgagt ggcggacggg 60

tgagtaacgc gtgggcaacc tgccttgcac tgggggataa cagccagaaa tggctgctaa 120

taccgcataa gaccgaagcg ccgcatgggg cagcggccaa agccccggcg gtgcaagatg 180

ggcccgcgtc tgattaggta gttggcgggg taacggccca ccaagccgac aatcagtagc 240

cgacctgaga gggtgaccgg ccacattggg actgagacac ggcccacact cctacgggag 300

gcagcagtgg ggaatattgc acaatggggg aaaccctgat gcagcgacgc cgcgtgaagg 360

atgaagtatt tcggtatgta aacttctatc accagggaag aaaatgacgg tacctgacta 420

agaagccccg gctaactacg tgccacagcc gcggtaatac gtaggggcca agcgttatcc 480

ggatttactg ggtgtaaagg gagcgtaacg gcgatgcaag ccaatgtgaa agcccggggc 540

tcaaccccgg gactgcattt ggaactgcgt ggctggagtg tcgagaggca ggcggaattc 600

tagtgtacgg tgaaatgcgt aatattagag gaacaccagt ggcgaagcgg cctgctggac 660

atgactgacg ttgaggctcg aaagcgtggg gagcacagga ttaataccct ggtagtccac 720

gccgtaacga tgactactag tgtcgggtgg aaggccattc gtgccgcagc aacgcaataa 780

gtagtccacc tggggagtac gttcgcaaga atgaaactca aggaattgac gggaccccac 840

aagcggtgga gcatgtggtt taattcgaag caacgcgaag aaccttacct gatcttgaca 900

tcccgatgcc aaagcgcgta acgcgctctt tcttcggaac atcggtgaca ggtggtgcat 960

ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct 1020

atcttcagta gccagcattc cggatgggca ctctggagag actgccaggg acaacctgga 1080

ggaaggtggg gatgacgtca aatcatcatg ccccttatga ccagggctac acacgtgcta 1140

caatggcgta aacaaaggga ggcgaacccg cgagggtggg caaatcccaa aaataacgtc 1200

tcagttcgga ttgtagtctg caactcgact acatgaagct ggaatcgcta gtaatcgcga 1260

atcagaatgt cgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccatgg 1320

gagtcagtaa cgcccgaagc cggtgaccca acccgca 1357

<210> 1055
<211> 1537
<212> DNA
<213> Lachnospiraceae bacterium 5_1_63FAA

<400> 1055
ttgaacatga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg aaacacctta tttgattttc ttcggaactg aagatttggt gattgagtgg 120

cggacgggtg agtaacgcgt gggtaacctg ccctgtacag ggggataaca gtcagaaatg 180

actgctaata ccgcataaga ccacagcacc gcatggtgca ggggtaaaaa ctccggtggt 240

acaggatgga cccgcgtctg attagctggt tggtgaggta acggctcacc aaggcgacga 300

tcagtagccg gcttgagaga gtgaacggcc acattgggac tgagacacgg cccaaactcc 360

tacgggaggc agcagtgggg aatattgcac aatgggggaa accctgatgc agcgacgccg 420

cgtgagtgaa gaagtatctc ggtatgtaaa gctctatcag cagggaagaa aatgacggta 480

cctgactaag aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcaa 540

gcgttatccg gaattactgg gtgtaaaggg tgcgtaggtg gtatggcaag tcagaagtga 600

aaacccaggg cttaactctg ggactgcttt tgaaactgtc agactggagt gcaggagagg 660

taagcggaat tcctagtgta gcggtgaaat gcgtagatat taggaggaac atcagtggcg 720

aaggcggctt actggactga aactgacact gaggcacgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgaatact aggtgtcggg gccgtagagg 840

cttcggtgcc gcagccaacg cagtaagtat tccacctggg gagtacgttc gcaagaatga 900

aactcaaagg aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc 960

aacgcgaaga accttacctg gtcttgacat ccttctgacc ggtccttaac cggacctttc 1020

cttcgggaca ggagagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaaccccta tctttagtag ccagcatata aggtgggcac 1140

tctagagaga ctgccaggga taacctggag gaaggtgggg acgacgtcaa atcatcatgc 1200

cccttatgac cagggctaca cacgtgctac aatggcgtaa acagagggaa gcagcctcgt 1260

gagagtgagc aaatcccaaa aataacgtct cagttcggat tgtagtctgc aactcgacta 1320

catgaagctg gaatcgctag taatcgcgaa tcagaatgtc gcggtgaata cgttcccggg 1380

tcttgtacac accgcccgtc acaccatggg agtcagtaac gcccgaagtc agtgacccaa 1440

ccgtaaggag ggagctgccg aaggcgggac cgataactgg ggtgaagtcg taacaaggta 1500

gccgtatcgg aaggtgcggc tggatcacct cctttct 1537

<210> 1056
<211> 1370
<212> DNA
<213> Lachnospiraceae bacterium 6_1_63FAA

<400> 1056
cgaagcactt atcattgact cttcggaaga tttgatattt gactgagcgg cggacgggtg 60

agtaacgcgt gggtaacctg cctcatacag gggaataaca gttagaaatg gctgctaatg 120

ccgcataagc gcacaggacc gcatggtctg gtgtgaaaaa ctgaggtggt atgagatgga 180

cccgcgtctg attaggtagt tggtggggta acggcctacc aagccgacga tcagtagccg 240

gcctgagagg gtgaacggcc acattgggac tgagacacgg cccagactcc tacgggaggc 300

agcagtgggg aatattgcac aatgggggaa accctgatgc agcgacgccg cgtgaaggaa 360

gaagtatctc ggtatgtaaa cttctatcag cagggaagaa aatgacggta cctgactaag 420

aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcaa gcgttatccg 480

gatttactgg gtgtaaaggg agcgtagacg gaagagcaag tctgatgtga aaggctgggg 540

cttaacccca ggactgcatt ggaaactgtt tttctagagt gccggagagg taagcggaat 600

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcggctt 660

actggacggt aactgacgtt gaggctcgaa agcgtgggga gcaaacagga ttagataccc 720

tggtagtcca cgccgtaaac gatgaatact aggtgtcggg gtgcaaagca gttcggtgcc 780

gcagcaaacg caataagtat tccacctggg gagtacgttc gcaagaatga aactcaaagg 840

aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 900

agctttacta ggtgtaaagg gagcctagac ggtacatcaa ctgtgatgtg aaaggcgaca 960

ggcaagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1020

cgcaacgagc gcaaccccta tccttagtag ccagcagtcc ggctgggcac tctagggaga 1080

ctgccgggga taacccggag gaaggcgggg acgacgtcaa atcatcatgc cccttatgat 1140

ttgggctaca cacgtgctac aatggcgtaa acaaagggaa gcgaagcggt gacgcttagc 1200

aaatctcaaa aataacgtcc cagttcggac tgcagtctgc aactcgactg cacgaagctg 1260

gaatcgctag taatcgcgaa tcagaatgtc gcggtgaata cgttcccggg tcttgtacac 1320

accgcccgtc acaccatggg agtcagtaac gcccgaagtc agtgacccaa 1370

<210> 1057
<211> 1527
<212> DNA
<213> Lachnospiraceae bacterium 8_1_57FAA

<400> 1057
gagagtttga tcctggctca ggatgaacgc tggcggcgtg cctaacacat gcaagtcgag 60

cgaagcactt tgcttagatt cttcggatga agaggattgt gactgagcgg cggacgggtg 120

agtaacgcgt gggtaacctg cctcatacag ggggataaca gttagaaatg actgctaata 180

ccgcataaga ccacagcacc gcatggtgcg ggggtaaaaa ctccggtggt atgagatgga 240

cccgcgtctg attagctagt tggtaaggta acggcttacc aaggcgacga tcagtagccg 300

acctgagagg gtgaccggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

agcagtgggg aatattgcac aatgggggaa accctgatgc agcgacgccg cgtgagcgaa 420

gaagtatttc ggtatgtaaa gctctatcag cagggaagaa aatgacggta cctgactaag 480

aagcaccggc taaatacgtg ccagcagccg cggtaatacg tatggtgcaa gcgttatccg 540

gatttactgg gtgtaaaggg agcgtagacg gatgggcaag tctgatgtga aaacccgggg 600

ctcaaccccg ggactgcatt ggaaactgtt catctagagt gctggagagg taagtggaat 660

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcggctt 720

actggacagt aactgacgtt gaggctcgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatgactact aggtgtcggg tggcaaagcc attcggtgcc 840

gcagcaaacg caataagtag tccacctggg gagtacgttc gcaagaatga aactcaaagg 900

aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttacctg ctcttgacat cccgctgacc ggacggtaat gcgtccttcc cttcggggca 1020

gcggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaaccccta tctttagtag ccagcggcca ggccgggcac tctagagaga 1140

ctgccgggga taacccggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgag 1200

cagggctaca cacgtgctac aatggcgtaa acaaagggaa gcgagaccgc gaggtggagc 1260

aaatcccaaa aataacgtct cagttcggat tgtagtctgc aactcgacta catgaagctg 1320

gaatcgctag taatcgcgaa tcagaatgtc gcggtgaata cgttcccggg tcttgtacac 1380

accgcccgtc acaccatggg agtcagtaac gcccgaagtc agtgacccaa ccgtaaggag 1440

ggagctgccg aaggcgggac cgataactgg ggtgaagtcg taacaaggta gccgtatcgg 1500

aaggtgcggc tggatcacct cctttct 1527

<210> 1058
<211> 1387
<212> DNA
<213> Lachnospiraceae bacterium 9_1_43BFAA

<220>
<221> modified_base
<222> (13)..(13)
<223> a, c, t, g, unknown or other

<400> 1058
tcgaacgaag cancttgaat ggaattcttc ggaaggaagc tcaagtgact gagtggcgga 60

cgggtgagta acgcgtgggt aacctgcctc atacaggggg ataacagtta gaaatgactg 120

ctaataccgc ataagcacac gtgatcgcat gatcgagtgt gaaaaactcc ggtggtatga 180

gatggacccg cgtctgatta gcttgttggt ggggtaacgg cccaccaagg cgacgatcag 240

tagccggcct gagagggtga acggccacat tgggactgag acacggccca aactcctacg 300

ggaggcagca gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg acgccgcgtg 360

aaggatgaag tatttcggta tgtaaacttc tatcagcagg gaagaaaatg acggtacctg 420

actaagaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt 480

tatccggatt tactgggtgt aaagggagcg tagacggcag tgcaagtctg aagtgaaagc 540

ccggggctca accccgggac tgctttggaa actgtgcagc tggagtgtcg gagaggcaag 600

cggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg 660

cggcttgctg gacgataact gacgttgagg ctcgaaagcg tggggagcaa acaggattag 720

ataccctggt agtccacgcc gtaaacgatg actactaggt gtcggggagc aaagctcttc 780

ggtgccgcag ccaacgcaat aagtagtcca cctggggagt acgttcgcaa gaatgaaact 840

caaaggaatt gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 900

cgaagaacct tacctgctat tgacatccct ctgaccgctc tttaatccgg gggttccacc 960

cggggactgg tttggaaagg ggcatggtgg tcgtcagctc gtgtcgtgag atgttgggtt 1020

aagtcccgca acgagcgcaa cccctatctt cagtagccag cattaaggat gggcactctg 1080

gagagactgc cagggataac ctggaggaag gtggggatga cgtcaaatca tcatgcccct 1140

tatgagcagg gctacacacg tgctacaatg gcgtaaacaa agggaagcag agtcgtgagg 1200

ccgagcaaat cccaaaaata acgtctcagt tcggattgta gtctgcaact cgactacatg 1260

aagctggaat cgctagtaat cgcgaatcag aatgtcgcgg tgaatacgtt cccgggtctt 1320

gtacacaccg cccgtcacac catgggagtc agtaacgccc gaagtcagtg acccaaccgt 1380

aaggagg 1387

<210> 1059
<211> 1483
<212> DNA

<213> Lachnospiraceae bacterium A4

<400> 1059
agagtttgat catggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggactcatat tgaaacctag tgatgtatga gttagtggcg gacgggtgag taacgcgtgg 120

agaacctgcc gtatactggg ggataacact tagaaatagg tgctaatacc gcataagcgc 180

acagcttcgc atgaagcagt gtgaaaaact ccggtggtat acgatggatc cgcgtctgat 240

tagcttgttg gcggggtaaa ggcccaccaa ggcgacgatc agtagccggc ctgagagggt 300

gaacggccac attgggactg agacacggcc caaactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggggaaac cctgatgcag cgacgccgcg tgagtgaaga agtatttcgg 420

tacgtaaagc tctatcagca gggaagaaaa tgacggtacc tgactaagaa gccccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggggcaagc gttatccgga tttactgggt 540

gtaaagggag cgtagacggc agcgcaagtc tggagtgaaa tcccatggct taaccatgga 600

actgctttgg aaactgtgca gctggagtgc aggagaggta agcggaattc ctagtgtagc 660

ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa ggcggcttac tggactgtaa 720

ctgacgttga ggctcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 780

ctgtaaacga tgattactag gtgttggggg accaaggtcc ttcggtgccg tcgcaaacgc 840

attaagtaat ccacctgggg agtacgttcg caagaatgaa actcaaagga attgacgggg 900

acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttacctgg 960

tcttgacatc ccagtgacgc atgagtaaag tcatgtttcc ttcgggacac tggagacagg 1020

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccctat ttccagtagc cagcatgtaa agatgggcac tctggagaga ctgcctagga 1140

taactaggag gaaggcgggg atgacgtcaa atcatcatgc cccttatgat cagggctaca 1200

cacgtgctac aatggcgtaa acaaagggaa gcaaagcggt gacgccaagc aaatcccaaa 1260

aataacgtct cagttcggat tgtagtctgc aactcgacta catgaagctg gaatcgctag 1320

taatcgcgaa tcagaatgtc gcggtgaata cgttcccggg tcttgtacac accgcccgtc 1380

acaccatggg agtcggaaat gcccgaagtc agtgacctaa ccgaaaggga ggagctgccg 1440

aaggtggagc cggtaactgg ggtgaagtcg taacaaggta acc 1483

<210> 1060
<211> 1485
<212> DNA
<213> Lachnospiraceae bacterium DJF VP30

<220>
<221> modified_base
<222> (485)..(485)
<223> a, c, t, g, unknown or other

<400> 1060
agagtttgat catggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggagtcatcc tctgtcaaag cttcggcaga gacttggtta acttagtggc ggacgggtga 120

gtaacgcgtg ggtaacctgc catgtacagg gggataacac ttagaaatag gtgctaaaac 180

cgcataagcg cacggtaccg catggtacag tgtgaaaaac tccggtggta catgatggac 240

ccgcgtctga ttagccagtt ggcagggtaa cggcctacca aagcgacgat cagtagccgg 300

cctgagaggg tgaacggcca cattgggact gagacacggc ccaaactcct acgggaggca 360

gcagtgggga atattgcaca atgggggaaa ccctgatgca gcgacgccgc gtgagtgaag 420

aagtatttcg gtatgtaaag ctctatcagc aggaagaaat caatgcggta cctgactaag 480

aagcnccggc taactacgtg ccagcagccg cggtaatacg taggggcaa gcgttatccg 540

gatttactgg gtgtaaaggg agcgtagacg gcatggcaag tctgaagtga aaggccaggg 600

ctcaaccctg ggactgcttt ggaaactgtc aggctggagt gcaggagagg taagtggaat 660

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcggctt 720

actggactgt aactgacgtt gaggctcgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatgaatact aggtgtcggg gagtatagac ttttcggtgc 840

cgcagccaac gcaataagta ttccacctgg ggagtacgtt cgcaagaatg aaactcaaag 900

gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag 960

aaccttacct ggtcttgaca tcccgatgac cggacagtaa tgtgtccttt tcttcggaac 1020

attggagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaacccct atcttcagta gccagcaagt aaagttgggc actctggaga 1140

gactgccggg gataacccgg aggaaggcgg ggatgacgtc aaatcatcat gcccccttatg 1200

accagggcta cacacgtgct acaatggcgt aaacagaggg aagcgagagc gtgagctgga 1260

gcaaatccca aaaataacgt cccagttcgg attgtagtct gcaactcgac tacatgaagc 1320

tggaatcgct agtaatcgcg aatcagcatg tcgcggtgaa tacgttcccg ggtcttgtac 1380

acaccgccgt cacaccatgg gagtcggaaa tgcccgaagt cggtgaccta accgtaagga 1440

aggagccgcc gaagcaggtc tgataactgg ggtgaagtcg taaca 1485

<210> 1061
<211> 1255
<212> DNA
<213> Lachnospiraceae bacterium ICM62

<400> 1061
acgctggcgg cgtgcttaac acatgcaagt cgaacgagtg gcggacgggt gagtaacgcg 60

tggataacct gccttataca gggggataac ggagagaaat ttccgctaac accgcataag 120

aaaattaggt ataagatgga tccgcgtccg attagctagt tggtgaggta aaggcccacc 180

aaggcgacga tcggtagccg gcctgagagg gtgaacggcc acattgggac tgagacacgg 240

cccaaactcc tacgggaggc agcagtgggg aatattggac aatgggggaa accctgatcc 300

agcgacgccg cgtgagtgaa gaagtatttc ggtatgtaaa gctctatcag cagggaagat 360

gacggtacct gactaagaag ccccggctaa ctacgtgcca gcagccgcgg taatacgtag 420

ggggcaagcg ttatccggat ttactgggtg taaagggagc gcagacggca atgcaagtct 480

gaagtgaaag gcgtgggctc aacccatgaa ctgctttgga aactgtatag cttgagtgtc 540

ggaggggtaa gcggaattcc tagtgtagcg gtgaaatgcg tagatattag gaggaacacc 600

ggaggcgaag gcggcttact ggacgaactg acgttgaggc tcgaaggcgt ggggagcaaa 660

caggattaga taccctggta gtccacgcag taaacgatga atacttggtg tcggggcttc 720

ggtgccgcag ctaacgcatt aagtattcca cctggggagt acgttcgcaa gaatgaaact 780

caaaggaatt gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 840

cgaagaacct taccaaatct tgacatatac aggtggtgca tggttgtcgt cagctcgtgt 900

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcgtcagt agccagcatg 960

ggcactctga cgagacagcc ggagataatc cggaggaagg tggggatgac gtcaaatcat 1020

catgcccctt atgatttggg ctacacacgt gctacaatgg cgtacaaagt gaagcaaagc 1080

cgcgaggcca agcaaatcac aaaacgtctc agttcggatg tagtctgcaa ctcgactata 1140

gaagctggaa tcgctagtaa tcgcagatca gaatgctgcg gtgaatacgt tcccgggtct 1200

tgtacacacc gcccgtcaca ccatgggagt catcaatgcc cgaagtcagt accta 1255

<210> 1062
<211> 1406
<212> DNA
<213> Lachnospiraceae bacterium MSX33

<400> 1062
ggcgtgctta acacatgcaa gtcgaacgaa gctgcccaaa ggaagttttc ggatggaatt 60

taggtagact tagtggcgga cgggtgagta acgcgtggat aacctgcctt atacaggggg 120

ataacggaga gaaatttccg ctaacaccgc ataagaccac agcaccgcat ggtgcagggg 180

taaaatattt ataggtataa gatggatccg cgtccgatta gctagttggt gaggtaaagg 240

cccaccaagg cgacgatcgg tagccggcct gagagggtga acggccacat tgggactgag 300

acacggccca aactcctacg ggaggcagca gtggggaata ttggacaatg ggggaaaccc 360

tgatccagcg acgccgcgtg agtgaagaag tatttcggta tgtaaagctc tatcagcagg 420

gaagaaaatg acggtacctg actaagaagc cccggctaac tacgtgccag cagccgcggt 480

aatacgtagg gggcaagcgt tatccggatt tactgggtgt aaagggagcg cagacggcaa 540

tgcaagtctg aagtgaaagg cgtgggctca acccatgaac tgctttggaa actgtatagc 600

ttgagtgtcg gaggggtaag cggaattcct agtgtagcgg tgaaatgcgt agatattagg 660

aggaacaccg gaggcgaagg cggcttactg gacgacaact gacgttgagg ctcgaaggcg 720

tggggagcaa acaggattag ataccctggt agtccacgca gtaaacgatg aatacttggt 780

gtcggggagg taaactcttc ggtgccgcaa gctaacgcat taagtattcc acctggggag 840

tacgttcgca agaatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 900

gtggtttaat tcgaagcaac gcgaagaacc ttaccaaatc ttgacatact cttgaatagc 960

tttgtaatga agctagtcct tcgggacaag ggatacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgtc gtcagtagcc 1080

agcagtaaga tgggcactct gacgagacag ccggagataa tccggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgatttg ggctacacac gtgctacaat ggcgtaaaca 1200

aagtgaagca aagccgcgag gtcaagcaaa tcacaaaaat aacgtctcag ttcggattgt 1260

agtctgcaac tcgactatat gaagctggaa tcgctagtaa tcgcagatca gaatgctgcg 1320

gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccatgggagt catcaatgcc 1380

cgaagtcagt gacctaaccg taagga 1406

<210> 1063
<211> 1536
<212> DNA
<213> Lachnospiraceae bacterium oral taxon 107

<400> 1063
ttttatatga gagtttgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg aagctgctta aaggaagttt tcggatggaa tttaggtaga cttagtggcg 120

gacgggtgag taacgcgtgg ataacctgcc ttatacaggg ggataacgga gagaaatttc 180

cgctaacacc gcataagacc acagcaccgc atggtgcagg ggtaaaatat ttataggtat 240

aagatggatc cgcgtccgat tagctagttg gtgaggtaga ggctcaccaa ggcgacgatc 300

ggtagccggc ctgagagggt gaacggccac attgggactg agacacggcc caaactccta 360

cgggaggcag cagtggggaa tattggacaa tgggggaaac cctgatccag cgacgccgcg 420

tgagtgaaga agtatttcgg tatgtaaagc tctatcagca gggaagaaaa tgacggtacc 480

tgactaagaa gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc 540

gttatccgga tttactgggt gtaaagggag cgcagacggc aatgcaagtc tgaagtgaaa 600

ggcgtgggct caacccatga actgctttgg aaactgtata gcttgagtgt cggaggggta 660

agcggaattc ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cggaggcgaa 720

ggcggcttac tggacgacaa ctgacgttga ggctcgaagg cgtggggagc aaacaggatt 780

agataccctg gtagtccacg cagtaaacga tgaatacttg gtgtcggaga ggtaaactct 840

tcggtgccgc aagctaacgc attaagtatt ccacctgggg agtacgttcg caagaatgaa 900

actcaaagga attgacgggg acccgcacaa gcggtggagc atgtggttta attcgaagca 960

acgcgaagaa ccttaccaaa tcttgacata ctcttgaata gtcttgtaat gagactagtc 1020

cttcgggaca agggatacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaacccttg tcgtcagtag ccagcagtaa gatggggact 1140

ctgacgagac agccggagat aatccggagg aaggtgggga tgacgtcaaa tcatcatgcc 1200

ccttatgatt tgggctacac acgtgctaca atggcgtaaa caaagtgaag caaagctgcg 1260

aagccaagca aatcacaaaa ataacgtctc agttcggatt gtagtctgca actcgactat 1320

atgaagctgg aatcgctagt aatcgcagat cagaatgctg cggtgaatac gttcccgggt 1380

cttgtacaca ccgcccgtca caccatggga gtcatcaatg cccgaagtca gtgacctaac 1440

cgtaaggaag gagctgccga aggcagggag gataactggg gtgaagtcgt aacaaggtag 1500

ccgtatcgga aggtgcggct ggatcacctc ctttct 1536

<210> 1064
<211> 1487
<212> DNA
<213> Lachnospiraceae bacterium oral taxon F15

<400> 1064
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gaagcattta gaagttttcg gacggaagaa tgacttagtg gcggacgggt gagtaacgcg 120

tgggtaacct gccttataca gggggataac agttggaaac gactgctaat accgcataac 180

ccgatagagt cgcatgactt agtcggaaaa gatttatcgg tataagatgg acccgcgtct 240

gattagctag ttggtgaggt aatggcccac caaggcgacg atcagtagcc ggcttgagag 300

agtgaacggc cacattggga ctgagacacg gcccaaactc ctacgggagg cagcagtggg 360

gaatattgca caatggggga aaccctgatg cagcaacgcc gcgtgaagga tgaagtattt 420

cggtatgtaa acttctatca gcagggaaga aattgacggt acctgactaa gaagccccgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggggggca agcgttatcc ggatttactg 540

ggtgtaaagg gagcgtaggc ggcaatgcaa gtccgatgtg aaagcccggg gctcaacccc 600

gggactgcat tagaaactgt gttgctagag tgcaggagag gtaagtggaa ttcctagtgt 660

agcggtgaaa tgcgtagata ttaggaggaa caccagtggc gaaggcgact tactggactg 720

aaactgacgc tgaggctcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgccgtaaa cgatgaatac taggtgtcgg ggcccatccg ggcttcggtg ccgcggctaa 840

cgcaataagt attccacctg gggagtacgt tcgcaagaat gaaactcaaa ggaattgacg 900

gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 960

aagtcttgac atcccattga ccgtcccgta acggggactt ctcttcggag caatggagac 1020

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcagccct tatctttagt agccagcatt taaggtgggc actctagaga gactgccggg 1140

gataacccgg aggaaggcgg ggatgacgtc aaatcatcat gccccttatg atttgggcta 1200

cacacgtgct acaatggcgt aaacaaaggg aagcaacagg gtgacctcaa gcaaatccca 1260

aaaataacgt cccagttcgg attgtagtct gcaactcgac tacatgaagc tggaatcgct 1320

agtaatcgcg gatcagaatg ccgcggtgaa tacgttcccg ggtcttgtac acaccgcccg 1380

tcacaccatg ggagtcggaa atgcccgaag tcagtgaccc aaccgcaagg agggagctgc 1440

cgaaggtgga gccgataact ggggtgaagt cgtaacaagg tagccgt 1487

<210> 1065
<211> 1330
<212> DNA

<213> Lachnospiraceae genomosp. C1

<400> 1065
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac gaatggcgga cgggtgagta 60

acgcgtgggt aacctgcctc atacaggggg ataacagttg gaaacgactg ttaataccgc 120

ataagaaaaa gtggtatgag atggacccgc gttcgattag ccagttggcg gggtaacggc 180

ccaccaaagc gacgatcgat agccgatctg agaggatgac cggccacatt gggactgaga 240

cacggcccaa actcctacgg gaggcagcag tggggaatat tgcacaatgg gggaaaccct 300

gatgcagcga cgccgcgtga gtgaagaagt atttcggtat gtaaagctct atcagcaggg 360

aagatgacgg tacctgagta agaagccccg gctaactacg tgccagcagc cgcggtaata 420

cgtaggggcc aagcgttatc cggatttact gggtgtaaag ggagcgcaga cggctctgca 480

agtctgaagt gaaagcccgc ggcttaaccg cgggactgct ttggaaactg caaggcttga 540

gtatcggagg ggcaggcgga attcctagtg tagcggtgaa atgcgtagat attaggaaga 600

acaccggtgg cgaaggcggc ctgctggacg aactgacgtt gaggctcgaa ggcgtgggga 660

gcaaacagga ttagataccc tggtagtcca cgcggtaaac gatgaatact aggtgttggt 720

gcatcggtgc cgtcgcaaac gcaataagta ttccacctgg ggagtacgtt cgcaagaatg 780

aaactcaaag gaattgacgg ggacccgcac aagcagtgga gcatgtggtt taattcgaag 840

caacgcgaag aaccttacca aatcttgaca tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctattg ccggtagcca 960

gcagctgggc actccggcga gactgcccgg gataaccggg aggaaggcgg ggatgacgtc 1020

aaatcatcat gccccttatg atttgggcaa cacacgtgct acaatggcgt tcaaagagaa 1080

gcgagaacgc gagtttaagc aaagctcaaa acgtctcagt tcggatgcag tctgcaactc 1140

gactgcagaa gctggaattg ctagtaatcg cgaatcagca tgtcgcggtg aatacgttcc 1200

cgggtcttgt acacaccgcc cgtcacacca tgggagtcag caacgcccga agtcggtacc 1260

cagggagctg ccgaaggcgg ggcggataac tggggtgaag tcgtaacaag gtagccgtat 1320

cggaaggtgc 1330

<210> 1066
<211> 1406
<212> DNA
<213> Lactobacillus acidipiscis

<220>
<221> modified_base
<222> (69)..(69)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (461)..(461)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (651)..(651)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (678)..(678)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (828)..(828)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1221)..(1221)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1223)..(1223)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1242)..(1242)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1247)..(1247)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1268)..(1268)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1282)..(1282)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1287)..(1287)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1321)..(1321)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1386)..(1386)
<223> a, c, t, g, unknown or other

<400> 1066
acgctggcgg cgtgcctaat acatgcaagt cgaacgcaat ctttgaccaa tgagtgcttg 60

cactcagcng tcaaagtgcg agtggcgaac gggtgagtaa cacgtgggca atctgcccaa 120

aagtggggga taacacttgg aaacaggtgc taataccgca tcaaccggct gaccgcatgg 180

tcggccgggc aaagacggcg tcagctgtcg cttttggatg agcccgcggc gtattaacta 240

gttggtaagg taacggctta ccaaggtgat gatacgtagc cgaactgaga ggttgatcgg 300

ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtag ggaatcttcc 360

acaatggacg caagtctgat ggagcaacgc cgcgtgtatg aagaaggtct tcggatcgta 420

aaatactgtt gtcagagaag aacacgtgat agagtaactg ntatggcgct gacggtatct 480

gaccagcaag tcacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg 540

ttgtccggat ttattgggcg taaagggaac gcaggcggtc ttttaagtct gatgtgaaag 600

ccttcggctt aaccggagaa gtgcattgga aactggaaga cttgagtgca naagaggaga 660

gtggaactcc atgtgtancg gtgaaatgcg taaatatatg gaagaacacc agtggcgaaa 720

gcggctctct ggtctgtaac tgacgctgag gttcgaaagc gtggggagcg aacaggatta 780

gataccctgg tagtccacgc tgtaaacgat gaatgctagg tgttggangg tttccgccct 840

tcggtgccgc agctaacgca ctaagcattc cgcctgggga gtacgatcgc aagattgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 960

cgcgaagaac cttaccaggt cttgacatct tttgaccatc tgagagatca gaatttccct 1020

tcggggacaa aatgacaggt ggtgcatggc tgtcgtccag ctcgtgttcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta ttgtcagttg ccagcattca gttgggcact 1140

ctggcgagac tgccggtgac aaaccggagg aaggtgggga tgacgtcaag tcatcatgcc 1200

ccttatgacc tgggctacac ncntgctaca atggacgata cnacgantcg cgagaccgcg 1260

aggtttanct aatctctgaa antcgtnctc agttcggatc gtaggctgca actcgcctac 1320

ntgaagtcgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggc 1380

cttgtncaca ccgcccgtca caccat 1406

<210> 1067
<211> 1421
<212> DNA
<213> Lactobacillus acidophilus

<400> 1067
agcgagctga accaacagat tcacttcggt gatgacgttg ggaacgcgag cggcggatgg 60

gtgagtaaca cgtggggaac ctgccccata gtctgggata ccacttggaa acaggtgcta 120

ataccggata agaaagcaga tcgcatgatc agcttataaa aggcggcgta agctgtcgct 180

atgggatggc cccgcggtgc attagctagt tggtagggta acggcctacc aaggcaatga 240

tgcatagccg agttgagaga ctgatcggcc acattgggac tgagacacgg cccaaactcc 300

tacgggaggc agcagtaggg aatcttccac aatggacgaa agtctgatgg agcaacgccg 360

cgtgagtgaa gaaggttttc ggatcgtaaa gctctgttgt tggtgaagaa ggatagaggt 420

agtaactggc ctttatttga cggtaatcaa ccagaaagtc acggctaact acgtgccagc 480

agccgcggta atacgtaggt ggcaagcgtt gtccggattt attgggcgta aagcgagcgc 540

aggcggaaga ataagtctga tgtgaaagcc ctcggcttaa ccgaggaact gcatcggaaa 600

ctgtttttct tgagtgcaga agaggagagt ggaactccat gtgtagcggt ggaatgcgta 660

gatatatgga agaacaccag tggcgaaggc ggctctctgg tctgcaactg acgctgaggc 720

tcgaaagcat gggtagcgaa caggattaga taccctggta gtccatgccg taaacgatga 780

gtgctaagtg ttgggaggtt tccgcctctc agtgctgcag ctaacgcatt aagcactccg 840

cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg 900

gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatctaa 960

tgcaatccgt agagatacgt atttcccttc ggggacacta agacaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtcat 1080

tagttgccag cattaagttg ggcactctaa tgagactgcc ggtgacaaac cggaggaagg 1140

tggggatgac gtcaagtcat catgcccctt atgacctggg ctacacacgt gctacaatgg 1200

acagtacaac gaggagcaag cctgcgaagg caagcgaatc tcttaaagct gttctcagtt 1260

cggactgcag tctgcaactc gactgcacga agctggaatc gctagtaatc gcggatcagc 1320

acgccgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgggagtct 1380

gcaatgccca aagccggtgg cctaaccttc gggaaggagc c 1421

<210> 1068
<211> 1515
<212> DNA
<213> Lactobacillus alimentarius

<220>
<221> modified_base
<222> (1)..(1)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (82)..(82)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (214)..(214)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (217)..(217)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (260)..(260)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (359)..(360)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (765)..(765)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (767)..(767)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (957)..(957)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (992)..(992)
<223> a, c, t, g, unknown or other

<400> 1068
ntaatatgag agtttgatcc tggctcagga cgaacgctgg cggcatgcct aatacatgca 60

agtcgaacga actttcctat tnattgatgc ttgcatcatg atttagatct aagtgagtgg 120

cggacgggtg agtaacacgt gggtaacctg cccagaagtg ggggataaca tttggaaaca 180

agtgctaata ccgcataaca acattaaaca catnttnttt gtttaaaaga tggttttgct 240

atctcttctg gatggacccn cggcgtatta gctagttggt gaggtaatag ctcaccaagg 300

cgatgatacg tagccgacct gagagggtaa tcggccacat tgggactgag acacggccnn 360

aactcctacg ggaggcagca gtagggaatc ttccacaatg gacgaaagtc tgatggagca 420

atgccgcgtg agtgaagaag gttttcggat cgtaaaactc tgttgttgaa gaagaacata 480

tgtgagagta actgttcacg tactgacggt attcaaccag aaagccacgg ctaactacgt 540

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaaga 600

gaatgtaggc ggttcattaa gtttgaagtg aaagccctcg gctcaaccga ggaagtgctt 660

cgaaaactgg tgaacttgag tgcagaagag gaaagtggaa ctccatgtgt agcggtggaa 720

tgcgtagata tatggaagaa caccagtggc gaaggcggct ttctngnctg taactgacgc 780

tgagattcga aagcatgggt agcaaacagg attagatacc ctggtagtcc atgccgtaaa 840

cgatgagtgc taagtgttgg agggtttccg cccttcagtg ctgcagctaa cgcattaagc 900

actccgcctg gggagtacga tcgcaagatt gaaactcaaa ggaattgacg ggggccngca 960

caagcggtgg agcatgtggt ttaattcgaa gnaacgcgaa gaaccttacc aggtcttgac 1020

ataccatgaa aagctaagag attagtcttt cccttcgggg acatggatac aggtggtgca 1080

tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1140

tattatcagt tgccagcatt cagttgggca ctctggtgag actgccggtg ataaaccgga 1200

ggaaggtggg gacgacgtca aatcatcatg ccccttatga cctgggctac acacgtgcta 1260

caatggtcgg tacaacgtgt tgcgaactcg cgagggcaag caaatcactt aaaaccgatc 1320

tcagttcgga ttgcaggctg caactcgcct gcatgaagct ggaatcgcta gtaatcgcgg 1380

atcagcatgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga 1440

gagtttgtaa cacccaaagt cggtggggta accttcggg gaactagccg cctaaggtgg 1500

gacaaatgat taggg 1515

<210> 1069
<211> 1561
<212> DNA
<213> Lactobacillus amylolyticus

<400> 1069
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcgagcagaa ctaacagatc tacttcggta gtgacgtttc ggaagcgagc ggcggatggg 120

tgagtaacac gtgggtaacc tgcccttaag tctgggatac cacttggaaa caggtgctaa 180

taccggataa caacaagtgc tgcatggcac ttgcttgaaa ggcggcgcaa gctgtcgcta 240

aaggatggac ccgcggtgca ttagctagtt ggtaaggtaa cggcttacca aggcaacgat 300

gcatagccga gttgagagac tgatcggcca cattgggact gagacacggc ccaaactcct 360

acgggaggca gcagtaggga atcttccaca atgggcgaaa gcctgatgga gcaacgccgc 420

gtgagtgaag aaggttttcg gatcgtaaag ctctgttgtt ggtgaagaag gatagaggta 480

gtaactggcc tttatttgac ggtaatcaac cagaaagtca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa agcgagcgca 600

ggcggagaaa taagtctgat gtgaaagccc tcggcttaac cggggaattg catcggaaac 660

tgtttttctt gagtgcagaa gaggagagtg gaactccatg tgtagcggtg gaatgcgtag 720

atatatggag gaacaccagt ggcgaaggcg gctctctggt ctgtaactga cgctgaggct 780

cgaaagcatg ggtagcgaac aggattagat accctggtag tccatgccgt aaacgatgag 840

tgctaagtgt tgggaggctt ccgcctctca gtgctgcagc taacgcatta agcactccgc 900

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 960

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatctagc 1020

gcaatccgta gagatacgga gttcccttcg gggacgctaa gacaggtggt gcatggctgt 1080

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtcatt 1140

agttgccagc attaagttgg gcactctaat gagactgccg gtgacaaacc ggaggaaggt 1200

ggggacgacg tcaagtcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg 1260

cagtacaacg agaagcaagc ctgcgaaggc aagcgaatct ctgaaagctg ttctcagttc 1320

ggactgcagt ctgcaactcg actgcacgaa gctggaatcg ctagtaatcg cggatcagca 1380

cgccgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcacacca tgggagtctg 1440

caatgcccga agccggtggc ctaaccttcg ggaaggagcc gtctaaggca gggcagatga 1500

ctggggtgaa gtcgtaacaa ggtagccgta ggagaacctg cggctggatc acctcctttc 1560

t 1561

<210> 1070
<211> 1575
<212> DNA
<213> Lactobacillus amylovorus

<400> 1070

tttaaaatga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgagcg agcggaacca acagatttac ttcggtaatg acgttgggaa agcgagcggc 120

ggatgggtga gtaacacgtg gggaacctgc ccctaagtct gggataccat ttggaaacag 180

gtgctaatac cggataataa agcagatcgc atgatcagct tttgaaaggc ggcgtaagct 240

gtcgctaagg gatggccccg cggtgcatta gctagttggt aaggtaacgg cttaccaagg 300

cgacgatgca tagccgagtt gagagactga tcggccacat tgggactgag acacggccca 360

aactcctacg ggaggcagca gtagggaatc ttccacaatg gacgcaagtc tgatggagca 420

acgccgcgtg agtgaagaag gttttcggat cgtaaagctc tgttgttggt gaagaaggat 480

agaggtagta actggccttt atttgacggt aatcaaccag aaagtcacgg ctaactacgt 540

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 600

gagcgcaggc ggaaaaataa gtctaatgtg aaagccctcg gcttaaccga ggaactgcat 660

cggaaactgt ttttcttgag tgcagaagag gagagtggaa ctccatgtgt agcggtggaa 720

tgcgtagata tatggaagaa caccagtggc gaaggcggct ctctggtctg caactgacgc 780

tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc atgccgtaaa 840

cgatgagtgc taagtgttgg gaggtttccg cctctcagtg ctgcagctaa cgcattaagc 900

actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg gggcccgca 960

caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac 1020

atctagtgca atctgtagag atacggagtt cccttcgggg acgctaagac aggtggtgca 1080

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1140

tgttattagt tgccagcatt aagttgggca ctctaatgag actgccggtg acaaaccgga 1200

ggaaggtggg gatgacgtca agtcatcatg ccccttatga cctgggctac acacgtgcta 1260

caatgggcag tacaacgaga agcaagcctg cgaaggcaag cgaatctctg aaagctgttc 1320

tcagttcgga ctgcagtctg caactcgact gcacgaagct ggaatcgcta gtaatcgcgg 1380

atcagcacgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg 1440

gagtctgcaa tgcccaaagc cggtggccta accttcggga aggagccgtc taaggcaggg 1500

cagatgactg gggtgaagtc gtaacaaggt agccgtagga gaacctgcgg ctggatcacc 1560

tcctttctaa ggaag 1575

<210> 1071
<211> 938
<212> DNA
<213> Lactobacillus antri

<220>
<221> modified_base
<222> (16)..(16)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (18)..(18)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (20)..(21)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (603)..(603)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (642)..(642)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (661)..(661)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (699)..(699)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (768)..(768)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (777)..(777)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (798)..(798)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (836)..(836)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (844)..(844)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (855)..(855)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (913)..(913)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (916)..(916)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (918)..(919)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (931)..(931)
<223> a, c, t, g, unknown or other

<400> 1071
tgcactgaat tgacgntngn ntcccagtga gcggcggacg ggtgagtaac acgtgggcaa 60

cctgccctga agcgggggat aacatctgga aacaggtgct aataccgcat aacaacgaaa 120

accacatggt tttcgtttca aagatggttt cggctatcac ttcaggatgg gcccgcggtg 180

cattagctag ttggtaaggt aacggcttac caaggcgatg atgcatagcc gagttgagag 240

actgatcggc cacaatggaa ctgagacacg gtccatactc ctacgggagg cagcagtagg 300

gaatcttcca caatgggcgc aagcctgatg gagcaacacc gcgtgagtga agaagggttt 360

cggctcgtaa agctctgttg ttggagaaga acgtgcgtga gagtaactgt tcacgcagtg 420

acggtatcca accagaaagt cacggctaac tacgtgccag cagccgcggt aatacgtagg 480

tggcaagcgt tatccggatt tattgggcgt aaagcgagcg caggcggttg cttaggtctg 540

atgtgaaagc cttcggctta accgaagaag tgcatcggaa accgggcgac ttgagtgcag 600

aanaggacag tggaactcca tgtgtagcgg tggaatgcgt anatatatgg aagaacacca 660

ntggcgaagg cggctgtctg gtctgcaact gacgctgang ctcgaaagca tgggtagcga 720

acaggattag ataccctggt agtccatgcc gtaaacgatg agtgctangt gttgganggt 780

ttccgccctt cagtgccnga gctaacgcat taagcactcc gcctggggag tacgancgca 840

aggntgaaac tcaanggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 900

tcgaagctac gcnaanannt taccaggtct ngacatct 938

<210> 1072
<211> 1430
<212> DNA
<213> Lactobacillus brevis

<400> 1072
gaacgagctt ccgttgaatg acgtgcttgc actgatttca acaatgaagc gagtggcgaa 60

ctggtgagta acacgtggga aatctgccca gaagcagggg ataacacttg gaaacaggtg 120

ctaataccgt ataacaacaa aatccgcatg gattttgttt gaaaggtggc ttcggctatc 180

acttctggat gatcccgcgg cgtattagtt agttggtgag gtaaaggccc accaagacga 240

tgatacgtag ccgacctgag agggtaatcg gccacattgg gactgagaca cggcccaaac 300

tcctacggga ggcagcagta gggaatcttc cacaatggac gaaagtctga tggagcaatg 360

ccgcgtgagt gaagaagggt ttcggctcgt aaaactctgt tgttaaagaa gaacaccttt 420

gagagtaact gttcaagggt tgacggtatt taaccagaaa gccacggcta actacgtgcc 480

agcagccgcg gtaatacgta ggtggcaagc gttgtccgga tttattgggc gtaaagcgag 540

cgcaggcggt tttttaagtc tgatgtgaaa gccttcggct taaccggaga agtgcatcgg 600

aaactgggag acttgagtgc agaagaggac agtggaactc catgtgtagc ggtggaatgc 660

gtagatatat ggaagaacac cagtggcgaa ggcggctgtc tagtctgtaa ctgacgctga 720

ggctcgaaag catgggtagc gaacaggatt agataccctg gtagtccatg ccgtaaacga 780

tgagtgctaa gtgttggagg gtttccgccc ttcagtgctg cagctaacgc attaagcact 840

ccgcctgggg agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa 900

gcggtggagc atgtggttta attcgaagct acgcgaagaa ccttaccagg tcttgacatc 960

ttctgccaat cttagagata agacgttccc ttcggggaca gaatgacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat 1080

tatcagttgc cagcattcag ttgggcactc tggtgagact gccggtgaca aaccggagga 1140

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1200

tggacggtac aacgagtcgc gaagtcgtga ggctaagcta atctcttaaa gccgttctca 1260

gttcggattg taggctgcaa ctcgcctaca tgaagttgga atcgctagta atcgcggatc 1320

agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

tttgtaacac ccaaagccgg tgagataacc ttcgggagtc agccgtctaa 1430

<210> 1073
<211> 1578
<212> DNA
<213> Lactobacillus buchneri

<400> 1073
tttaagatga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg cgtcttggtc aatgaagttg agtgcttgca tttaactgat ttgacattaa 120

gacgagtggc gaactggtga gtaacacgtg ggtaacttgc cccgaagcgg gggataacat 180

ttggaaacag gtgctaatac cgcataacaa caaaaaccac atggtttttg tttaaaagat 240

ggtttcggct atcactttgg gatggacccg cggcgtatta gctagttggt gaggtaatgg 300

ctcaccaagg caatgatacg tagccgacct gagagggtaa tcggccacat tgggactgag 360

acacggccca aactcctacg ggaggcagca gtagggaatc ttccacaatg gacgaaagtc 420

tgatggagca acgccgcgtg agtgatgaag ggtttcggct cgtaaaactc tgttgttgga 480

gaagaacggg tgtcagagta actgttgaca tcgtgacggt atccaaccag aaagccacgg 540

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg 600

ggcgtaaagc gagcgcaggc ggtttttag gtctgatgtg aaagccttcg gcttaaccgg 660

agaagtgcat cggaaaccgg gagacttgag tgcagaagag gacagtggaa ctccatgtgt 720

agcggtgaaa tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg 780

caactgacgc tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc 840

atgccgtaaa cgatgagtgc taagtgttgg agggtttccg cccttcagtg ctgcagctaa 900

cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 960

ggggcccgca caagcggtgg agcatgtggt ttaattcgat gctacgcgaa gaaccttacc 1020

aggtcttgac atcttctgct aacctaagag attaggcgtt cccttcgggg acggaatgac 1080

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1140

gcgcaaccct tattgtcagt tgccagcatt tagttgggca ctctggcgag actgccggtg 1200

acaaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga cctgggctac 1260

acacgtgcta caatggacgg tacaacgagt cgcgaaaccg cgaggtcaag ctaatctctt 1320

aaagccgttc tcagttcgga ttgtaggctg caactcgcct acatgaagtt ggaatcgcta 1380

gtaatcgtgg atcagcatgc cacggtgaat acgttcccgg gccttgtaca caccgcccgt 1440

cacaccatga gagtttgtaa cacccaaagc cggtgaggta accttcgggg gccagccgtc 1500

taaggtggga cagatgatta gggtgaagtc gtaacaaggt agccgtagga gaacctgcgg 1560

ctggatcacc tcctttct 1578

<210> 1074
<211> 1573
<212> DNA
<213> Lactobacillus casei

<400> 1074
tttatatgag agtttgatcc tggctcagga tgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacga gttctcgttg atgatcggtg cttgcaccga gattcaacat ggaacgagtg 120

gcggacgggt gagtaacacg tgggtaacct gcccttaagt gggggataac atttggaaac 180

agatgctaat accgcataga tccaagaacc gcatggttct tggctgaaag atggcgtaag 240

ctatcgcttt tggatggacc cgcggcgtat tagctagttg gtgaggtaac ggctcaccaa 300

ggcgatgata cgtagccgaa ctgagaggtt gatcggccac attgggactg agacacggcc 360

caaactccta cgggaggcag cagtagggaa tcttccacaa tggacgcaag tctgatggag 420

caacgccgcg tgagtgaaga aggctttcgg gtcgtaaaac tctgttgttg gagaagaatg 480

gtcggcagag taactgttgt cggcgtgacg gtatccaacc agaaagccac ggctaactac 540

gtgccagcag ccgcggtaat acgtaggtgg caagcgttat ccggatttat tgggcgtaaa 600

gcgagcgcag gcggtttttt aagtctgatg tgaaagccct cggcttaacc gaggaagcgc 660

atcggaaact gggaaacttg agtgcagaag aggacagtgg aactccatgt gtagcggtga 720

aatgcgtaga tatatggaag aacaccagtg gcgaaggcgg ctgtctggtc tgtaactgac 780

gctgaggctc gaaagcatgg gtagcgaaca ggattagata ccctggtagt ccatgccgta 840

aacgatgaat gctaggtgtt ggagggtttc cgcccttcag tgccgcagct aacgcattaa 900

gcattccgcc tggggagtac gaccgcaagg ttgaaactca aaggaattga cgggggcccg 960

cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaggtcttg 1020

acatcttttg atcacctgag agatcaggtt tcccccttcgg gggcaaaatg acaggtggtg 1080

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1140

cttatgacta gttgccagca tttagttggg cactctagta agactgccgg tgacaaaccg 1200

gaggaaggtg gggatgacgt caaatcatca tgccccttat gacctgggct acacacgtgc 1260

tacaatggat ggtacaacga gttgcgagac cgcgaggtca agctaatctc ttaaagccat 1320

tctcagttcg gactgtaggc tgcaactcgc ctacacgaag tcggaatcgc tagtaatcgc 1380

ggatcagcac gccgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccat 1440

gagagtttgt aacacccgaa gccggtggcg taaccctttt agggagcgag ccgtctaagg 1500

tgggacaaat gattagggtg aagtcgtaac aaggtagccg taggagaacc tgcggctgga 1560

tcacctcctt tct 1573

<210> 1075
<211> 1544
<212> DNA
<213> Lactobacillus catenaformis

<220>
<221> modified_base
<222> (67)..(67)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (319)..(319)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (327)..(328)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (373)..(373)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (581)..(581)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (602)..(605)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (639)..(639)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (753)..(756)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (920)..(921)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1432)..(1432)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1473)..(1473)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1479)..(1479)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1488)..(1496)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1505)..(1529)
<223> a, c, t, g, unknown or other

<400> 1075
tggagagttt gatcctggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg 60

aacgggntgc cattaggcac tagtggcgaa cgggtgagga gcacatgggg aacctgcccg 120

tcagaggggg acaacagctg gaaacggctg ctaagaccgc ataggctcaa ggagggcatc 180

ctcgttgagt taaagtgtcc tttcggggac agctgacgga tggacctgtg gcgcattagc 240

tagttggcgg ggtaaaggcc caccaaggcg acgatgcgta gccggcctga gagggcggac 300

ggccacactg ggactgagnc acggccnnga ctcctgcggg aggcagcagt agggaatttt 360

cggcaatggg ggnaaccctg accgagcaac gccgcgtgag tgaggaaggc cttcgggctg 420

taaagctctg ttgcagagga agaacgggag agcgaggaaa tgcgcttttc gtgacggtac 480

tctgcgagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcgag 540

cgttatccgg aatcattggg cgtaaagagg gagcaggcgg nacgcgaagg tccgtagtaa 600

annnngaagc taaacttcgg gcggctatgg aaaccgcgnc gcctggagtg cggaagagga 660

actcggaatt ccatgtgtag cggtgaaatg cgtagatata tggaggaaca ccggtggcga 720

aggcggcggt ctggtccggc actgacgctc agnnnngaaa gcgtggggag caaataggat 780

tagataccct agtagtccac gctgtaaacg atcgatacca ggtgtcggga gtcacatccc 840

ggtgccgaag ccaacgcatt aagtatcgcg cctgagtagt acgtccgcaa ggatgaaact 900

caaaggaatt gacgggggcn ngcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaggcct tgacatcgat ccgatcgcgc ggagacgcgc gagaccttgc 1020

cgaaagggaa ggaggagaag acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cctgccgcca gttgccagca ttcaggatgg 1140

ggactctggc gggactgccc ctgtaagggg gaggaaggcg gggatgacgt caaatcatca 1200

tgccccttat ggcctgggct acacacgtgc tacaatggac ggagcagagg gaggcgaagc 1260

cgcgaggcgg agcggagccc agaaacccgt tcacagttcg gactgcagcc tgcaactcgg 1320

ctgcacgaag ctggaatcgc tagtaatcgc agatcagcat gctgcggtga atacgttccc 1380

gggccttgta cacaccgccc gtcacaccat gagagtcggc aacgcccgaa gncggcggcc 1440

caaccccgta aggggaggga gcagtcaaag gcngggcana tgattggnnn nnnnnngtaa 1500

caagnnnnnn nnnnnnnnnn nnnnnnnnng atcacctcct ttct 1544

<210> 1076
<211> 1573
<212> DNA
<213> Lactobacillus coleohominis

<400> 1076
tgagagtttg atcctggctc aggatgaacg ccggcggtgt gcctaataca tgcaagtcga 60

acgcgttggc ccgactgatt gatgatgctt gcatcagatt gacgacggtt taccaacgag 120

tggcggacgg gtgagtaaca cgtaggcaac ctgcccagaa gcgggggaca acatttggaa 180

acaagtgcta ataccgcata acaacgaaaa ctgcctggtt ttcgtttaaa agatggtttc 240

ggctatcact tctggatggg cctgcggcgc attagctagt tggtaaggca acggcttacc 300

aaggcagtga tgcgtagccg agttgagaga ctgatcggcc acaatggaac tgagacacgg 360

tccatactcc tacgggaggc agcagtaggg aatcttccac aatgggcgca agcctgatgg 420

agcaacaccg cgtgagtgaa gaagggtttc ggctcgtaaa actctgttgt tgaagaagaa 480

cgtgcgtgag agtaactgtt cacgcagtga cggtattcaa ccagaaagtc acggctaact 540

acgtgccagc agccgcggta atacgtaggt ggcaagcgtt atccggattt attgggcgta 600

aagcgagcgc aggcggtttt ctaagtctga tgtgaaagcc ttcggcttaa ccggagaagg 660

gcatcggaaa ctggataact tgagtgcaag agaggacagt ggaactccat gtgtagcggt 720

ggaatgcgta gatatatgga agaacaccag tggcgaaggc ggctgtctag cttgcaactg 780

acgctgaggc tcgaaagcat gggtagcgaa caggattaga taccctggta gtccatgccg 840

taaacgatga gtgctaggtg ttggagggtt tccgcccttc agtgccggag ctaacgcatt 900

aagcactccg cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc 960

cgcacaagcg gtggagcatg tggtttaatt cgaagctacg cgaagaacct taccaggtct 1020

tgacatcttg cgccaacctc agagatgagg cgttcccttc ggggacgcaa tgacaggtgg 1080

tgcatggtcg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1140

cccttgttac tagttgccag cattcagttg ggcactctag tgagactgcc ggtgacaaac 1200

cggaggaagg tggggacgac gtcagatcat catgcccctt atgacctggg ctacacacgt 1260

gctacaatgg acggtacaac gagcagcgaa ctcgcaaggg ccagctaatc tcttaaaacc 1320

gttctcagtt cggactgcag tctgcaactc gactgcacga agtcggaatc gctagtaatc 1380

gcggatcagc atgccgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc 1440

atgggagttt gcaatgccca aagccggtgg cctaaccttc gggaaggagc cgtctaaggc 1500

agggcagatg actggggtga agtcgtaaca aggtagccgt aggagaacct gcggctggat 1560

cacctccttt cta 1573

<210> 1077
<211> 1518
<212> DNA
<213> Lactobacillus coryniformis

<220>
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (116)..(116)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (150)..(151)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (220)..(220)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (247)..(247)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (263)..(263)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (362)..(363)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (464)..(464)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (573)..(573)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (639)..(639)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (763)..(763)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (790)..(790)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (792)..(793)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (960)..(960)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (995)..(995)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1080)..(1080)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1181)..(1181)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1391)..(1391)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1416)..(1416)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1430)..(1430)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1436)..(1436)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1497)..(1497)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1511)..(1511)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1514)..(1515)
<223> a, c, t, g, unknown or other

<400> 1077
nnttatatga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg cactgacgtc gaccgaagct gcttgcagtg gacgttgatt gacgtnagtg 120

gcggacgggt gagtaacacg tgggtaaccn ncccttaagt gggggataac atttggaaac 180

agatgctaat accgcataac cattcagacc acatggtctn aatgtaaaag acggcctttg 240

gctgtcnctt ttggacggac ccncggcgta ttagttagtt ggtaaggtaa cggcttacca 300

agacaatgat acgtagccga cctgagaggg taatcggcca cattgggact gagacacggc 360

cnnaactcct acgggaggca gcagtaggga atcttccaca atggacgaaa gtctgatgga 420

gcaacgccgc gtgagtgaag aaggttttag gatcgtaaaa ctcngttgtt ggagaagaac 480

agggactaga gtaactgtta gtcctttgac ggtatccaac cagaaagcca cggctaacta 540

cgtgccagca gccgcggtaa tacgtaggtg gcnagcgttg tccggattta ttgggcgtaa 600

agcgagcgca ggcggttttt taagtctgat gtgaaagcnt tcggcttaac cgaagaagtg 660

cattagaaac tggraaactt gagtgcagaa gaggacagtg gaactccatg tgtagcggtg 720

aaatgcgtag atatatggaa gaacaccagt ggcgaaggcg gcngtctggt ctgtaactga 780

cgctgaggcn cnnaagtatg gggagcgaac aggattagat accctggtag tccataccgt 840

aaacgatgaa tgctaagtgt tggagggttt ccgcccttca gtgctgcagc taacgcatta 900

agcattccgc ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccn 960

gcacaagcgg tggagcatgt ggtttaattc gaagnaacgc gaagaacctt accaggtctt 1020

gacatccttt gaccactgta gagatacagc tttcccttcg gggacaaagt gacaggtggn 1080

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1140

ccttatgact agttgccagc atttagttgg gcactctagt nagactgccg gtgacaaacc 1200

ggaggaaggt ggggatgacg tcaaatcagc atgccccttа tgacctgggc tacacacgtg 1260

ctacaatggt cggtacaacg agttgcgaac ccgcgagggt aagctaatct cttaaagccg 1320

atctcagttc ggattgtagg ctgcaactcg cctacatgaa gccggaatcg ctagtaatcg 1380

cggatcagca ngccgcggtg aatacgttcc cgggcnttgt acacaccgcn cgtcanacca 1440

tgagagtttg taacacccga agtcggtggg gtaacccttt tagggaacta gccgccnaag 1500

gtgggacaga nganngg 1518

<210> 1078
<211> 1562
<212> DNA
<213> Lactobacillus crispatus

<400> 1078
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcgagcggaa ctaacagatt tacttcggta atgacgttag gaaagcgagc ggcggatggg 120

tgagtaacac gtggggaacc tgccccatag tctgggatac cacttggaaa caggtgctaa 180

taccggataa gaaagcagat cgcatgatca gcttttaaaa ggcggcgtaa gctgtcgcta 240

tgggatggcc ccgcggtgca ttagctagtt ggtaaggtaa aggcttacca aggcgatgat 300

gcatagccga gttgagagac tgatcggcca cattgggact gagacacggc ccaaactcct 360

acgggaggca gcagtaggga atcttccaca atggacgcaa gtctgatgga gcaacgccgc 420

gtgagtgaag aaggttttcg gatcgtaaag ctctgttgtt ggtgaagaag gatagaggta 480

gtaactggcc tttatttgac ggtaatcaac cagaaagtca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa agcgagcgca 600

ggcggaagaa taagtctgat gtgaaagccc tcggcttaac cgaggaactg catcggaaac 660

tgtttttctt gagtgcagaa gaggagagtg gaactccatg tgtagcggtg gaatgcgtag 720

atatatggaa gaacaccagt ggcgaaggcg gctctctggt ctgcaactga cgctgaggct 780

cgaaagcatg ggtagtgaac aggattagat accctggtag tccatgccgt aaacgatgag 840

tgctaagtgt tgggaggttt ccgcctctca gtgctgcagc taacgcatta agcactccgc 900

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 960

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatctagt 1020

gccatttgta gagatacaaa gttcccttcg gggacgctaa gacaggtggt gcatggctgt 1080

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgttatt 1140

agttgccagc attaagttgg gcactctaat gagactgccg gtgacaaacc ggaggaaggt 1200

ggggatgacg tcaagtcatc atgcccctta tgacctgggc tacacacgtg ctacaatggg 1260

cagtacaacg agaagcgagc ctgcgaaggc aagcgaatct ctgaaagctg ttctcagttc 1320

ggactgcagt ctgcaactcg actgcacgaa gctggaatcg ctagtaatcg cggatcagca 1380

cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgggagtctg 1440

caatgcccaa agccggtggc ctaaccttcg ggaaggagcc gtctaaggca gggcagatga 1500

ctggggtgaa gtcgtaacaa ggtagccgta ggagaacctg cggctggatc acctcctttc 1560

ta 1562

<210> 1079
<211> 1559
<212> DNA
<213> Lactobacillus curvatus

<400> 1079
aagtttgatt atagctcagg acgaacgctg gcggcgtgcc taatacatgc aagtcgaacg 60

cactctcgtt agattgaaga agcttgcttc tgattgataa catttgagtg agtggcggac 120

gggtgagtaa cacgtgggta acctgcccta aagtggggga taacatttcg gaaacagatg 180

ctaataccgc ataaaaccta acaccgcatg gtgcaaggtt gaaagatggt ttcggctatc 240

actttaggat ggacccgcgg tgcattagtt agttggtgag gtaaaggctc accaagaccg 300

tgatgcatag ccgacctgag agggtaatcg gccacactgg gactgagaca cggcccagac 360

tcctacggga ggcagcagta gggaatcttc cacaatggac gaaagtctga tggagcaacg 420

ccgcgtgagt gaagaaggtt ttcggatcgt aaaactctgt tgttggagaa gaacgtattt 480

gatagtaact gatcaggtag tgacggtatc caaccagaaa gccacggcta actacgtgcc 540

agcagccgcg gtaatacgta ggtggcaagc gttgtccgga tttattgggc gtaaagcgag 600

cgcaggcggt ttcttaagtc tgatgtgaaa gccttcggct caaccgaaga agtgcatcgg 660

aaactgggaa acttgagtgc agaagaggac agtggaactc catgtgtagc ggtgaaatgc 720

gtagatatat ggaagaacac cagtggcgaa ggcggatgtc tggtctgtaa ctgacgctga 780

ggctcgaaag catgggtagc aaacaggatt agataccctg gtagtccatg ccgtaaacga 840

tgagtgctag gtgttggagg gtttccgccc ttcagtgccg cagctaacgc attaagcact 900

ccgcctgggg agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa 960

gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc 1020

ctttgaccac tctagagata gagctttccc ttcggggaca aagtgacagg tggtgcatgg 1080

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat 1140

tactagttgc cagcatttag ttgggcactc tagtgagact gccggtgaca aaccggagga 1200

aggtggggac gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1260

tggatggtac aacgagtcgc gagaccgcga ggtttagcta atctcttaaa accattctca 1320

gttcggattg taggctgcaa ctcgcctaca tgaagccgga atcgctagta atcgcggatc 1380

agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1440

tttgtaacac ccaaagccgg tgaggtaacc ttcgggagcc agccgtctaa ggtgggacag 1500

atgattaggg tgaagtcgta acaaggtagc cgtagagaac ctgcggctgg atcacctct 1559

<210> 1080
<211> 1568
<212> DNA
<213> Lactobacillus delbrueckii

<400> 1080
ttcaaattga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgagcg agctgaattc aaagatccct tcggggtgat ttgttggacg ctagcggcgg 120

atgggtgagt aacacgtggg caatctgccc taaagactgg gataccactt ggaaacaggt 180

gctaataccg gataacaaca tgaatcgcat gattcaagtt tgaaaggcgg cgcaagctgt 240

cactttagga tgagcccgcg gcgcattagc tagttggtgg ggtaaaggcc taccaaggca 300

atgatgcgta gccgagttga gagactgatc ggccacattg ggactgagac acggcccaaa 360

ctcctacggg aggcagcagt agggaatctt ccacaatgga cgcaagtctg atggagcaac 420

gccgcgtgag tgaagaaggt cttcggatcg taaagctctg ttgttggtga agaaggatag 480

aggcagtaac tggtctttat ttgacggtaa tcaaccagaa agtcacggct aactacgtgc 540

cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg atttattggg cgtaaagcga 600

gcgcaggcgg aatgataagt ctgatgtgaa agcccacggc ttaaccgtgg aactgcatcg 660

gaaactgtca ttcttgagtg cagaagagga gagtggaact ccatgtgtag cggtggaatg 720

cgtagatata tggaagaaca ccagtggcga aggcggctct ctggtctgca actgacgctg 780

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 840

atgagcgcta ggtgttgggg actttccggt tctcagtgcc gcagcaaacg cgttaagcgc 900

tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca 960

agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat 1020

cctgcgctac acctagagat aggtggttcc cttcggggac gcagagacag gtggtgcatg 1080

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 1140

tctttagttg ccatcattaa gttgggcact ctaaagagac tgccggtgac aaaccggagg 1200

aaggtgggga tgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1260

atgggcagta caacgagaag cgaacccgcg agggtaagcg gatctcttaa agctgctctc 1320

agttcggact gcaggctgca actcgcctgc acgaagctgg aatcgctagt aatcgcggat 1380

cagcacgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggaa 1440

gtctgcaatg cccaaagtcg gtgagataac ctttatagga gtcagccgcc taaggcaggg 1500

cagatgactg gggtgaagtc gtaacaaggt agccgtagga gaacctgcgg ctggatcacc 1560

tcctttct 1568

<210> 1081
<211> 1464
<212> DNA
<213> Lactobacillus dextrinicus

<220>
<221> modified_base
<222> (394)..(394)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (397)..(397)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (781)..(781)
<223> a, c, t, g, unknown or other

<400> 1081
ctggcggcgt gcctaataca tgcaagtcga acgagtttgc ttttaatgaa ggcggtgctt 60

gcaccaactg atttaaaaat aaacgagtgg cggacgggtg agtaacacgt gggtaaccta 120

ccctaaagtg ggggataaca tttggaaaca gatgctaata ccgcataata tcaaaaacca 180

catggttttt aattgaaaga cggcgtaagc tgtcactttt ggatggaccc gcggcgtatt 240

agctagttgg tgaggtaacg gctcaccaag gcgatgatac gtagccgacc tgagagggtg 300

atcggccaca ttgggactga gacacggccc aaactcctac gggaggcagc agtagggaat 360

cttccacaat ggacgaaagt ctgatggagc aacnccncgt gagtgaagaa ggttttcgga 420

tcgtaaaact ctgttattgg agaagaacgt atttggtagt aactggccag atagtgacgg 480

tatccaatca gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc 540

aagcgttgtc cggatttatt gggcgtaaag cgagtgcagg cggtttttta agtctgatgt 600

gaaagccttc ggcttaaccg aagaaatgca ttggaaactg ggaaacttga gtgcagaaga 660

ggagagtgga actccatgtg tagcggtgaa atgcgtagat atatggaaga acaccagtgg 720

cgaaggcggc tctctggtct gtaactgacg ctgaggctcg aaagcgtggg tagcaaacag 780

nattagatac cctggtagtc cacgccgtaa acgatgagtg ctaagtgttg gagggtttcc 840

gcccttcagt gctgcagcta acgcattaag cactccgcct ggggagtacg accgcaaggt 900

tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 960

agcaacgcga agaaccttac caggtcttga catctagcgc caatcctaga gataggacgt 1020

tcccttcggg gacgctaaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttattatcag ttgccagcat ttagttgggc 1140

actctggtga gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aaatcatcat 1200

gccccttatg acctgggcta cacacgtgct acaatggcta gtacaacgag ttgcgagacc 1260

gcgaggtcaa gctaatctct aaaagctagt ctcagttcgg attgtaggct gcaactcgcc 1320

tacatgaagt tggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg agagtttgta acacccgaag ccggtggagt 1440

aacccgtaag ggagctagcc gtct 1464

<210> 1082
<211> 1517
<212> DNA
<213> Lactobacillus farciminis

<220>
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (154)..(154)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (297)..(297)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (360)..(361)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (551)..(552)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (571)..(571)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (761)..(761)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (956)..(958)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (993)..(993)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1136)..(1136)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1410)..(1410)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1414)..(1414)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1428)..(1430)
<223> a, c, t, g, unknown or other

<400> 1082
nntaatatga gagtttgatc ctggctcagg acgaacgctg gcggcatgcc taatacatgc 60

aagtcgaacg aaccatcctg aagattgaag cttgcttcat gattcagacc ttggtgagtg 120

gcggacgggt gagtaacacg tgggtaacct gccnaaaagt gggggataac atttggaaac 180

aagtgctaat accgcataac aactactttc acatgatcgt agcttgaaag atggctctgc 240

tatcgctttt ggatggaccc gcggcgtatt agctagttgg tgaggtaata gctcacnaag 300

gcaatgatac gtagccgacc tgagagggta atcggccaca ttgggactga gacacggccn 360

naactcctac gggaggcagc agtagggaat cttccacaat gggcgaaagc ctgatggagc 420

aatgccgcgt gagtgaagaa ggttttcgga tcgtaaaact ctgttgttga agaagaacat 480

gcgtgagagt aactgttcac gtactgacgg tattcaacca gaaagctacg gctaactacg 540

tgccagcagc nncggtaata cgtaggtggc nagcgttgtc cggatttatt gggcgtaaag 600

agaatgtagg cggtttatta agtttgaagt gaaagccctc ggctcaaccg aggaagtgct 660

tcgaaaactg gtaaacttga gtgcagaaga ggaaagtgga actccatgtg tagcggtgga 720

atgcgtagat atatggaaga acaccagtgg cgaaggcggc nttctggtct gtaactgacg 780

ctgagattcg aaagcatggg tagcaaacag gattagatac cctggtagtc catgccgtaa 840

acgatgagtg ctaagtgttg gagggtttcc gcccttcagt gctgcagcta acgcattaag 900

cactccgcct ggggagtacg atcgcaagat tgaaactcaa aggaattgac gggggnnngc 960

acaagcggtg gagcatgtgg tttaattcga agnaacgcga agaaccttac caggtcttga 1020

cataccatga caaactaaga gattagtctt tcccttcggg gacatggata caggtggtgc 1080

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcnaccc 1140

ttattatcag ttgccagcat tcagttgggc actctggtga gactgccggt gacaaaccgg 1200

aggaaggtgg ggacgacgtc aaatcatcat gcccccttatg acctgggcta cacacgtgct 1260

acaatggtcg gtacaacgtg ttgcgaactc gcgagggcaa gcaaatcact taaaaccgat 1320

ctcagttcgg attgcaggct gcaactcgcc tgcatgaagc tggaatcgct agtaatcgcg 1380

gatcagcatg ccgcggtgaa tacgttcccn ggcnttgtac acaccgcnnn tcacaccatg 1440

agagtttgta acacccaaag tcggtggggt aacccttcgg ggaactagcc gcctaaggtg 1500

ggacaaatga ttagggt 1517

<210> 1083
<211> 1419
<212> DNA
<213> Lactobacillus fermentum

<220>
<221> modified_base
<222> (1405)..(1405)
<223> a, c, t, g, unknown or other

<400> 1083
tggcccaatt gattgatggt gcttgcacct gattgatttt ggtcgccaac gagtggcgga 60

cgggtgagta acacgtaggt aacctgccca gaagcggggg acaacatttg gaaacagatg 120

ctaataccgc ataacagcgt tgttcgcatg aacaacgctt aaaagatggc ttctcgctat 180

cacttctgga tggacctgcg gtgcattagc ttgttggtgg ggtaatggcc taccaaggcg 240

atgatgcata gccgagttga gagactgatc ggccacaatg ggactgagac acggcccata 300

ctcctacggg aggcagcagt agggaatctt ccacaatggg cgcaagcctg atggagcaac 360

accgcgtgag tgaagaaggg tttcggctcg taaagctctg ttgttaaaga agaacacgta 420

tgagagtaac tgttcatacg ttgacggtat ttaaccagaa agtcacggct aactacgtgc 480

cagcagccgc ggtaatacgt aggtggcaag cgttatccgg atttattggg cgtaaagaga 540

gtgcaggcgg ttttctaagt ctgatgtgaa cttcggctta accggagaag tgcatcggaa 600

actggataac ttgagtgcag aagagggtag tggaactcca tgtgtagcgg tggaatgcgt 660

agatatatgg aagaacacca gtggcgaagg cggctacctg gtctgcaact gacgctgaga 720

ctcgaaagca tgggtagcga acaggattag ataccctggt agtccatgcc gtaaacgatg 780

agtgctagtg ttggagggtt tccgcccttc agtgccggag ctaacgcatt aagcactccg 840

cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg 900

gtggagcatg tggtttaatt cgaagctacg catccaacct taccaggtct tgacatcttg 960

cgcccaccct agagataggg cgtttccttc gggaacgcaa tgacaggtgg tgcatggtcg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgttac 1080

tagttgccag cattaagttg ggcactctag tgagactgcc ggtgacaaac cggaggaagg 1140

tggggacgac gtcagatcat catgcccctt atgacctggg ctacacacgt gctacaatgg 1200

acggtacaac gagtcgcgaa ctcgcgaggg caagcaaatc tcttaaaacc gttctcagtt 1260

cggactgcag gctgcaactc gcctgcacga agtcggaatc gctagtaatc gcggatcagc 1320

atgccgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgagagttt 1380

gtaacaccca aagtcggtgg ggtanccttt taggagcca 1419

<210> 1084
<211> 995
<212> DNA
<213> Lactobacillus gasseri

<220>
<221> modified_base
<222> (43)..(43)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (50)..(50)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (918)..(918)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (976)..(976)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (984)..(984)
<223> a, c, t, g, unknown or other

<400> 1084
gagcttgcct agatgaattt ggtgcttgca ccaaatgaaa ctngatacan gcgagcggcg 60

gacgggtgag taacacgtgg gtaacctgcc caagagactg ggataacacc tggaaacaga 120

tgctaatacc ggataacaac actagacgca tgtctagagt ttaaaagatg gttctgctat 180

cactcttgga tggacctgcg gtgcattagc tagttggtaa ggtaacggct taccaaggca 240

atgatgcata gccgagttga gagactgatc ggccacattg ggactgagac acggcccaaa 300

ctcctacggg aggcagcagt agggaatctt ccacaatgga cgcaagtctg atggagcaac 360

gccgcgtgag tgaagaaggg tttcggctcg taaagctctg ttggtagtga agaaagatag 420

aggtagtaac tggcctttat ttgacggtaa ttacttagaa agtcacggct aactacgtgc 480

cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg atttattggg cgtaaagcga 540

gtgcaggcgg ttcaataagt ctgatgtgaa agccttcggc tcaaccggag aattgcatca 600

gaaactgttg aacttgagtg cagaagagga gagtggaact ccatgtgtag cggtggaatg 660

cgtagatata tggaagaaca ccagtggcga aggcggctct ctggtctgca actgacgctg 720

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 780

atgagtgcta agtgttggga ggtttccgcc tctcagtgct gcagctaacg cattaagcac 840

tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca 900

agcggtggag catgtggntt aattcgaagc aacgcgaaga accttaccag gtcttgacat 960

ccagtgcaaa cctaanagat tagnagttcc cttcg 995

<210> 1085
<211> 1373
<212> DNA
<213> Lactobacillus gastricus

<400> 1085
tatatggagt ttgatcctgg ctcaggatga acgccggcgg tgtgcctaat acatgcaagt 60

cgaacgagtg gcggacgggt gagtaacacg taggtaacct gcccagaagc gggggataac 120

atctggaaac aggtgctaat accgcataac aaaagtcact tctggatgga cctgcggcgc 180

attagcttgt tggtagggta atggcctacc aaggcagtga tgcgtagccg agttgagaga 240

ctgatcggcc acaatgggac tgagacacgg cccatactcc tacgggaggc agcagtaggg 300

aatcttccac aatgggcgca agcctgatgg agcaacaccg cgtgagtgaa gaagggtttc 360

ggctcgtaaa gctctgttgt tgaagaagat gacggtattc aaccagaaag tcacggctaa 420

ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg ttatccggat ttattgggcg 480

taaagagagt gcaggcggtt tcttaagtct gatgtgaaag ccttcggctc aaccgaagaa 540

gtgcatcgga aactgggaga cttgagtaca gaagagggca gtggaactcc atgtgtagcg 600

gtggaatgcg tagatatatg gaagaacacc agtggcgaag gcggctgcct ggtctgactg 660

acgctgagac tcgaaagcat gggtagcgaa caggattaga taccctggta gtccatgccg 720

taaacgatga gtgctaggtg ttggagcttc agtgccggag ctaacgcatt aagcactccg 780

cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacggggcc cgcacaagcg 840

gtggagcatg tggtttaatt cgaagctacg cgaagaacct taccaggtct tgacatcgac 900

aggtggtgca tggtcgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 960

gcgcaaccct tgttactagt tgccagcatg ggcactctag tgagactgcc ggtgacaaac 1020

cggaggaagg tggggacgac gtcagatcat catgcccctt atgacctggg ctacacacgt 1080

gctacaatgg acggcaacga gtcgcgaact cgcgagggca agcaaatctc ttccgttctc 1140

agttcggatg caggctgcaa ctcgcctgca gaagtcggaa tcgctagtaa tcgcggatca 1200

gcatgccgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgagagt 1260

ttgtaacacc caaagtcggt gggtagccag ccgcctaagg tgggacagat gattagggtg 1320

aagtcgtaac aaggtagccg taggagaacc tgcggctgga tcacctcctt tct 1373

<210> 1086
<211> 1287
<212> DNA
<213> Lactobacillus genomosp. C1

<400> 1086
agtggcgaac tggtgagtaa cacgtgggta acctgccctg aagtggggga taacacttgg 60

aaacaggtgc taataccgca taacgaaagt cacttttgga tggacccgcg gcgtattagc 120

ttgttggtga ggtaacggct caccaaggcc atgatacgta gccgacctga gagggtaatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag tgatgaaggg tttcggctcg 300

taaaactctg ttgttggaga agatgacggt atccaaccag aaagccacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggtttttag gtctgatgtg aaagccttcg gcttaaccgg agaagggcat 480

cggaaaccgg gagacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtgaaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg actgacgctg 600

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta agtgttggag cttcagtgct gcagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgatgc tacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttattgt cagttgccag catgggcact ctggcgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgcg aaaccgcgag gtcaagctaa tctcttccgt tctcagttcg 1080

gatgccggct gcaactcgcc tgcagaagtt ggaatcgcta gtaatcgtgg atcagcatgc 1140

cacggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagc cggtaggtaa ccagccgtct aaggtgggac agatgattag ggtgaagtcg 1260

taacaaggta gccgtaggag aacctgc 1287

<210> 1087
<211> 1254
<212> DNA
<213> Lactobacillus genomosp. C2

<400> 1087
agtggcgaac tggtgagtaa cacgtgggta acctgccctg aagtagggga taacacttgg 60

aaacaggtgc taataccgta taacaaaagt cactttagga tggacccgcg gcgtattagc 120

ttgttggtga ggtaacggct caccaaggca atgatacgta gccgacctga gagggtaatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag tgatgaaggg tttcggctcg 300

taaaactctg ttgttggaga agatgacggt atccaaccag aaagccacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggtttttag gtctgatgtg aaagccttcg gcttaaccgg agaagtgcat 480

cggaaaccgg gagacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtgaaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg actgacgctg 600

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta agtgttggag cttcagtgct gcagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgatgc tacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttattgt tagttgccag catgggcact ctagcaagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgcg aaaccgcgag gtcaagctaa tctcttccgt tctcagttcg 1080

gatgtaggct gcaactcgcc tacagaagtt ggaatcgcta gtaatcgtgg atcagcatgc 1140

cacggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagc cggtaggtaa ccagccgtct aaggtgggac agatgattag ggtg 1254

<210> 1088
<211> 1016
<212> DNA
<213> Lactobacillus helveticus

<220>
<221> modified_base
<222> (797)..(799)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (979)..(979)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (983)..(986)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1000)..(1000)
<223> a, c, t, g, unknown or other

<400> 1088
gtcgagcgag cagaaccagc agatttactt cggtaatgac gctggggacg cgagcggcgg 60

atgggtgagt aacacgtggg gaacctgccc catagcctgg gataccactt ggaaacaggt 120

gctaataccg gataagaaag cagatcgcat gatcagctta taaaaggcgg cgtaagctgt 180

cgctatggga tggccccgcg gtgcattagc tagttggtaa ggtaacggct taccaaggca 240

atgatgcata gccgagttga gagactgatc ggccacattg ggactgagac acggcccaaa 300

ctcctacggg aggcagcagt agggaatctt ccacaatgga cgcaagtctg atggagcaac 360

gccgcgtgag tgaagaaggt tttcggatcg taaagctctg ttgttggtga agaaggatag 420

aggtagtaac tggcctttat ttgacggtaa tcaaccagaa agtcacggct aactacgtgc 480

cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg atttattggg cgtaaagcga 540

gcgcaggcgg aagaataagt ctgatgtgaa agccctcggc ttaaccgagg aactgcatcg 600

gaaactgttt ttcttgagtg cagaagagga gagtggaatt ccatgtgtag cggtggaatg 660

cgtagatata tggaagaaca ccagtggcga aggcgactct ctggtctgca actgacgctg 720

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 780

atgagtgcta agtgttnnng gtttccgcct ctcagtgctg cagctaacgc atttaagcac 840

tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca 900

agcggtggag catgtggttt aattcgaagc aacgcgaaga acccttacca ggtcttgaca 960

tctagtgcca tcctaagana ttnnnnttcc cttcggggan gctaagacag gtggtg 1016

<210> 1089
<211> 1572
<212> DNA
<213> Lactobacillus hilgardii

<400> 1089
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

acgcgtcttg gtcaatgaag ttgagtgctt gcatttaact gatttgacat taagacgagt 120

ggcgaactgg tgagtaacac gtgggtaact tgccccgaag cgggggataa catttggaaa 180

caggtgctaa taccgcataa caacaaaaac cacatggttt ttgtttaaaa gatggtttcg 240

gctatcactt tgggatggac ccgcggcgta ttagctagtt ggtgaggtaa tggctcacca 300

aggcaatgat acgtagccga cctgagaggg taatcggcca cattgggact gagacacggc 360

ccaaactcct acgggaggca gcagtaggga atcttccaca atggacgaaa gtctgatgga 420

gcaacgccgc gtgagtgatg aagggtttcg gctcgtaaaa ctctgttgtt ggagaagaac 480

gggtgtcaga gtaactgttg acatcgtgac ggtatccaac cagaaagcca cggctaacta 540

cgtgccagca gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa 600

agcgagcgca ggcggttttt taggtctgat gtgaaagcct tcggcttaac cggagaagtg 660

catcggaaac cgggagactt gagtgcagaa gaggacagtg gaactccatg tgtagcggtg 720

aaatgcgtag atatatggaa gaacaccagt ggcgaaggcg gctgtctggt ctgcaactga 780

cgctgaggct cgaaagcatg ggtagcgaac aggattagat accctggtag tccatgccgt 840

aaacgatgag tgctaagtgt tggagggttt ccgcccttca gtgctgcagc taacgcatta 900

agcactccgc ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc 960

gcacaagcgg tggagcatgt ggtttaattc gatgctacgc gaagaacctt accaggtctt 1020

gacatcttct gctaacctaa gagattaggc gttcccttcg gggacggaat gacaggtggt 1080

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1140

ccttattgtc agttgccagc atttagttgg gcactctggc gagactgccg gtgacaaacc 1200

ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgacctgggc tacacacgtg 1260

ctacaatgga cggtacaacg agtcgcgaaa ccgcgaggtc aagctaatct cttaaagccg 1320

ttctcagttc ggattgtagg ctgcaactcg cctacatgaa gttggaatcg ctagtaatcg 1380

tggatcagca tgccacggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1440

tgagagtttg taacacccaa agccggtgag gtaaccttcg ggggccagcc gtctaaggtg 1500

ggacagatga ttagggtgaa gtcgtaacaa ggtagccgta ggagaacctg cggctggatc 1560

acctcctttc ta 1572

<210> 1090
<211> 1718
<212> DNA
<213> Lactobacillus hominis

<400> 1090
tacacatgga gttccactct cctcttctgc actcaagttc aacagtttct gatgcaattc 60

tccggttgag ccgaaggctt tcacatcaga cttattgaac cgcctgcact cgctttacgc 120

ccaataaatc cggacaacgc ttgccaccta cgtagagttt gatcatggct caggacgaac 180

gctggcggcg tgcctaatac atgcaagtcg agcgagcttg cctagatgat ttcggtgctt 240

gcaccgaatg aaactagata caagcgagcg gcggacgggt gagtaacacg tgggtaacct 300

gcccaagaga ctgggataac acctggaaac agatgctaat accggataac aacatctagc 360

gcatgctaga agtttgaaag atgggtttct atcactcttg gatggacctg cggtgcatta 420

gctagttggt aaggtaacgg cttaccaagg caatgatgca tagccgagtt gagagactga 480

tcggccacat tgggactgag acacggccca aactcctacg ggaggcagca gtagggaatc 540

ttccacaatg gacgcaagtc tgatggagca acgccgcgtg agtgaagaag ggtttcggct 600

cgtaaagctc tgttggtggt gaagaaagat agaggtagta actggccttt atttgacggt 660

aatcacctag aaagtcacgg ctaactacgt gccagcagcc gcggtaatac gtaggtggca 720

agcgttgtcc ggatttattg ggcgtaaagc gagtgcaggc ggttcaataa gtctgatgtg 780

aaagccttcg gctcaaccgg agaattgcat cagaaactgt tgaacttgag tgcagaagag 840

gagagtggaa ctccatgtgt agcggtggaa tgcgtagata tatggaagaa caccagtggc 900

gaaggcggct ctctggtctg caactgacgc tgaggctcga aagcatgggt agcgaacagg 960

attagatacc ctggtagtcc atgccgtaaa cgatgagtgc taagtgttgg gaggtttccg 1020

cctctcagtg ctgcagctaa cgcattaagc actccgcctg gggagtacga ccgcaaggtt 1080

gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa 1140

gcaacgcgaa gaaccttacc aggtcttgac atccagtgca aacctaagag attaggtgtt 1200

cccttcgggg acgctgagac aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt 1260

tgggttaagt cccgcaacga gcgcaaccct tgtcattagt tgccatcatt aagttgggca 1320

ctctaatgag actgccggtg acaaaccgga ggaaggtggg gatgacgtca agtcatcatg 1380

ccccttatga cctgggctac acacgtgcta caatggacgg tacaacgaga agcgaacctg 1440

cgaaggcaag cggatctctg aaagccgttc tcagttcgga ctgtaggctg caactcgcct 1500

acacgaagct ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1560

gccttgtaca caccgcccgt cacaccatga gagtctgtaa cacccaaagc cggtgagata 1620

accattaaag gagtcagccg tctaaggtag gacagatgat tagggtgaag tcgtaacaag 1680

gtagccgtag gagaacctgc ggttggatca cctccttа 1718

<210> 1091
<211> 1572
<212> DNA
<213> Lactobacillus iners

<400> 1091
aaattgagag tttgatcctg gctcaggacg aacgctggcg gcgtgcctaa tacatgcaag 60

tcgagcgagt ctgccttgaa gatcggagtg cttgcactct gtgaaacaag atacaggcta 120

gcggcggacg ggtgagtaac acgtgggtaa cctgcccaag agatcgggat aacacctgga 180

aacagatgct aataccggat aataacagat gatgcctatc aactgtttaa aagatggttc 240

tgctatcact cttggatgga cctgcggtgc attagctagt tggtagggta acggcctacc 300

aaggcgatga tgcatagccg agttgagaga ctgatcggcc acattgggac tgagacacgg 360

cccaaactcc tacgggaggc agcagtaggg aatcttccac aatggacgca agtctgatgg 420

agcaacgccg cgtgagtgaa gaagggtttc ggctcgtaaa gctctgttgt tggtgaagaa 480

ggacaggggt agtaactgac ctttgtttga cggtaatcaa ttagaaagtc acggctaact 540

acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggattt attgggcgta 600

aagcgagtgc aggcggctcg ataagtctga tgtgaaagcc ttcggctcaa ccggagaatt 660

gcatcagaaa ctgtcgagct tgagtacaga agaggagagt ggaactccat gtgtagcggt 720

gaaatgcgta gatatatgga agaacaccgg tggcgaaggc ggctctctgg tctgttactg 780

acgctgaggc tcgaaagcat gggtagcgaa caggattaga taccctggta gtccatgccg 840

taaacgatga gtgctaagtg ttgggaggtt tccgcctctc agtgctgcag ctaacgcatt 900

aagcactccg cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc 960

cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggtct 1020

tgacatccat agccagtcta agagattaga tgttcccttc ggggactatg agacaggtgg 1080

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1140

cccttgtcat tagttgccag cattaagttg ggcactctaa tgagactgcc ggtgacaaac 1200

cggaggaagg tggggatgac gtcaagtcat catgcccctt atgacctggg ctacacacgt 1260

gctacaatgg acggtacaac gagaagcgac cctgtgaagg caagcggatc tctgaaagcc 1320

gttctcagtt cggattgcag gctgcaactc gcctgcatga agctggaatc gctagtaatc 1380

gcaaatcagc acgttgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc 1440

atgagagtct gtaacgcccg aagccggcgg gataaccgaa aggagtcagc cgtctaaggc 1500

gggacagatg attagggtga agtcgtaaca aggtagccgt aggagaacct gcggctggat 1560

cacctccttt ct 1572

<210> 1092
<211> 1567
<212> DNA
<213> Lactobacillus jensenii

<400> 1092
ttcaaaatga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgagcg agcttgccta tagaaattct tcggaatgga catagataca agctagcggc 120

ggatgggtga gtaacgcgtg ggtaacctgc ccttaagtct gggataccat ttggaaacag 180

atgctaatac cggataaaag ctactttcgc atgaaagaag tttaaaaggc ggcgtaagct 240

gtcgctaaag gatggacctg cgatgcatta gctagttggt aaggtaacgg cttaccaagg 300

cgatgatgca tagccgagtt gagagactga tcggccacat tgggactgag acacggccca 360

aactcctacg ggaggcagca gtagggaatc ttccacaatg gacgaaagtc tgatggagca 420

acgccgcgtg agtgaagaag gttttcggat cgtaaagctc tgttgttggt gaagaaggat 480

agaggtagta actggccttt atttgacggt aatcaaccag aaagtcacgg ctaactacgt 540

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 600

gagcgcaggc ggattgataa gtctgatgtg aaagccttcg gctcaaccga agaactgcat 660

cagaaactgt caatcttgag tgcagaagag gagagtggaa ctccatgtgt agcggtggaa 720

tgcgtagata tatggaagaa caccagtggc gaaggcggct ctctggtctg taactgacgc 780

tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc atgccgtaaa 840

cgatgagtgc taagtgttgg gaggtttccg cctctcagtg ctgcagctaa cgcattaagc 900

actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg ggggcccgca 960

caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac 1020

atcctttgac cacctaagag attaggtttt cccttcgggg acaaagagac aggtggtgca 1080

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1140

tgttaatagt tgccagcatt aagttgggca ctctattgag actgccggtg acaaaccgga 1200

ggaaggtggg gatgacgtca agtcatcatg ccccttatga cctgggctac acacgtgcta 1260

caatgggcag tacaacgaga agcgaacctg tgaaggcaag cggatctctt aaagctgttc 1320

tcagttcgga ctgtaggctg caactcgcct acacgaagct ggaatcgcta gtaatcgcgg 1380

atcagcacgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga 1440

gagtttgtaa cacccaaagt cggtgaggta acctttggag ccagccgcct aaggtgggac 1500

agatgattag ggtgaagtcg taacaaggta gccgtaggag aacctgcggc tggatcacct 1560

cctttct 1567

<210> 1093
<211> 1651

<212> DNA
<213> Lactobacillus johnsonii

<400> 1093
agctaaacga taaaaagctc attttcaaaa ggaaaatgag agtttgatcc tggctcagga 60

cgaacgctgg cggcgtgcct aatacatgca agtcgagcga gcttgcctag atgattttag 120

tgcttgcact aaatgaaact agatacaagc gagcggcgga cgggtgagta acacgtgggt 180

aacctgccca agagactggg ataacacctg gaaacagatg ctaataccgg ataacaacac 240

tagacgcatg tctagagttt gaaagatggt tctgctatca ctcttggatg gacctgcggt 300

gcattagcta gttggtaagg taacggctta ccaaggcaat gatgcatagc cgagttgaga 360

gactgatcgg ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtag 420

ggaatcttcc acaatggacg aaagtctgat ggagcaacgc cgcgtgagtg aagaagggtt 480

tcggctcgta aagctctgtt ggtagtgaag aaagatagag gtagtaactg gcctttattt 540

gacggtaatt acttagaaag tcacggctaa ctacgtgcca gcagccgcgg taatacgtag 600

gtggcaagcg ttgtccggat ttattgggcg taaagcgagt gcaggcggtt caataagtct 660

gatgtgaaag ccttcggctc aaccggagaa ttgcatcaga aactgttgaa cttgagtgca 720

gaagaggaga gtggaactcc atgtgtagcg gtggaatgcg tagatatatg gaagaacacc 780

agtggcgaag gcggctctct ggtctgcaac tgacgctgag gctcgaaagc atgggtagcg 840

aacaggatta gataccctgg tagtccatgc cgtaaacgat gagtgctaag tgttgggagg 900

tttccgcctc tcagtgctgc agctaacgca ttaagcactc cgcctgggga gtacgaccgc 960

aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 1020

ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc agtgcaaacc taagagatta 1080

ggtgttccct tcggggacgc tgagacaggt ggtgcatggc tgtcgtcagc tcgtgtcgtg 1140

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcattaagt 1200

tgggcactct aatgagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc 1260

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggacggtaca acgagaagcg 1320

aacctgcgaa ggcaagcgga tctcttaaag ccgttctcag ttcggactgt aggctgcaac 1380

tcgcctacac gaagctggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt 1440

tcccgggcct tgtacacacc gcccgtcaca ccatgagagt ctgtaacacc caaagccggt 1500

gggataacct ttataggagt cagccgtcta aggtaggaca gatgattagg gtgaagtcgt 1560

aacaaggtag ccgtaggaga acctgcggct ggatcacctc ctttctaagg aaggcgaaag 1620

atgatggaga gtgcgagagc actaagagaa g 1651

<210> 1094
<211> 1555
<212> DNA
<213> Lactobacillus kalixensis

<400> 1094
ttgatcctgg ctcaggacga acgctggcgg cgtgcctaat acatgcaagt cgagcgaaca 60

gaagcagcag aattacttcg gtaaggacgc tgtggaagtt agcggcggat gggtgagtaa 120

cacgtgggta acctaccctt aagactggga taccacttgg aaacaggtgc taataccgga 180

taggagtatg agctgcatgg cttatacttt aaaggcggcg aaagctgtca ctaaaggatg 240

gacccgcggt gcattagcta gttggtaagg taacggctta ccaaggcgac gatgcatagc 300

cgagttgaga gactgatcgg ccacattggg actgagacac ggcccaaact cctacgggag 360

gcagcagtag ggaatcttcc acaatggacg caagtctgat ggagcaacgc cgcgtgagtg 420

aagaaggttt tcggatcgta aagctctgtt gttggtgaag aaggatatag gtagtaactg 480

gcctatattt gacggtaatc aaccagaaag tcacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtggcaagcg ttgtccggat ttattgggcg taaagcgagc gcaggcggag 600

aaataagtct gatgtgaaag cccacggctc aaccgtggaa ctgcatcgga aactgttttt 660

cttgagtgca gaagaggaga gtggaactcc atgtgtagcg gtggaatgcg tagatatatg 720

gaagaacacc agtggcgaag gcggctctct ggtctgcaac tgacgctgag gctcgaaagc 780

atgggtagcg aacaggatta gataccctgg tagtccatgc cgtaaacgat gagtgctaag 840

tgttgggagg tttccgcctc tcagtgctgc agctaacgca ttaagcactc cgcctgggga 900

gtacgaccgc aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 960

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatct agtgccattc 1020

taagagatta gaagttccct tcggggacgc taagacaggt ggtgcatggc tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc 1140

agcattaagt tgggcactct aatgagactg ccggtgacaa accggaggaa ggtggggatg 1200

acgtcaagtc atcatgcccc ttatgacctg ggctacacac gtgctacaat gggcagtaca 1260

acgagaagca agccggtgac ggcaagcgaa tctcttaaag ctgttctcag ttcggactgc 1320

agtctgcaac tcgactgcac gaagctggaa tcgctagtaa tcgcggatca gcacgccgcg 1380

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgggagt ctgcaatgcc 1440

caaagccggt ggcctaaccg taaggaagga gccgtctaag gcagggcaga tgactggggt 1500

gaagtcgtaa caaggtagcc gtaggagaac ctgcggctgg atcacctcct tttct 1555

<210> 1095
<211> 1552
<212> DNA
<213> Lactobacillus kefiranofaciens

<400> 1095
agtttgattc ttgctcagga cgaacgctgg cggcgtgcct aatacatgca agtcgagcga 60

gcggaaccag cagaatcact tcggtgagga cgctgggaaa gcgagcggcg gatgggtgag 120

taacacgtgg ggaacctgcc cttaagtctg ggataccact tggaaacagg tgctaatacc 180

ggataagaaa gcagttcgca tgaacagctt ttaaaaggcg gcgcaagctg tcgctaaagg 240

atggacccgc ggtgcattag ctagttggta aggtaacggc ctaccaaggc agtgatgcat 300

agccgagttg agagactgat cggccacatt gggactgaga cacggcccaa actcctacgg 360

gaggcagcag tagggaatct tccacaatgg acgcaagtct gatggagcaa cgccgcgtga 420

gtgaagaagg ttttcggacc gtaaagctct gttgttggtg aagaaggata gaggtagtaa 480

ctggccttta tttgacggta atcaaccaga aagtcacggc taactacgtg ccagcagccg 540

cggtaatacg taggtggcaa gcgttgtccg gatttattgg gcgtaaagcg agcgcaggcg 600

gaagaataag tctgatgtga aagccctcgg cttaaccgag gaattgcatc ggaaactgtt 660

tttcttgagt gcagaagagg agagtagaac tccatgtgta gcggtggaat gcgtagatat 720

atggaagaat accagtggcg aaggcggctc tctggtctgc aactgacgct gaggctcgaa 780

agcatgggta gcgaacagga ttagataccc tggtagtcca tgccgtaaac gatgagtgct 840

aagtgttggg aggcttccgc ctctcagtgc tgcagctaac gcattaagca ctccgcctgg 900

ggagtacgac cgcaaggttg aaactcaaag gaattgacgg gggcccgcac aagcggtgga 960

gcatgtggtt taattcgaag caacgcgaag aaccttacca ggtcttgaca tctagtgcca 1020

tttgtagaga tacaaagttc ccttcgggga cgctaagaca ggtggtgcat ggctgtcgtc 1080

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gttattagtt 1140

gccagcatta agttgggcac tctaatgaga ctgccggtga caaaccggag gaaggtgggg 1200

atgacgtcaa gtcatcatgc cccttatgac ctgggctaca cacgtgctac aatgggcagc 1260

acaacgagca gcgagcctgc aaaggcaagc aaatctctga aagctgttct cagttcggac 1320

tgcagtctgc aactcgactg cacgaagctg gaatcgctag taatcgcgga tcagcacgcc 1380

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatggg agtctgcaat 1440

gcccaaagcc ggtggcctaa ccgcaaggaa ggagccgtct aaggcagggc agatgactgg 1500

ggtgaagtcg taacaaggta gccgtaggag aacctgcggc tggatcacct ct 1552

<210> 1096
<211> 1456
<212> DNA
<213> Lactobacillus kefiri

<400> 1096
gtcgaacgcg tttccgttat tgattttagg tgcttgcatt tagaatgatt taacacggaa 60

acgagtggcg aactggtgag taacacgtgg gtaacctgcc cttgaagtag gggataacac 120

ttggaaacag gtgctaatac cgtataacaa ccaaaaccac atggttttgg tttaaaagat 180

ggcttcggct atcactttag gatggacccg cggcgtatta gcttgttggt aaggtaatgg 240

cctaccaagg caatgatacg tagccgacct gagagggtaa tcggccacat tgggactgag 300

acacggccca aactcctacg ggaggcagca gtatggaatc ttccacaatg gacgaaagtc 360

tgatggagca acgccgcgtg agtgatgaag ggtttcggct cgtaaaactc tgttgttgga 420

gaagaacagg tgtcagagta actgttgaca tcttgacggt atccaaccag aaagccacgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg 540

ggcgtaaagc gagcgcaggc ggtttcttag gtctgatgtg aaagccttcg gcttaaccgg 600

agaagtgcat cggaaaccag gagacttgag tgcagaagag gacagtggaa ctccatgtgt 660

agcggtgaaa tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg 720

taactgacgc tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc 780

atgccgtaaa cgatgagtgc taagtgttgg agggtttccg cccttcagtg ctgcagctaa 840

cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 900

ggggcccgca caagcggtgg agcatgtggt ttaattcgat gctacgcgaa gaaccttacc 960

aggtcttgac atcttctgcc aacctaagag attaggcgtt cccttcgggg acagaatgac 1020

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct tattgttagt tgccagcatt cagttgggca ctctagcaag actgccggtg 1140

acaaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga cctgggctac 1200

acacgtgcta caatggacgg tacaacgagt cgcgaaaccg cgaggtcaag ctaatctctt 1260

aaagccgttc tcagttcgga ttgcaggctg caactcgcct gcatgaagtt ggaatcgcta 1320

gtaatcgtgg atcagcatgc cacggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatga gagtttgtaa cacccaaagc cggtgaggta accttcgggg accagccgtc 1440

taaggtggac agatga 1456

<210> 1097
<211> 1522
<212> DNA
<213> Lactobacillus kimchii

<400> 1097
gacgaacgct ggcggcatgc ctaatacatg caagtcgaac gaaccatcct gaagattgaa 60

gcttgcttca tgattcagac cttggtgagt ggcggacggg tgagtaacac gtgggtaacc 120

tgcccagaag tgggggataa catttggaaa caagtgctaa taccgcataa caacttagat 180

cacatgatct ttgtttaaaa gatggttttg ctatctcttc tggatggacc cgcggcgtat 240

tagctagttg gtgaggtaat agctcaccaa ggcgatgata cgtagccgac ctgagagggt 300

aatcggccac attgggactg agacacggcc caaactccta cgggaggcag cagtagggaa 360

tcttccacaa tggacgaaag tctgatggag caatgccgcg tgagtgaaga aggttttcgg 420

atcgtaaaac tctgttgttg aagaagaaca tatgtgagag taactgttca cgtactgacg 480

gtattcaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg 540

caagcgttgt ccggatttat tgggcgtaaa gagaatgtag gcggtttatt aagtttgaag 600

tgaaagccct cggctcaacc gaggaagtgc ttcgaaaact ggtaaacttg agtgcagaag 660

aggaaagtgg aactccatgt gtagcggtgg aatgcgtaga tatatggaag aacaccagtg 720

gcgaaggcgg ctttctggtc tgtaactgac gctgagattc gaaagcatgg gtagcaaaca 780

ggattagata ccctggtagt ccatgccgta aacgatgagt gctaagtgtt ggagggtttc 840

cgcccttcag tgctgcagct aacgcattaa gcactccgcc tggggagtac gatcgcaaga 900

ttgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 960

aagcaacgcg aagaacctta ccaggtcttg acataccatg aaaagcttag agataagtct 1020

ttcccttcgg ggacatggat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttattatca gttgccagca ttcagttggg 1140

cactctggtg agactgccgg tgataaaccg gaggaaggtg gggacgacgt caaatcatca 1200

tgcccccttat gacctgggct acacacgtgc tacaatggtc ggtacaacgt gctgcgaact 1260

cgcgagggca agcaaatcac ttaaaaccga tctcagttcg gattgtaggc tgcaactcgc 1320

ctacatgaag ctggaatcgc tagtaatcgc ggatcagcat gccgcggtga atacgttccc 1380

gggccttgta cacaccgccc gtcacaccat gagagtttgt aacacccaaa gtcggtgggg 1440

taacccttcg gggaactagc cgcctaaggt gggacaaatg attagggtga agtcgtaaca 1500

aggtagccgt aggagaacct gc 1522

<210> 1098
<211> 1479
<212> DNA
<213> Lactobacillus leichmannii

<400> 1098
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gagctgaatt caaagatccc 60

ttcggggtga tttgttggay gctagcggcg gatgggtgag taacacgtgg gcaatctgcc 120

ctaaagactg ggataccact tggaaacagg tgctaatacc ggataacaac atgaatcgca 180

tgattcaagt ttgaaaggcg gcgcaagctg tcactttagg atgagcccgc ggcgcattag 240

ctagttggtg gggtaaaggc ctaccaaggc aatgatgcgt agccgagttg agagactgat 300

cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag tagggaatct 360

tccacaatgg acgcaagtct gatggagcaa cgccgcgtga gtgaagaagg tyttcggatc 420

gtaaagctct gttgttggtg aagaaggata gaggcagtaa ctggtcttta tttgacggta 480

atcaaccaga aagtcacggc taactacgtg ccagcagccg cggtaatacg taggtggcaa 540

gcgttgtccg gatttattgg gcgtaaagcg agcgcaggcg gaatgataag tctgatgtga 600

aagcccacgg ctcaaccgtg gaactgcatc ggaaactgtc attcttgagt gcagaagagg 660

agagtggaac tccatgtgta gcggtggaat gcgtagatat atggaagaac accagtggcg 720

aaggcggctc tctggtctgc aactgacgct gaggctcgaa agcatgggta gcgaacagga 780

ttagataccc tggtagtcca tgccgtaaac gatgagcgct aggtgttggg gactttccgg 840

tcctcagtgc cgcagcaaac gcattaagcg ctccgcctgg ggagtacgac cgcaaggttg 900

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgaag 960

caacgcgaag aaccttacca ggtcttgaca tcctgcgcta cacytagaga targtggttc 1020

ccttcgggga cgcagagaca ggtggtgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt gtctttagtt gccatcatta agttgggcac 1140

tctaaagaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcatcatgc 1200

ccctttatgac ctgggctaca cacgtgctac aatgggcagt acaacgagaa gcraacccgc 1260

gagggtaagc ggatctctta aagctgytct cagttcggac tgcaggctgc aactcgcctg 1320

cacgaagctg gaatcgctag taatcgcgga tcagcacgcc gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc acaccatgga agtctgcaat gcccaaagtc ggtgsgataa 1440

cctttatagg agtcagccgc ctaaggcagg gcagatgac 1479

<210> 1099
<211> 1308
<212> DNA
<213> Lactobacillus mucosae

<400> 1099
agcgagtggc ggacgggtga gtaacacgta ggtaacctgc cccaaagcgg gggataacat 60

ttggaaacag atgctaatac cgcataacaa tttgaatcgc atgattcaaa tttaaaagat 120

ggcttcggct atcactttgg gatggacctg cggcgcatta gcttgttggt agggtaacgg 180

cctaccaagg ctgtgatgcg tagccgagtt gagagactga tcggccacaa tggaactgag 240

acacggtcca tactcctacg ggaggcagca gtagggaatc ttccacaatg ggcgcaagcc 300

tgatggagca acaccgcgtg agtgaagaag ggtttcggct cgtaaagctc tgttgttaga 360

gaagaacgtg cgtgagagca actgttcacg cagtgacggt atctaaccag aaagtcacgg 420

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg 480

ggcgtaaagc gagcgcaggc ggtttgataa gtctgatgtg aaagcctttg gcttaaccaa 540

agaagtgcat cggaaactgt cagacttgag tgcagaagag gacagtggaa ctccatgtgt 600

agcggtggaa tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg 660

caactgacgc tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc 720

atgccgtaaa cgatgagtgc taggtgttgg agggtttccg cccttcagtg ccgcagctaa 780

cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 840

ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gctacgcgga agaaccttac 900

caggtcttga catcttgcgc caaccctaga gatagggcgt ttccttcggg aacgcaatga 960

caggtggtgc atggtcgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1020

agcgcaaccc ttgttactag ttgccagcat tcagttgggc actctagtga gactgccggt 1080

gacaaaccgg aggaaggtgg ggacgacgtc agatcatcat gccccttatg acctgggcta 1140

cacacgtgct acaatggacg gtacaacgag tcgcgaactc gcgagggcaa gctaatctct 1200

taaaaccgtt ctcagttcgg actgcaggct gcaactcgcc tgcacgaagt cggaatcgct 1260

agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggccttgt 1308

<210> 1100
<211> 1022
<212> DNA
<213> Lactobacillus murinus

<220>
<221> modified_base
<222> (989)..(989)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (998)..(1001)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1003)..(1004)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1011)..(1012)
<223> a, c, t, g, unknown or other

<400> 1100
cttctttatc accgagtgct tgcactcacc gataaagagt tgagtggcga acgggtgagt 60

aacacgtggg caacctgccc aaaagagggg gataacactt ggaaacaggt gctaataccg 120

cataaccata gttaccgcat ggtaactatg taaaaggtgg ctatgctacc gcttttggat 180

gggcccgcgg cgcattagct agttggtgag gtaaaggctt accaaggcaa tgatgcgtag 240

ccgaactgag aggttgatcg gccacattgg gactgagaca cggcccaaac tcctacggga 300

ggcagcagta gggaatcttc cacaatgggc gaaagcctga tggagcaacg ccgcgtgggt 360

gaagaaggtc ttcggatcgt aaaaccctgt tgttagagaa gaaagtgcgt gagagtaact 420

gttcacgttt cgacggtatc taaccagaaa gccacggcta actacgtgcc agcagccgcg 480

gtaatacgta ggtggcaagc gttatccgga tttattgggc gtaaagggaa cgcaggcggt 540

cttttaagtc tgatgtgaaa gccttcggct taaccggagt agtgcattgg aaactgggag 600

acttgagtgc agaagaggag agtggaactc catgtgtagc ggtgaaatgc gtagatatat 660

ggaagaacac cagtggcgaa agcggctctc tggtctgtaa ctgacgctga ggttcgaaag 720

cgtgggtagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgaatgctaa 780

gtgttggagg gtttccgccc ttcagtgctg cagctaacgc aataagcatt ccgcctgggg 840

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 900

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc ttctgacaat 960

cctagagata ggactttccc ttcggggana gaatgacnnn ngnncatggt nntcgtcagc 1020

tc 1022

<210> 1101
<211> 1556
<212> DNA
<213> Lactobacillus nodensis

<400> 1101
cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gaactctggt 60

ttttgaacga tggtgcttgc accggagtga ttaaacattt gagtgagcgg cggatgggtg 120

agtaacacgt gggtaacctg ccctaaagtg ggggataaca tttggaaaca agtgctaata 180

ccgcataaca acatttacca catggtttat gtttgaaaga tggttctgct atcgctttag 240

gatggacccg cggtgcatta gttagttggt gaggtaacgg ctcaccaaga ccgtgatgca 300

tagccgacct gagagggtaa tcggccacat tgggactgag acacggccca aactcctacg 360

ggaggcagca gtagggaatc ttccacaatg gacgaaagtc tgatggagca acgccgcgtg 420

agtgaagaag gttttcggat cgtaaaactc tgttgttgaa gaagaacatg cgtgagagta 480

actgttcatg tattgacggt attcaaccag aaagccacgg ctaactacgt gccagcagcc 540

gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc gagcgtaggc 600

ggtttattaa gtctgatgtg aaagccctcg gctcaaccga ggaagtgcat cggaaactgg 660

taaacttgag tgcagaagag gagagtggaa ctccatgtgt agcggtggaa tgcgtagata 720

tatggaagaa catcagtggc gaaggcggct ctctggtctg taactgacgc tgaggttcga 780

aagcgtgggt agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtgc 840

taagtgttgg agggtttccg cccttcagtg ctgcagctaa cgcattaagc actccgcctg 900

gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg gggcccgca caagcggtgg 960

agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac atatcttgaa 1020

acactaagag attagttttt cccttcgggg acaagaatac aggtggtgca tggttgtcgt 1080

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tattactagt 1140

tgccagcatt tagttgggca ctctagtgag actgccggtg acaaaccgga ggaaggtggg 1200

gacgacgtca aatcatcatg ccccttatga cctgggctac acacgtgcta caatggtcgg 1260

tacaacgtgc tgcgaactcg cgagggtaag caaatcactt aaaaccgatc tcagttcgga 1320

ttgtaggctg caactcgcct acatgaagct ggaatcgcta gtaatcgcgg atcagcatgc 1380

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1440

cacccaaagc cggtggggta cctttttagga gctagccgtc taaggtggga caaatgatta 1500

gggtgaagtc gtaacaaggt agccgtagga gaacctgcgg ctggatcacc tcctac 1556

<210> 1102
<211> 1556
<212> DNA
<213> Lactobacillus oeni

<400> 1102
tagattttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgaa 60

cgcagaattt ccaccgagtg cttgcactca ccggaaattc tgagtggcga acgggtgagt 120

aacacgtggg taacctgccc aaaagagggg gataacactt ggaaacaggt gctaataccg 180

cataacaaca aaaaccgcct ggtttttgtt tcaaagatgg tttcggctgt cacttttgga 240

tggacccgcg gcgtattagc tagttggtaa ggtaacggct taccaaggca gtgatacgta 300

gccgaactga gaggttgatc ggccacattg ggactgagac acggcccaaa ctcctacggg 360

aggcagcagt agggaatctt ccacaatgga cgaaagtctg atggagcaac gccgcgtgag 420

tgaagaaggt tttcggatcg taaaactctg ttgttagaga agaacgtgtg tgagagtaac 480

tgttcatgca gtgacggtat ctaaccagaa agccacggct aactacgtgc cagcagccgc 540

ggtaatacgt aggtggcaag cgttgtccgg atttattggg cgtaaaggga acgcaggcgg 600

tcttttaagt ctgatgtgaa agccttcggc ttaaccgaag tcgtgcattg gaaactgaga 660

gacttgagtg cagaagagga gagtggaact ccatgtgtag cggtgaaatg cgtagatata 720

tggaagaaca ccagtggcga aagcggctct ctggtctgta actgacgctg aggttcgaaa 780

gcatgggtag caaacaggat tagataccct ggtagtccat gccgtaaacg atgaatgcta 840

agtgttggag ggtttccgcc cttcagtgct gcagctaacg cattaagcat tccgcctggg 900

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 960

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cttttgctaa 1020

cctgagagat caggcgttcc cttcggggac aaaatgacag gtggtgcatg gttgtcgtca 1080

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta ttactagttg 1140

ccagcattca gttgggcact ctagtgagac tgccggtgac aaaccggagg aaggtgggga 1200

tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggacggta 1260

caacgagtcg cgaaaccgcg aggtttagct aatctcttaa aaccgttctc agttcggatt 1320

gcaggctgca actcgcctgc atgaagtcgg aatcgctagt aatcgcggat cagcatgccg 1380

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatgaga gtttgtaaca 1440

cccaaagccg gtgcggtaac cttttaggaa ccagccgtct aaggtgggac agatgattgg 1500

ggtgaagtcg taacaaggta gccgtaggag aacctgcggc tggaccacct acttaa 1556

<210> 1103
<211> 1579
<212> DNA
<213> Lactobacillus oris

<400> 1103
ttttatatga gagtttgatc ctggctcagg atgaacgccg gcggtgtgcc taatacatgc 60

aagtcgagcg cactggccca acagaaatga cgtgcttaca ctgatttgac gttggattcc 120

cagtgagcgg cggacgggtg agtaacacgt gggcaacctg ccccaaagcg ggggataaca 180

tttggaaaca ggtgctaata ccgcataact tggaaaacca catggttttc caataaaaga 240

tggtttcggc tatcactttg ggatgggccc gcggtgcatt agctagttgg taaggtaacg 300

gcttaccaag gcgatgatgc atagccgagt tgagagactg atcggccaca atggaactga 360

gacacggtcc atactcctac gggaggcagc agtagggaat cttccacaat gggcgcaagc 420

ctgatggagc aacaccgcgt gagtgaagaa gggtttcggc tcgtaaaact ctgttgttgg 480

agaagaacgt gcgtaagagt aactgtttac gcagtgacgg tatccaacca gaaagtcacg 540

gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttatc cggatttatt 600

gggcgtaaag cgagcgcagg cggttgctta ggtctgatgt gaaagccttc ggcttaaccg 660

aagaagtgca tcggaaaccg ggcgacttga gtgcagaaga ggacagtgga actccatgtg 720

tagcggtgga atgcgtagat atatggaaga acaccagtgg cgaaggcggc tgtctggtct 780

gcaactgacg ctgaggctcg aaagcatggg tagcgaacag gattagatac cctggtagtc 840

catgccgtaa acgatgagtg ctaggtgttg gagggtttcc gcccttcagt gccgaagcta 900

acgcattaag cactccgcct ggggagtacg accgcaaggt tgaaactcaa aggaattgac 960

gggggcccgc acaagcggtg gagcatgtgg tttaattcga agctacgcga agaaccttac 1020

caggtcttga catcttgcgc caacctcaga gatgaggcgt tcccttcggg gacgcaaaga 1080

caggtggtgc atggtcgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1140

agcgcaaccc ttgttactag ttgccagcat tcagttgggc actctagtga gactgccggt 1200

gacaaaccgg aggaaggtgg ggacgacgtc agatcatcat gccccttatg acctgggcta 1260

cacacgtgct acaatggccg gtacaacgag cagctaaccc gcgagggtgt gcaaatctct 1320

taaagccggt ctcagttcgg actgcagtct gcaactcgac tgcacgaagt cggaatcgct 1380

agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1440

tcacaccatg gaagtttgta acgcccaaag tcggtggcct aaccatttgg agggagccgc 1500

ctaaggcggg acagatgact ggggtgaagt cgtaacaagg tagccgtagg agaacctgcg 1560

gctggatcac ctcctttct 1579

<210> 1104
<211> 1518
<212> DNA
<213> Lactobacillus parabrevis

<400> 1104
gacgaacgct ggcggcatgc ctaatacatg caagtcgaac gagcttccgt tgaatgacgt 60

gcttgcactg atttyaacaa tgaagcgagt ggcgaactgg tgagtaacac gtgggtaact 120

tgcccagaag caggggataa cacttggaaa caggtgctaa taccgtataa caacagaaac 180

cgcatggttt ctgtttgaaa ggtggtttcg gctatcactt ctggatggac ccgcggcgta 240

ttagttagtt ggtgaggtaa aggcccacca agacaatgat acgtagccga cctgagaggg 300

taatcggcca cattgggact gagacacggc ccaaactcct acgggaggca gcagtaggga 360

atcttccaca atggacgaaa gtctgatgga gcaatgccgc gtgagtgaag aagggtttcg 420

gctcgtaaaa ctctgttgtt aaagaagaac actcttgaga gtaactgttc aggagttgac 480

ggtatttaac cagaaagcca cggctaacta cgtgccagca gccgcggtaa tacgtaggtg 540

gcaagcgttg tccggattta ttgggcgtaa agcgagcgca ggcggtttct taagtctgat 600

gtgaaagcct tcggcttaac cggagaagtg catcggaaac tgggagactt gagtgcagaa 660

gaggacagtg gaactccatg tgtagcggtg gaatgcgtag atatatggaa gaacaccagt 720

ggcgaaggcg gctgtctagt ctgtaactga cgctgaggct cgaaagcatg ggtagcaaac 780

aggattagat accctggtag tccatgccgt aaacgatgag tgctaggtgt tggagggttt 840

ccgcccttca gtgccgcagc taacgcatta agcactccgc ctggggagta cgaccgcaag 900

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 960

gaagctacgc gaagaacctt accaggtctt gacatactat gcaaatccta gagataggac 1020

gttcccttcg gggacatgga tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1080

tgttgggtta agtcccgcaa cgagcgcaac ccttattatc agttgccagc attaagttgg 1140

gcactctggt gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc 1200

atgccccttа tgacctgggc tacacacgtg ctacaatgga cggtacaacg agtygcgaag 1260

tcgtgaggct aagctaatct cttaaagccg ttctcagttc ggattgtagg ctgcaactcg 1320

cctacatgaa gttggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcacacca tgagagtttg taacacccaa agccggtgag 1440

ataaccttcg ggagtcagcc gtctaaggtg ggacagatga ttagggtgaa gtcgtaacaa 1500

ggtagccgta ggagaacc 1518

<210> 1105
<211> 1556
<212> DNA
<213> Lactobacillus parabuchneri

<400> 1105
ttgatcctgg ctcaggacga acgctggcgg cgtgcctaat acatgcaagt cgaacgcgtc 60

ttggttattg atgttaagtg cttgcattta actgatttaa cattgagacg agtggcgaac 120

tggtgagtaa cacgtgggta acctgccctt gaagtagggg ataacacttg gaaacaggtg 180

ctaataccgt ataacaacca aaaccacctg gttttggttt aaaagatggc ttcggctatc 240

actttaggat ggacccgcgg cgtattagct tgttggtaag gtaacggcct accaaggcaa 300

tgatacgtag ccgacctgag agggtaatcg gccacattgg gactgagaca cggcccaaac 360

tcctacggga ggcagcagta gggaatcttc cacaatggac gaaagtctga tggagcaacg 420

ccgcgtgagt gatgaagggt ttcggctcgt aaaactctgt tgttggagaa gaacaggtgt 480

gagagtaact gttcacatct tgacggtatc caaccagaaa gccacggcta actacgtgcc 540

agcagccgcg gtaatacgta ggtggcaagc gttgtccgga tttattgggc gtaaagcgag 600

cgcaggcggt ttcttaggtc tgatgtgaaa gccttcggct taaccggaga agtgcatcgg 660

aaaccaggag acttgagtgc agaagaggac agtggaactc catgtgtagc ggtgaaatgc 720

gtagatatat ggaagaacac cagtggcgaa ggcggctgtc tggtctgtaa ctgacgctga 780

ggctcgaaag catgggtagc gaacaggatt agataccctg gtagtccatg ccgtaaacga 840

tgagtgctaa gtgttggagg gtttccgccc ttcagtgctg cagctaacgc attaagcact 900

ccgcctgggg agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa 960

gcggtggagc atgtggttta attcgatgct acgcgaagaa ccttaccagg tcttgacatc 1020

ttctgccaac ctaagagatt aggcgttccc ttcggggaca gaatgacagg tggtgcatgg 1080

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat 1140

tgttagttgc cagcattcag ttgggcactc tagcaagact gccggtgaca aaccggagga 1200

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1260

tggacggtac aacgagtcgc gaaaccgcga ggtcaagcta atctcttaaa gccgttctca 1320

gttcggattg taggctgcaa ctcgcctaca tgaagttgga atcgctagta atcgtggatc 1380

agcatgccac ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1440

tttgtaacac ccaaagccgg tgaggtaacc ttcggggacc agccgtctaa ggtgggacag 1500

atgattaggg tgaagtcgta acaaggtagc cgtaggagaa cctgcggctg gatcac 1556

<210> 1106
<211> 1410
<212> DNA
<213> Lactobacillus paracasei

<220>
<221> modified_base
<222> (1402)..(1402)
<223> a, c, t, g, unknown or other

<400> 1106
tcgttgatga tcggtgcttg caccgagatt caacatggaa cgagtggcgg acgggtgagt 60

aacacgtggg taacctgccc ttaagtgggg gataacattt ggaaacagat gctaataccg 120

catagatcca agaaccgcat ggttcttggc tgaaagatgg cgtaagctat cgcttttgga 180

tggacccgcg gcgtattagc tagttggtga ggtaatggct caccaaggcg atgatacgta 240

gccgaactga gaggttgatc ggccacattg ggactgagac acggcccaaa ctcctacggg 300

aggcagcagt agggaatctt ccacaatgga cgcaagtctg atggagcaac gccgcgtgag 360

tgaagaaggc tttcgggtcg taaaactctg ttgttggaga agaatggtcg gcagagtaac 420

tgttgtcggc gtgacggtat ccaaccagaa agccacggct aactacgtgc cagcagccgc 480

ggtaatacgt aggtggcaag cgttatccgg atttattggg cgtaaagcga gcgcaggcgg 540

ttttttaagt ctgatgtgaa agccctcggc ttaaccgagg aagcgcatcg gaaactggga 600

aacttgagtg cagaagagga cagtggaact ccatgtgtag cggtgaaatg cgtagatata 660

tggaagaaca ccagtggcga aggcggctgt ctggtctgta actgacgctg aggctcgaaa 720

gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg atgaatgcta 780

ggtgttggag ggtttccgcc cttcagtgcc gcagctaacg cattaagcat tccgcctggg 840

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggac 900

atgtggttta attcgaagca acgcgaagaa cttaccaggt cttgacatct tttgatcacc 960

tgagagatcc cgttacccat tgggggggcaa aatgacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatg actagttgcc 1080

agcatttagt tgggcactct agtaagactg ccggtgacaa accggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat ggatggtaca 1200

acgagttgcg agaccgcgag gtcaagctaa tctcttaaag ccattctcag ttcggactgt 1260

aggctgcaac tcgcctacac gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg 1320

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgagagt ttgtaacacc 1380

cgaagccggt ggcgtaaccc tntagggagc 1410

<210> 1107
<211> 1396
<212> DNA
<213> Lactobacillus parakefiri

<220>
<221> modified_base
<222> (51)..(51)
<223> a, c, t, g, unknown or other

<400> 1107
gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac gcgtcttggc naatgatttt 60

aggtgcttgc acttgaaaga tttgacattg agacgagtgg cgaactggtg agtaacacgt 120

gggtaacctg cccttgaagt aggggataac acttggaaac aggtgctaat accgtataac 180

aaccaaaacc acctggtttt ggtttaaaag acggcttcgg ctgtcacttt aggatggacc 240

cgcggcgtat tagcttgttg gtaaggtaac ggcctaccaa ggcaatgata cgtagccgac 300

ctgagagggt aatcggccac attgggactg agacacggcc caaactccta cgggaggcag 360

cagtagggaa tcttccacaa tggacgaaag tctgatggag caacgccgcg tgagtgatga 420

agggtttcgg ctcgtaaaac tctgttgttg gagaagaacc gttgtcagag caactgttga 480

cagcttgacg gtatccaacc agaaagccac ggctaactac gtgccagcag ccgcggtaat 540

acgtaggtgg caagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggtttttt 600

aggtctgatg tgaaagcctt cggcttaacc ggagaagtgc atcggaaacc gggagacttg 660

agtgcagaag aggacagtgg aactccatgt gtagcggtga aatgcgtaga tatatggaag 720

aacaccagtg gcgaaggcgg ctgtctggtc tgtaactgac gctgaggctc gaaagcatgg 780

gtagcgaaca ggattagata ccctggtagt ccatgccgta aacgatgagt gctaagtgtt 840

ggagggtttc cgcccttcag tgctgcagct aacgcattaa gcactccgcc tggggagtac 900

gaccgcaagg ttgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg 960

gtttaattcg atgctacgcg aagaacctta ccaggtcttg acatcttctg ccaacctaag 1020

agattaggcg ttcccttcgg ggacagaatg acaggtggtg catggttgtc gtcagctcgt 1080

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttattgtta gttgccagca 1140

ttcagttggg cactctagca agactgccgg tgacaaaccg gaggaaggtg gggatgacgt 1200

caaatcatca tgccccttat gacctgggct acacacgtgc tacaatggac ggtacaacga 1260

gtcgcgaaac cgcgaggtca agctaatctc ttaaagccgt tctcagttcg gattgtaggc 1320

tgcaactcgc ctacatgaag ttggaatcgc tagtaatcgt ggatcagcat gccacggtga 1380

atacgttccc ggcctt 1396

<210> 1108
<211> 1308
<212> DNA
<213> Lactobacillus pentosus

<400> 1108
gagtttgatc atggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtcgaacg 60

agtggcgaac tggtgagtaa cacgtgggaa acctgcccag aagcggggga taacacctgg 120

aaacagatgc taataccgca taacgaaagt cacttttgga tggtcccgcg gcgtattagc 180

tagatggtga ggtaacggct caccatggca atgatacgta gccgacctga gagggtaatc 240

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 300

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag tgaagaaggg tttcggctcg 360

taaaactctg ttgttaaaga agatgacggt atttaaccag aaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 480

gagcgcaggc ggtttttaa gtctgatgtg aaagccttcg gctcaaccga agaagtgcat 540

cggaaactgg gaaacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtgaaa 600

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg actgacgctg 660

aggctcgaaa gtatgggtag caaacaggat tagataccct ggtagtccat accgtaaacg 720

atgaatgcta agtgttggag cttcagtgct gcagctaacg cattaagcat tccgcctggg 780

gagtacggcc gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat atacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttattat cagttgccag catgggcact ctggtgagac tgccggtgac aaaccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggatggca acgagttgcg aactcgcgag agtaagctaa tctcttccat tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1260

cacccaaagt cggtgggtaa ccagccgcct aaggtgggac agatgatt 1308

<210> 1109
<211> 1554
<212> DNA
<213> Lactobacillus perolens

<400> 1109
tggctcagga cgaacgctgg cggcgtgcct aatacatgca agtcgaacga ggtttgatca 60

gtttgcggtg gtgcttgcat caccaattac cgattaaacc gagtggcgga cgggtgagta 120

acacgtgggt aacctgccct tcagcagggg ataacatttg gaaacagatg ctaataccgt 180

ataaccacgg agaccgcatg gtctccgggt aaaagatggc gaaagctatc actgagggat 240

ggacccgcgg cgtattagcc agttggtggg gtaatggcct accaaagcga tgatacgtag 300

ccgacctgag agggtaatcg gccacattgg gactgagaca cggcccaaac tcctacggga 360

ggcagcagta gggaatcttc cacaatggac gcaagtctga tggagcaacg ccgcgtgagt 420

gaagaaggct ttcgggtcgt aaaactctgt tattgaagaa gaacgtgtgt gagagtaact 480

gctcatgcag tgacggtatt caaccagaaa gtcacggcta actacgtgcc agcagccgcg 540

gtaatacgta ggtggcaagc gttgtccgga tttattgggc gtaaagcgag tgcaggcggt 600

tttttaagtc tgatgtgaaa gccttcggct taaccgaaga agtgcatcgg aaagtgggaa 660

acttgagtgc agaagaggag agtggaactc catgtgtagc ggtgaaatgc gtagatatat 720

ggaagaacac cagtggcgaa ggcggctctc tggtctgtaa ctgacgctga ggctcgaaag 780

cgtgggtagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgaatactaa 840

gtgttggggg gtttccgccc ctcagtgctg cagctaacgc attaagtatt ccgcctgggg 900

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 960

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc ttctgccaag 1020

ctgagagatc agccgttcct tcggggacag aatgacaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatg attagttgcc 1140

agcattcagt tgggcactct agtcagactg ccggtgacaa accggaggaa ggcggggatg 1200

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat gggtggtaca 1260

acgagcagcg agaccgcgag gtcaagcgaa tctctaaaaa ccatcctcag ttcggattgt 1320

aggctgcaac tcgcctacat gaagctggaa tcgctagtaa tcgcggatca gcacgccgcg 1380

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgagagt ttgtaacacc 1440

caaagccggt aggacaaccg caaggagtca gccgtctaag gtgggacaaa tgattagggt 1500

gaagtcgtaa caaggtagcc gtaggagaac ctgcggctgg atcacctcct ttct 1554

<210> 1110
<211> 900
<212> DNA
<213> Lactobacillus plantarum

<220>
<221> modified_base
<222> (19)..(19)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (32)..(32)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (44)..(44)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (74)..(74)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (87)..(87)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (99)..(99)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (123)..(123)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (133)..(134)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (151)..(151)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (153)..(153)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (203)..(203)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (382)..(382)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (882)..(884)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (886)..(888)
<223> a, c, t, g, unknown or other

<400> 1110
gccgcggtaa tacgtaggng caagcgttgt cnggattatt gggngtaaag cgagcgcagg 60

cggtttttta agtntgatgt gaaagcnttc ggctcaacng aagaagtgca tcggaaaact 120

ggnaaacttg agnncagaag aggacagtgg nanctccatg tgtagcggtg aaatgcgtag 180

atatatggaa gaacaccagt ggngaaggcg gctgtctggt ctgtaactga cgctgaggct 240

cgaaagtatg ggtagcaaac aggattagat accctggtag tccataccgt aaacgatgaa 300

tgctaagtgt tggagggttt ccgcccttca gtgctgcagc taacgcatta agcattccgc 360

ctggggagta cggccgcaag gntgaaactc aaaggaattg acgggggccc gcacaagcgg 420

tggagcatgt ggtttaattc gaagctacgc gaagaacctt accaggtctt gacatactat 480

gcaaatctaa gagattagac gttcccttcg gggacatgga tacaggtggt gcatggttgt 540

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttattatc 600

agttgccagc attaagttgg gcactctggt gagactgccg gtgacaaacc ggaggaaggt 660

ggggatgacg tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatgga 720

tggtacaacg agttgcgaac tcgcgagagt aagctaatct cttaaagcca ttctcagttc 780

ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg cggatcagca 840

tgccgcggtg aatacgttcc cgggccttgt acacaccgcc cnnnannnca tgagagtttg 900

<210> 1111
<211> 1395
<212> DNA
<213> Lactobacillus pontis

<400> 1111
agtgagcggc ggacgggtga gtaacacgtg ggcaacctgc cctggagcgg gggataacat 60

ttggaaacag atgctaatac cgcataataa tcaaaaccac atggttttga tttcaaagat 120

ggcttcggct atcactccag gatgggcccg cggtgcatta gctagttggt aaggtaacgg 180

cttaccaagg cgatgatgca tagccgagtt gagagactga tcggccacaa tggaactgag 240

acacggtcca tactcctacg ggaggcagca gtagggaatc ttccacaatg ggcgcaagcc 300

tgatggagca acaccgcgtg agtgaagaag ggtttcggct cgtaaaactc tgttgttgaa 360

gaagaacgtg cgtgagagta actgttcatg cagtgacggt attcaaccag aaagtcacgg 420

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg 480

ggcgtaaagc gagcgcaggc ggttacttaa gtctgatgtg aaagccttcg gcttaaccga 540

agaagtgcat cggaaactgg gtgacttgag tgcagaagag gacagtggaa ctccatgtgt 600

agcggtggaa tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg 660

caactgacgc tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc 720

atgccgtaaa cgatgagtgc taggtgttgg agggtttccg cccttcagtg ccggagctaa 780

cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 840

ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gctacgcgaa gaaccttacc 900

aggtcttgac atcttgcgct aacctaagag attaggcgtt cccttcgggg acgcaatgac 960

aggtggtgca tggtcgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1020

gcgcaaccct tgttactagt tgccagcatt cagttgggca ctctagtgag actgccggtg 1080

acaaaccgga ggaaggtggg gatgacgtca gatcatcatg ccccttatga cctgggctac 1140

acacgtgcta caatggtcgg tacaacgagt cgctaacccg cgagggcaag ctaatctctt 1200

aaagccgatc tcagttcgga ctgtaggctg caactcgcct acacgaagtc ggaatcgcta 1260

gtaatcgcgg atcagcatgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1320

cacaccatgg aagtttgtaa cgcccaaagt cggtggccta accatttgga gggagccgcc 1380

taaggcggga cagat 1395

<210> 1112
<211> 1580
<212> DNA
<213> Lactobacillus reuteri

<400> 1112
ttttatatga gagtttgatc ctggctcagg atgaacgccg gcggtgtgcc taatacatgc 60

aagtcgtacg cactggccca actgattgat ggtgcttgca cctgattgac gatggattac 120

cagtgagtgg cggacgggtg agtaacacgt aggtaacctg ccccggagcg ggggataaca 180

tttggaaaca gatgctaata ccgcataaca acaaaagcca catggctttt gtttgaaaga 240

tggctttggc tatcactctg ggatggacct gcggtgcatt agctagttgg taaggtaacg 300

gcttaccaag gcgatgatgc atagccgagt tgagagactg atcggccaca atggaactga 360

gacacggtcc atactcctac gggaggcagc agtagggaat cttccacaat gggcgcaagc 420

ctgatggagc aacaccgcgt gagtgaagaa gggtttcggc tcgtaaagct ctgttgttgg 480

agaagaacgt gcgtgagagt aactgttcac gcagtgacgg tatccaacca gaaagtcacg 540

gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttatc cggatttatt 600

gggcgtaaag cgagcgcagg cggttgctta ggtctgatgt gaaagccttc ggcttaaccg 660

aagaagtgca tcggaaaccg ggcgacttga gtgcagaaga ggacagtgga actccatgtg 720

tagcggtgga atgcgtagat atatggaaga acaccagtgg cgaaggcggc tgtctggtct 780

gcaactgacg ctgaggctcg aaagcatggg tagcgaacag gattagatac cctggtagtc 840

catgccgtaa acgatgagtg ctaggtgttg gagggtttcc gcccttcagt gccggagcta 900

acgcattaag cactccgcct ggggagtacg accgcaaggt tgaaactcaa aggaattgac 960

gggggcccgc acaagcggtg gagcatgtgg tttaattcga agctacgcga agaaccttac 1020

caggtcttga catcttgcgc taaccttaga gataaggcgt tcccttcggg gacgcaatga 1080

caggtggtgc atggtcgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1140

agcgcaaccc ttgttactag ttgccagcat taagttgggc actctagtga gactgccggt 1200

gacaaaccgg aggaaggtgg ggacgacgtc agatcatcat gcccccttatg acctgggcta 1260

cacacgtgct acaatggacg gtacaacgag tcgcaagctc gcgagagtaa gctaatctct 1320

taaagccgtt ctcagttcgg actgtaggct gcaactcgcc tacacgaagt cggaatcgct 1380

agtcctcgcg gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1440

tcacaccatg ggagtttgta acgcccaaag tcggtggcct aacctttatg gagggagccg 1500

cctaaggcgg gacagatgac tggggtgaag tcgtaacaag gtagccgtag gagaacctgc 1560

ggctggatca cctcctttct 1580

<210> 1113
<211> 1429
<212> DNA
<213> Lactobacillus rhamnosus

<400> 1113
gtcgaacgag ttctgattat tgaaaggtgc ttgcatcttg atttaatttt gaacgagtgg 60

cggacgggtg agtaacacgt gggtaacctg cccttaagtg ggggataaca tttggaaaca 120

gatgctaata ccgcataaat ccaagaaccg catggttctt ggctgaaaga tggcgtaagc 180

tatcgctttt ggatggaccc gcggcgtatt agctagttgg tgaggtaacg gctcaccaag 240

gcaatgatac gtagccgaac tgagaggttg atcggccaca ttgggactga gacacggccc 300

aaactcctac gggaggcagc agtagggaat cttccacaat ggacgcaagt ctgatggagc 360

aacgccgcgt gagtgaagaa ggctttcggg tcgtaaaact ctgttgttgg agaagaatgg 420

tcggcagagt aactgttgtc ggcgtgacgg tatccaacca gaaagccacg gctaactacg 480

tgccagcagc cgcggtaata cgtaggtggc aagcgttatc cggatttatt gggcgtaaag 540

cgagcgcagg cggtttttta agtctgatgt gaaagccctc ggcttaaccg aggaagtgca 600

tcggaaactg ggaaacttga gtgcagagga cagtggaact ccatgtgtag cggtgaaatg 660

cgtagatata tggaagaaca ccagtggcga aggcggctgt ctggtctgta actgacgctg 720

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 780

atgaatgcta gtgttggagg gtttccgccc ttcagtgccg cagctaacgc attaagcatt 840

ccgcctgggg agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa 900

gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc 960

ttttgatcac ctgagagatc aggttgcccg tgtggggcga aaatgacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat 1080

gactagttgc cagcatttag ttgggcactc tagtaagact gccggtgaca aaccggagga 1140

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1200

tggatggtac aacgagttgc gagaccgcga ggtcaagcta atctcttaaa gccattctca 1260

gttcggactg taggctgcaa ctcgcctaca cgaagtcgga atcgctagta atcgcggatc 1320

agcacgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag 1380

tttgtaacac ccgaagccgg tggcgtaacc cttttaggga gcgagccgt 1429

<210> 1114
<211> 1452
<212> DNA
<213> Lactobacillus rogosae

<400> 1114
tcaggatgaa cgctggcggc gtgcttaaca catgcagtcg aacgaagcat ttaagacaga 60

ttacttcggt ttgaagtctt ttatgactga gtggcggacg ggtgagtaac gcgtgggtaa 120

cctgcctcat acaggggat agcagctgga aacggctggt aataccgcat aagcgcacag 180

taccacatgg tacagtgtga aaaactccgg tggtatgaga tggacccgcg tctgattagc 240

ttgttggcgg ggtaacggcc caccaaggcg acgatcagta gccgacctga gagggtgacc 300

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatgga ggaaactctg atgcagcgac gccgcgtgag tgaagaagta gttcgctatg 420

taaagctcta tcagcaggga agatagtgac ggtacctgac taagaagctc cggctaaata 480

cgtgccagca gccgcggtaa tacgtatgga gcaagcgtta tccggattta ctgggtgtaa 540

agggagtgta ggtggccagg caagtcagaa gtgaaagccc ggggctcaac cccgggactg 600

cttttgaaac tgcagggcta gagtgcagga ggggcaagtg gaattcctag tgtagcggtg 660

aaatgcgtag atattaggag gaacaccagt ggcgaaggcg gcttgctgga ctgtaactga 720

cactgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgaa tactaggtgt cggggcacat aagtgctccg gtgccgcagc aaacgcaata 840

agtattccac ctggggagta cgttcgcaag aatgaaactc aaaggaattg acggggaccc 900

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaagtctt 960

gacatcctct tgaccggtca gtaatgtgac cttttcttcg gaacaagagt gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttatcctt agtagccagc agttcggctg ggcactctag ggagactgcc agggataacc 1140

tggaggaagg tggggatgac gtcaaatcat catgcccctt atgacttggg ctacacacgt 1200

gctacaatgg cgtaaacaaa gtgaagcgag agtgtgagct taagcaaatc acaaaaataa 1260

cgtctcagtt cggattgtag tctgcaactc gactacatga agctggaatc gctagtaatc 1320

gcagatcaga atgctgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc 1380

atgggagtcg gaaatgcccg aagtcggtga cctaacgtaa gaagagccgc cgaagcaggt 1440

ctgataactg gg 1452

<210> 1115
<211> 1561
<212> DNA
<213> Lactobacillus ruminis

<400> 1115
ttgagagttt gatcctggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg 60

aacgaagctt tctttcaccg aatgcttgca ttcaccgaaa gaagcttagt ggcgaacggg 120

tgagtaacac gtaggcaacc tgcccaaaag aggggataa cacttggaaa caggtgctaa 180

taccgcataa ccatgaacac cgcatgatgt tcatgtaaaa gacggctttt gctgtcactt 240

ttggatgggc ctgcggcgta ttaacttgtt ggtggggtaa cggcctacca aggtgatgat 300

acgtagccga actgagaggt tgatcggcca cattgggact gagacacggc ccaaactcct 360

acgggaggca gcagtaggga atcttccaca atggacgaaa gtctgatgga gcaacgccgc 420

gtgaatgaag aaggccttcg ggtcgtaaaa ttctgttgtc agagaagaac gtgcgtgaga 480

gtaactgttc acgtattgac ggtatctgac cagaaagcca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcgagcgttg tccggattta ttgggcgtaa agggaacgca 600

ggcggtcttt taagtctgat gtgaaagcct tcggcttaac cgaagtagtg cattggaaac 660

tggaagactt gagtgcagaa gaggagagtg gaactccatg tgtagcggtg aaatgcgtag 720

atatatggaa gaacaccagt ggcgaaagcg gctctctggt ctgtaactga cgctgaggtt 780

cgaaagcgtg ggtagcaaac aggattagat accctggtag tccacgccgt aaacgatgag 840

tgctaagtgt tggagggttt ccgcccttca gtgctgcagc taacgcatta agcactccgc 900

ctggggagta cggtcgcaag actgaaactc aaaggaattg acgggggccc gcacaagcgg 960

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcttct 1020

gacaattcca gagatggaac gttcccttcg gggacagaat gacaggtggt gcatggttgt 1080

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttattgtc 1140

agttgccatc attaagttgg gcactctggc gagactgccg gtgacaaacc ggaggaaggt 1200

ggggatgacg tcaaatcatc atgccccttа tgacctgggc tacacacgtg ctacaatgga 1260

cggtacaacg agtcgctaac tcgcgagggc aagctaatct cttaaagccg ttctcagttc 1320

ggattgcagg ctgcaactcg cctgcatgaa gtcggaatcg ctagtaatcg cgaatcagca 1380

tgtcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgagagtttg 1440

taacacccaa agtcggtggg gtaacctttt ggagccagcc gcctaaggtg ggacagatga 1500

ttggggtgaa gtcgtaacaa ggtagccgta ggagaacctg cggctggatc acctcctttc 1560

t 1561

<210> 1116
<211> 1579
<212> DNA
<213> Lactobacillus sakei

<400> 1116
gggaattcga ttgagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat 60

gcaagtcgaa cgcactctcg tttagattga aggagcttgc tcctgattga taaacatttg 120

agtgagtggc ggacgggtga gtaacacgtg ggtaacctgc cctaaagtgg gggataacat 180

ttggaaacag atgctaatac cgcataaaac ctaacaccgc atggtgtagg gttgaaagat 240

ggtttcggct atcactttag gatggacccg cggtgcatta gttagttggt gaggtaaagg 300

ctcaccaaga ccgtgatgca tagccgacct gagagggtaa tcggccacac tgggactgag 360

acacggccca gactcctacg ggaggcagca gtagggaatc ttccacaatg gacgaaagtc 420

tgatggagca acgccgcgtg agtgaagaag gttttcggat cgtaaaactc tgttgttgga 480

gaagaatgta tctgatagta actgaccagg tagtgacggt atccaaccag aaagccacgg 540

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg 600

ggcgtaaagc gagcgcaggc ggtttcttaa gtctgatgtg aaagccttcg gctcaaccga 660

agaagtgcat cggaaactgg gaaacttgag tgcagaagag gacagtggaa ctccatgtgt 720

agcggtgaaa tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg 780

taactgacgc tgaggctcga aagcatgggt agcaaacagg attagatacc ctggtagtcc 840

atgccgtaaa cgatgagtgc taggtgttgg agggtttccg cccttcagtg ccgcagctaa 900

cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 960

ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 1020

aggtcttgac atcctttgac cactctagag atagagcttt cccttcgggg acaaagtgac 1080

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1140

gcgcaaccct tattactagt tgccagcatt tagttgggca ctctagtgag actgccggtg 1200

acaaaccgga ggaaggtggg gacgacgtca aatcatcatg ccccttatga cctgggctac 1260

acacgtgcta caatggatgg tacaacgagt tgcgagaccg cgaggtttag ctaatctctt 1320

aaaaccattc tcagttcgga ttgtaggctg caactcgcct acatgaagcc ggaatcgcta 1380

gtaatcgcgg atcagcatgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1440

cacaccatga gagtttgtaa cacccaaagc cggtgaggta accttcgggg agccagccgt 1500

ctaaggtggg acagatgatt agggtgaagt cgtaacaagg tagccgtagg agaacctgcg 1560

gctggatcac ctcctttct 1579

<210> 1117
<211> 1566
<212> DNA
<213> Lactobacillus salivarius

<400> 1117
tttaaaatga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg aaactttctt acaccgaatg cttgcattca ccgtaagaag ttgagtggcg 120

gacgggtgag taacacgtgg gtaacctgcc taaaagaagg ggataacact tggaaacagg 180

tgctaatacc gtatatctct aaggatcgca tgattcttag atgaaagatg gttctgctat 240

cgcttttaga tggacccgcg gcgtattaac tagttggtgg ggtaacggcc taccaaggtg 300

atgatacgta gccgaactga gaggttgatc ggccacattg ggactgagac acggcccaaa 360

ctcctacggg aggcagcagt agggaatctt ccacaatgga cgcaagtctg atggagcaac 420

gccgcgtgag tgaagaaggt cttcggatcg taaaactctg ttgttagaga agaacacgag 480

tgagagtaac tgttcattcg atgacggtat ctaaccagca agtcacggct aactacgtgc 540

cagcagccgc ggtaatacgt aggtggcaag cgttgtccgg atttattggg cgtaaaggga 600

acgcaggcgg tcttttaagt ctgatgtgaa agccttcggc ttaaccggag tagtgcattg 660

gaaactggaa gacttgagtg cagaagagga gagtggaact ccatgtgtag cggtgaaatg 720

cgtagatata tggaagaaca ccagtggcga aagcggctct ctggtctgta actgacgctg 780

aggttcgaaa gcgtgggtag caaacaggat tagataccct ggtagtccac gccgtaaacg 840

atgaatgcta ggtgttggag ggtttccgcc cttcagtgcc gcagctaacg caataagcat 900

tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca 960

agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat 1020

cctttgacca cctaagagat taggctttcc cttcggggac aaagtgacag gtggtgcatg 1080

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 1140

ttgtcagttg ccagcattaa gttgggcact ctggcgagac tgccggtgac aaaccggagg 1200

aaggtgggga cgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1260

atggacggta caacgagtcg cgagaccgcg aggtttagct aatctcttaa agccgttctc 1320

agttcggatt gtaggctgca actcgcctac atgaagtcgg aatcgctagt aatcgcgaat 1380

cagcatgtcg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatgaga 1440

gtttgtaaca cccaaagccg gtggggtaac cgcaaggagc cagccgtcta aggtgggaca 1500

gatgattggg gtgaagtcgt aacaaggtag ccgtaggaga acctgcggct ggatcacctc 1560

ctttct 1566

<210> 1118
<211> 1558
<212> DNA
<213> Lactobacillus saniviri

<400> 1118
gatcatggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg aacgagttct 60

ggttaatgat ggcggtgctt gcaccaatag atttaacatt tgaacgagtg gcggacgggt 120

gagtaacacg tgggtaacct gccctaaagt gggggataac atttggaaac agatgctaat 180

accgcataaa tcttggaacc tcatggttcc aagctgaaag atggcgtaag ctatcgcttt 240

tggatggacc cgcggcgtat tagctagttg gtgaggtaaa ggctcaccaa ggcgatgata 300

cgtagccgac ctgagagggt gatcggccac attgggactg agacacggcc caaactccta 360

cgggaggcag cagtagggaa tcttccacaa tggacgaaag tctgatggag caacgccgcg 420

tgagtgaaga aggttttcgg atcgtaaaac tctgttgttg gagaagaacg tacgtgagag 480

taactgttca cgtagtgacg gtatccaacc agaaagccac ggctaactac gtgccagcag 540

ccgcggtaat acgtaggtgg caagcgttat ccggatttat tgggcgtaaa gcgagcgcag 600

gcggtttctt aagtctgatg tgaaagccct cggctcaacc gaggaagtgc atcggaaact 660

gggaaacttg agtgcagaag aggacagtgg aactccatgt gtagcggtgg aatgcgtaga 720

tatatggaag aacaccagtg gcgaaggcgg ctgtctggtc tgtaactgac gctgaggctc 780

gaaagcatgg gtagcgaaca ggattagata ccctggtagt ccatgccgta aacgatgaat 840

actaagtgtt ggagggtttc cgcccttcag tgctgcagct aacgcattaa gtattccgcc 900

tggggagtac gaccgcaagg ttgaaactca aaggaattga cgggggcccg cacaagcggt 960

ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaggtcttg acatcttctg 1020

ctattctaag agattagaag ttcccttcgg ggacagaatg acaggtggtg catggttgtc 1080

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttatgacta 1140

gttgccagca ttaagttggg cactctaatc agactgccgg tgacaaaccg gaggaaggtg 1200

gggatgacgt caaatcatca tgccccttat gacctgggct acacacgtgc tacaatggat 1260

ggtacaacga gtcgcaaaac cgcgaggtta agctaatctc ttaaagccat tctcagtccg 1320

gactgtaggc tgcaactcgc ctacacgaag tcggaatcgc tagtaatcgc ggatcagcat 1380

gccgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccat gagagtttgt 1440

aacacccgaa gccggtgggg taacctttta ggagctagcc gtctaaggtg ggacagatga 1500

ttagggtgaa gtcgtaacaa ggtagccgta ggagaacctg cggctggatc acctccta 1558

<210> 1119
<211> 1562
<212> DNA
<213> Lactobacillus senioris

<400> 1119
gagtttgatc atggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtcgaacg 60

cgtcttggtg aatgatcggc ggtgcttgca ccaaagagat ttcacaatga gacgagtggc 120

gaactggtga gtaacacgtg gggaacctgc ccataagcag gggataacac ttggaaacag 180

gtgctaatac cgtataacaa tgtaaaccgc atggtttaca tttgaaagat ggtttcggct 240

atcacttatg gatggacccg cggcgcatta gctagttggt gaggtaacgg ctcaccaagg 300

caatgatgcg tagccgacct gagagggtaa tcggccacat tgggactgag acacggccca 360

aactcctacg ggaggcagca gtagggaatc ttccacaatg gacgaaagtc tgatggagca 420

acgccgcgtg agtgaagaag ggtttcggct cgtaaaactc tgttgttgga gaagaacatg 480

gatgagagta actgttcatt tattgacggt atccaaccag aaagccacgg ctaactacgt 540

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 600

gagcgcaggc ggtcttttaa gtctgatgtg aaagccttcg gcttaaccgg agaagtgcat 660

cggaaactgg gagacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtgaaa 720

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg taactgacgc 780

tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc atgccgtaaa 840

cgatgagtgc taagtgttgg agggtttccg cccttcagtg ctgcagctaa cgcattaagc 900

actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg gggcccgca 960

caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa gaaccttacc aggtcttgac 1020

atcttctgct aacccaagag attgggcgtt cccttcgggg acggaatgac aggtggtgca 1080

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1140

tattgttagt tgccagcatt tagttgggca ctctagcaag actgccggtg acaaaccgga 1200

ggaaggtggg gatgacgtca agtcctcatg ccccttatga cctgggctac acacgtgcta 1260

caatggacgg tacaacgagt cgcgaaaccg cgaggtcaag ctaatctctt aaagccgttc 1320

tcagttcgga ttgcaggctg caactcgcct gcatgaagtc ggaatcgcta gtaatcgtgg 1380

atcagcatgc cacggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga 1440

gagtttgtaa cacccaaagc cggtggggta acctttagg agccagccgt ctaaggtggg 1500

acagatgatt agggtgaagt cgtaacaagg tagccgtagg agaacctgcg gctcacctcc 1560

ta 1562

<210> 1120
<211> 1617
<212> DNA
<213> Lactobacillus sp. 66c

<400> 1120
gagttccact ctcctcttct gcactcaaga atgacagttt ccgatgcagt tccacggttg 60

agccgtgggc tttcacatca gacttatcat tccgcctgcg ctcgctttac gcccaataaa 120

tccggacaac gcttgccacc tacgtagagt ttgatcatgg ctcaggacga acgctgggcg 180

gcgtgcctaa tacatgcaag tcgagcgagc tgaattcaca gatcccttcg gagtgacgtg 240

ttggacgcta gcggcggatg ggtgagtaac acgtgggcaa tctgccctaa agactgggat 300

accacttgga aacaggtgct aataccggat aacaatgatg gttgcatgac cattatttga 360

aaggcggcgc aagctgtcac tttaggatga gcccgcggtg cattagctag ttggtgaggt 420

aacggctcac caaggccatg atgcatagcc gagttgagag actgatcggc cacattggga 480

ctgagacacg gcccaaactc ctacgggagg cagcagtagg gaatcttcca caatggacgc 540

aagtctgatg gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg 600

ttggtgaaga aggatgtgag tagcaactgg ctcatatttg acggtaatca accagaaagt 660

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tgtccggatt 720

tattgggcgt aaagcgagcg caggcggaat gataagtctg atgtgaaagc ccacggctca 780

accgtggaac tgcatcggaa actgtcattc ttgagtgcag aagaggagag tggaactcca 840

tgtgtagcgg tggaatgcgt agatatatgg aagaacacca gtggcgaagg cggctctctg 900

gtctgcaact gacgctgagg ctcgaaagca tgggtagcga acaggattag ataccctggt 960

agtccatgcc gtaaacgatg agcgctaggt gttggggact ttccggtcct cagtgccgca 1020

gcaaacgcat taagcgctcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 1080

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 1140

ttaccaggtc ttgacatcct gagaccgtta tagagatata attttccctt cggggactca 1200

gagacaggtg gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1260

aacgagcgca acccttgtct ttagttgcca gcattaagtt gggcactcta gagagactgc 1320

cggtgacaaa ccggaggaag gtggggatga cgtcaagtca tcatgcccct tatgacctgg 1380

gctacacacg tgctacaatg ggcagtacaa cgagaagcga acctgcgaag gcaagcggat 1440

ctcttaaagc tgttctcagt tcggactgca ggctgcaact cgcctgcacg aagctggaat 1500

cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1560

cccgtcacac catggaagtc tgcaatgccc aaagtcggtg ggataaccct tttggaa 1617

<210> 1121
<211> 1409
<212> DNA
<213> Lactobacillus sp. BT6

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (40)..(40)
<223> a, c, t, g, unknown or other

<400> 1121
tgattatntg aaanggtgct tgcatcttga tttaattttn gaacgagtgg cggacgggtg 60

agtaacacgt gggtaacctg cccttaagtg ggggataaca tttggaaaca gatgctaata 120

ccgcataaat ccaagaaccg catggttctt ggctgaaaga tggcgtaagc tatcgctttt 180

ggatggaccc gcggcgtatt agctagttgg tgaggtaacg gctcaccaag gcaatgatac 240

gtagccgaac tgagaggttg atcggccaca ttgggactga gacacggccc aaactcctac 300

gggaggcagc agtagggaat cttccacaat ggacgcaagt ctgatggagc aacgccgcgt 360

gagtgaagaa ggctttcggg tcgtaaaact ctgttgttgg agaagaatgg tcggcagagt 420

aactgttgtc ggcgtgacgg tatccaacca gaaagccacg gctaactacg tgccagcagc 480

cgcggtaata ctaggtggca agcgttatcc ggatttattg ggcgtaaagc gagcgcaggc 540

ggtttttaa gtctgatgtg aaagccctcg gcttaaccga ggaagtgcat cggaaactgg 600

aaacttgagt gcagaagagg acagtggaac tccatgtgta gcggtgaaat gcgtagatat 660

atggaagaac accagtggcg aaggcggctg tctggtctgt aactgacgct gagctcgaaa 720

gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg atgaatgcta 780

ggtgttggag ggtttccgcc cttcagtgcc gcagctaacg cattaagcat tccgcctggg 840

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggggagc 900

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc ttttgatcac 960

ctgagagatc aggtttcccc ttcgggggca aaatgacagg tggtgcatgg ttgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat gactagttgc 1080

cagcatttag ttgggcactc tagtaagact gccggtgaca aaccggagga aggtggggat 1140

gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa tggatggtac 1200

aacgagttgc gagaccgcga ggtcaagcta atctcttaaa gccattctca gttcggactg 1260

taggctgcaa ctcgcctaca cgaagtcgga atcgctagta atcgcggatc agcacgccgc 1320

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgagag tttgtaacac 1380

ccgaagccgg tggcgtaacc cttttaggg 1409

<210> 1122

<211> 1238
<212> DNA
<213> Lactobacillus sp. KLDS 1.0701

<400> 1122
agcggcggat gggtgagtaa cacgtgggga acctgcccca tagtctggga taccacttgg 60

aaacaggtgc taataccgga taagaaaagt cgctatggga tggccccgcg gtgcattagc 120

tagttggtag ggtaacggcc taccaaggca atgatgcata gccgagttga gagactgatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag tgaagaaggt tttcggatcg 300

taaagctctg ttgttggtga agatgacggt aatcaaccag aaagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggaagaataa gtctgatgtg aaagccctcg gcttaaccga ggaactgcat 480

cggaaactgt ttttcttgag tgcagaagag gagagtggaa ctccatgtgt agcggtggaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct ctctggtctg actgacgctg 600

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta agtgttggga tctcagtgct gcagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgtcat tagttgccag catgggcact ctaatgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacagca acgaggagca agcctgcgaa ggcaagcgaa tctcttctgt tctcagttcg 1080

gatgcagtct gcaactcgac tgcagaagct ggaatcgcta gtaatcgcgg atcagcacgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtctgcaa 1200

tgcccaaagc cggtgcctaa ggagccgtct aaggcagg 1238

<210> 1123
<211> 1237
<212> DNA
<213> Lactobacillus sp. KLDS 1.0702

<400> 1123
agtggcgaac tggtgagtaa cacgtgggaa acctgcccag aagcggggga taacacctgg 60

aaacagatgc taataccgca taacgaaagt cacttttgga tggtcccgcg gcgtattagc 120

tagatggtgg ggtaacggct caccatggca atgatacgta gccgacctga gagggtaatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag tgaagaaggg tttcggctcg 300

taaaactctg ttgttaaaga agatgacggt atttaaccag aaagccacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggtttttaa gtctgatgtg aaagccttcg gctcaaccga agaagtgcat 480

cggaaactgg gaaacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtgaaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg actgacgctg 600

aggctcgaaa gtatgggtag caaacaggat tagataccct ggtagtccat accgtaaacg 660

atgaatgcta agtgttggag cttcagtgct gcagctaacg cattaagcat tccgcctggg 720

gagtacggcc gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat atacaggtgg 840

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttattat cagttgccag catgggcact ctggtgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggatggca acgagttgcg aactcgcgag agtaagctaa tctcttccat tctcagttcg 1080

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagt cggtgggtaa ccagccgcct aaggtgg 1237

<210> 1124
<211> 1236
<212> DNA
<213> Lactobacillus sp. KLDS 1.0703

<400> 1124
agtggcgaac tggtgagtaa cacgtgggaa acctgcccag aagcggggga taacacctgg 60

aaacagatgc taataccgca taacgaaagt cacttttgga tggtcccgcg gcgtattagc 120

tagatggtgg ggtaacggct caccatggca atgatacgta gccgacctga gagggtaatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag tgaagaaggg tttcggctcg 300

taaaactctg ttgttaaaga agatgacggt atttaaccag aaagccacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggtttttaa gtctgatgtg aaagccttcg gctcaaccga agaagtgcat 480

cggaaactgg gaaacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtgaaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg actgacgctg 600

aggctcgaaa gtatgggtag caaacaggat tagataccct ggtagtccat accgtaaacg 660

atgaatgcta agtgttggag cttcagtgct gcagctaacg cattaagcat tccgcctggg 720

gagtacggcc gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat atacaggtgg 840

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttattat cagttgccag catgggcact ctggtgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggatggca acgagttgcg aactcgcgag agtaagctaa tctcttccat tctcagttcg 1080

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagt cggtgggtaa ccagccgcct aaggtg 1236

<210> 1125
<211> 1264
<212> DNA
<213> Lactobacillus sp. KLDS 1.0704

<400> 1125
gcggcgtgct atacatgcag tcgaacgagt ggcgaactgg tgagtaacac gtgggaaacc 60

tgcccagaag cgggggataa cacctggaaa cagatgctaa taccgcataa cgaaagtcac 120

ttttggatgg tcccgcggcg tattagctag atggtggggt aacggctcac catggcaatg 180

atacgtagcc gacctgagag ggtaatcggc cacattggga ctgagacacg gcccaaactc 240

ctacgggagg cagcagtagg gaatcttcca caatggacga aagtctgatg gagcaacgcc 300

gcgtgagtga agaagggttt cggctcgtaa aactctgttg ttaaagaaga tgacggtatt 360

taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc 420

gttgtccgga tttattgggc gtaaagcgag cgcaggcggt tttttaagtc tgatgtgaaa 480

gccttcggct caaccgaaga agtgcatcgg aaactgggaa acttgagtgc agaagaggac 540

agtggaactc catgtgtagc ggtgaaatgc gtagatatat ggaagaacac cagtggcgaa 600

ggcggctgtc tggtctgact gacgctgagg ctcgaaagta tgggtagcaa acaggattag 660

ataccctggt agtccatacc gtaaacgatg aatgctaagt gttggagctt cagtgctgca 720

gctaacgcat taagcattcc gcctggggag tacggccgca aggctgaaac tcaaaggaat 780

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagctac gcgaagaacc 840

ttaccaggtc ttgacatata caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 900

ttgggttaag tcccgcaacg agcgcaaccc ttattatcag ttgccagcat gggcactctg 960

gtgagactgc cggtgacaaa ccggaggaag gtggggatga cgtcaaatca tcatgcccct 1020

tatgacctgg gctacacacg tgctacaatg gatggcaacg agttgcgaac tcgcgagagt 1080

aagctaatct cttccattct cagttcggat gtaggctgca actcgcctac agaagtcgga 1140

atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac 1200

cgcccgtcac accatgagag tttgtaacac ccaaagtcgg tgggtaacca gccgcctaag 1260

gtgg 1264

<210> 1126
<211> 1240
<212> DNA
<213> Lactobacillus sp. KLDS 1.0705

<400> 1126
agtggcgaac tggtgagtaa cacgtgggaa acctgcccag aagcggggga taacacctgg 60

aaacagatgc taataccgca taacgaaagt cacttttgga tggtcccgcg gcgtattagc 120

tagatggtgg ggtaacggct caccatggca atgatacgta gccgacctga gagggtaatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag tgaagaaggg tttcggctcg 300

taaaactctg ttgttaaaga agatgacggt atttaaccag aaagccacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggtttttaa gtctgatgtg aaagccttcg gctcaaccga agaagtgcat 480

cggaaactgg gaaacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtgaaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg actgacgctg 600

aggctcgaaa gtatgggtag caaacaggat tagataccct ggtagtccat accgtaaacg 660

atgaatgcta agtgttggag cttcagtgct gcagctaacg cattaagcat tccgcctggg 720

gagtacggcc gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat atacaggtgg 840

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttattat cagttgccag catgggcact ctggtgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggatggca acgagttgcg aactcgcgag agtaagctaa tctcttccat tctcagttcg 1080

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagt cggtgggtaa ccagccgcct aaggtgggac 1240

<210> 1127
<211> 1236
<212> DNA
<213> Lactobacillus sp. KLDS 1.0707

<400> 1127
agtggcggac gggtgagtaa cacgtaggta acctgcccag aagcggggga caacatttgg 60

aaacagatgc taataccgca taacaaaagt cacttctgga tggacctgcg gtgcattagc 120

ttgttggtgg ggtaacggcc taccaaggcg atgatgcata gccgagttga gagactgatc 180

ggccacaatg ggactgagac acggcccata ctcctacggg aggcagcagt agggaatctt 240

ccacaatggg cgcaagcctg atggagcaac accgcgtgag tgaagaaggg tttcggctcg 300

taaagctctg ttgttaaaga agatgacggt atttaaccag aaagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg ggcgtaaaga 420

gagtgcaggc ggttttctaa gtctgatgtg aaagccttcg gcttaaccgg agaagtgcat 480

cggaaactgg ataacttgag tgcagaagag ggtagtggaa ctccatgtgt agcggtggaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct acctggtctg actgacgctg 600

agactcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta ggtgttggag cttcagtgcc ggagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggtcg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgttac tagttgccag catgggcact ctagtgagac tgccggtgac aaaccggagg 960

aaggtgggga cgacgtcaga tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgcg aactcgcgag ggcaagcaaa tctcttccgt tctcagttcg 1080

gatgcaggct gcaactcgcc tgcagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagt cggtgggtag ccagccgcct aaggtg 1236

<210> 1128
<211> 1237
<212> DNA
<213> Lactobacillus sp. KLDS 1.0709

<400> 1128
agtggcggac gggtgagtaa cacgtaggta acctgcccag aagcggggga caacatttgg 60

aaacagatgc taataccgca taacaaaagt cacttctgga tggacctgcg gtgcattagc 120

ttgttggtgg ggtaacggcc taccaaggcg atgatgcata gccgagttga gagactgatc 180

ggccacaatg ggactgagac acggcccata ctcctacggg aggcagcagt agggaatctt 240

ccacaatggg cgcaagcctg atggagcaac accgcgtgag tgaagaaggg tttcggctcg 300

taaagctctg ttgttaaaga agatgacggt atttaaccag aaagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg ggcgtaaaga 420

gagtgcaggc ggttttctaa gtctgatgtg aaagccttcg gcttaaccgg agaagtgcat 480

cggaaactgg ataacttgag tgcagaagag ggtagtggaa ctccatgtgt agcggtggaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct acctggtctg actgacgctg 600

agactcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta ggtgttggag cttcagtgcc ggagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggtcg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgttac tagttgccag catgggcact ctagtgagac tgccggtgac aaaccggagg 960

aaggtgggga cgacgtcaga tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgcg aactcgcgag ggcaagcaaa tctcttccgt tctcagttcg 1080

gatgcaggct gcaactcgcc tgcagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagt cggtgggtag ccagccgcct aaggtgg 1237

<210> 1129
<211> 1236
<212> DNA
<213> Lactobacillus sp. KLDS 1.0711

<400> 1129
agtggcggac gggtgagtaa cacgtaggta acctgcccag aagcggggga caacatttgg 60

aaacagatgc taataccgca taacaaaagt cacttctgga tggacctgcg gtgcattagc 120

ttgttggtgg ggtaatggcc taccaaggcg atgatgcata gccgagttga gagactgatc 180

ggccacaatg ggactgagac acggcccata ctcctacggg aggcagcagt agggaatctt 240

ccacaatggg cgcaagcctg atggagcaac accgcgtgag tgaagaaggg tttcggctcg 300

taaagctctg ttgttaaaga agatgacggt atttaaccag aaagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg ggcgtaaaga 420

gagtgcaggc ggttttctaa gtctgatgtg aaagccttcg gcttaaccgg agaagtgcat 480

cggaaactgg ataacttgag tgcagaagag ggtagtggaa ctccatgtgt agcggtggaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct acctggtctg actgacgctg 600

agactcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta ggtgttggag cttcagtgcc ggagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggtcg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgttac tagttgccag catgggcact ctagtgagac tgccggtgac aaaccggagg 960

aaggtgggga cgacgtcaga tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgcg aactcgcgag ggcaagcaaa tctcttccgt tctcagttcg 1080

gatgcaggct gcaactcgcc tgcagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagt cggtgggtag ccagccgcct aaggtg 1236

<210> 1130
<211> 1238
<212> DNA
<213> Lactobacillus sp. KLDS 1.0712

<400> 1130
agcggcggat gggtgagtaa cacgtgggga acctgcccca tagtctggga taccacttgg 60

aaacaggtgc taataccgga taagaaaagt cgctatggga tggccccgcg gtgcattagc 120

tagttggtaa ggtaaaggct taccaaggcg atgatgcata gccgagttga gagactgatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgcaagtctg atggagcaac gccgcgtgag tgaagaaggt tttcggatcg 300

taaagctctg ttgttggtga agatgacggt aatcaaccag aaagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggaagaataa gtctgatgtg aaagccctcg gcttaaccga ggaactgcat 480

cggaaactgt ttttcttgag tgcagaagag gagagtggaa ctccatgtgt agcggtggaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct ctctggtctg actgacgctg 600

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta agtgttggga tctcagtgct gcagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgttat tagttgccag catgggcact ctaatgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atgggcagca acgagaagcg agcctgcgaa ggcaagcgaa tctctgctgt tctcagttcg 1080

gatgcagtct gcaactcgac tgcagaagct ggaatcgcta gtaatcgcgg atcagcacgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtctgcaa 1200

tgcccaaagc cggtgcctaa ggagccgtct aaggcagg 1238

<210> 1131
<211> 1237
<212> DNA
<213> Lactobacillus sp. KLDS 1.0713

<400> 1131
agtggcggac gggtgagtaa cacgtaggta acctgcccag aagcggggga caacatttgg 60

aaacagatgc taataccgca taacaaaagt cacttctgga tggacctgcg gtgcattagc 120

ttgttggtgg ggtaatggcc taccaaggcg atgatgcata gccgagttga gagactgatc 180

ggccacaatg ggactgagac acggcccata ctcctacggg aggcagcagt agggaatctt 240

ccacaatggg cgcaagcctg atggagcaac accgcgtgag tgaagaaggg tttcggctcg 300

taaagctctg ttgttaaaga agatgacggt atttaaccag aaagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg ggcgtaaaga 420

gagtgcaggc ggttttctaa gtctgatgtg aaagccttcg gcttaaccgg agaagtgcat 480

cggaaactgg ataacttgag tgcagaagag ggtagtggaa ctccatgtgt agcggtggaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct acctggtctg actgacgctg 600

agactcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta ggtgttggag cttcagtgcc ggagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggtcg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgttac tagttgccag catgggcact ctagtgagac tgccggtgac aaaccggagg 960

aaggtgggga cgacgtcaga tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgcg aactcgcgag ggcaagcaaa tctcttccgt tctcagttcg 1080

gatgcaggct gcaactcgcc tgcagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagt cggtgggtag ccagccgcct aaggtgg 1237

<210> 1132
<211> 1237
<212> DNA
<213> Lactobacillus sp. KLDS 1.0716

<400> 1132
agtggcggac gggtgagtaa cacgtaggta acctgcccca aagcggggga taacatttgg 60

aaacagatgc taataccgca taacaaaagt cactttggga tggacctgcg gcgcattagc 120

ttgttggtag ggtaacggcc taccaaggct gtgatgcgta gccgagttga gagactgatc 180

ggccacaatg gaactgagac acggtccata ctcctacggg aggcagcagt agggaatctt 240

ccacaatggg cgcaagcctg atggagcaac accgcgtgag tgaagaaggg tttcggctcg 300

taaagctctg ttgttagaga agatgacggt atctaaccag aaagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg ggcgtaaagc 420

gagcgcaggc ggtttgataa gtctgatgtg aaagcctttg gcttaaccaa agaagtgcat 480

cggaaactgt cagacttgag tgcagaagag gacagtggaa ctccatgtgt agcggtggaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg actgacgctg 600

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 660

atgagtgcta ggtgttggag cttcagtgcc gcagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc tacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggtcg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgttac tagttgccag catgggcact ctagtgagac tgccggtgac aaaccggagg 960

aaggtgggga cgacgtcaga tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgcg aactcgcgag ggcaagctaa tctcttccgt tctcagttcg 1080

gatgcaggct gcaactcgcc tgcagaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgcaa 1200

cacccaaagt cggtgggtag ctagccgcct aaggtgg 1237

<210> 1133
<211> 1252
<212> DNA
<213> Lactobacillus sp. KLDS 1.0718

<400> 1133
atacatgcaa gtcgaacgag tggcggacgg gtgagtaaca cgtaggtaac ctgccccaaa 60

gcgggggata acatttggaa acagatgcta ataccgcata acaaaagtca ctttgggatg 120

gacctgcggc gcattagctt gttggtaggg taacggccta ccaaggctgt gatgcgtagc 180

cgagttgaga gactgatcgg ccacaatgga actgagacac ggtccatact cctacgggag 240

gcagcagtag ggaatcttcc acaatgggcg caagcctgat ggagcaacac cgcgtgagtg 300

aagaagggtt tcggctcgta aagctctgtt gttagagaag atgacggtat ctaaccagaa 360

agtcacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag cgttatccgg 420

atttattggg cgtaaagcga gcgcaggcgg tttgataagt ctgatgtgaa agcctttggc 480

ttaaccaaag aagtgcatcg gaaactgtca gacttgagtg cagaagagga cagtggaact 540

ccatgtgtag cggtggaatg cgtagatata tggaagaaca ccagtggcga aggcggctgt 600

ctggtctgac tgacgctgag gctcgaaagc atgggtagcg aacaggatta gataccctgg 660

tagtccatgc cgtaaacgat gagtgctagg tgttggagct tcagtgccgc agctaacgca 720

ttaagcactc cgcctgggga gtacgaccgc aaggttgaaa ctcaaaggaa ttgacggggg 780

cccgcacaag cggtggagca tgtggtttaa ttcgaagcta cgcgaagaac cttaccaggt 840

cttgacatcg acaggtggtg catggtcgtc gtcagctcgt gtcgtgagat gttgggttaa 900

gtcccgcaac gagcgcaacc cttgttacta gttgccagca tgggcactct agtgagactg 960

ccggtgacaa accggaggaa ggtggggacg acgtcagatc atcatgcccc ttatgacctg 1020

ggctacacac gtgctacaat ggacggcaac gagtcgcgaa ctcgcgaggg caagctaatc 1080

tcttccgttc tcagttcgga tgcaggctgc aactcgcctg cagaagtcgg aatcgctagt 1140

aatcgcggat cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1200

caccatgaga gtttgcaaca cccaaagtcg gtgggtagct agccgcctaa gg 1252

<210> 1134
<211> 1237
<212> DNA
<213> Lactobacillus sp. KLDS 1.0719

<400> 1134
agtggcggac gggtgagtaa cacgtgggta acctgcctaa aagaagggga taacacttgg 60

aaacaggtgc taataccgta tatcgaaagt cgcttttaga tggacccgcg gcgtattaac 120

tagttggtgg ggtaacggcc taccaaggtg atgatacgta gccgaactga gaggttgatc 180

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 240

ccacaatgga cgcaagtctg atggagcaac gccgcgtgag tgaagaaggt cttcggatcg 300

taaaactctg ttgttagaga agatgacggt atctaaccag caagtcacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagg 420

gaacgcaggc ggtcttttaa gtctgatgtg aaagccttcg gcttaaccgg agtagtgcat 480

tggaaactgg aagacttgag tgcagaagag gagagtggaa ctccatgtgt agcggtgaaa 540

tgcgtagata tatggaagaa caccagtggc gaaagcggct ctctggtctg actgacgctg 600

aggttcgaaa gcgtgggtag caaacaggat tagataccct ggtagtccac gccgtaaacg 660

atgaatgcta ggtgttggag cttcagtgcc gcagctaacg caataagcat tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 780

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttgttgt cagttgccag catgggcact ctggcgagac tgccggtgac aaaccggagg 960

aaggtgggga cgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggacggca acgagtcgca agaccgcgag gtttagctaa tctcttccgt tctcagttcg 1080

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcga atcagcatgt 1140

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagc cggtgggtag ccagccgtct aaggtgg 1237

<210> 1135
<211> 1364
<212> DNA
<213> Lactobacillus sp. oral clone HT002

<400> 1135
gagtttgatt ctggctcagg atgaacgccg gcggtgtgcc taatacatgc aagtcgaacg 60

agtggcggac gggtgagtaa cacgtaggta acctgcccgg aagcggggga caacatttgg 120

aaacagatgc taataccgca taacaaaagt cacttctgga tggacctgcg gtgcattagc 180

ttgttggtgg ggtaacggct taccaaggcg atgatgcata gccgagttga gagactgatc 240

ggccacaatg gaactgagac acggtccata ctcctacggg aggcagcagt agggaatctt 300

ccacaatggg cgcaagcctg atggagcaac accgcgtgag tgaagaaggg tttcggctcg 360

taaagctctg ttgttggaga agatgacggt atccaaccag aaagtcacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 480

gagtgcaggc ggttcaataa gtctgatgtg aaagccttcg gctcaaccgg agaattgcat 540

cagaaactgt tgaacttgag tgcagaagag gagagtggaa ctccatgtgt agcggtggaa 600

tgcgtagata tatggaagaa caccagtggc gaaggcggct ctctggtctg actgacgctg 660

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 720

atgagtgcta agtgttggga tctcagtgct gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc gacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgtcat tagttgccat catgggcact ataatgagac tgccggtgac aaaccggagg 1020

aaggtgggga tgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggacggca acgagaagcg aacctgcgaa ggcaagcgga tctctgccgt tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagct ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga gagtctgtaa 1260

cacccaaagc cggtggatag tcagccgtct aaggtaggac agatgattag ggtgaagtcg 1320

taacaaggta gccgtaggag aacctgcggc tggatcacct cctt 1364

<210> 1136
<211> 1361
<212> DNA
<213> Lactobacillus sp. oral clone HT070

<400> 1136
gagtttgatt ctggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtcgagcg 60

agcggcggat gggtgagtaa cacgtgggga acctgcccca gagtctggga taccacttgg 120

aaacaggtgc taataccgga taagaaaagt cgctcaggga tggccccgcg gtgcattagc 180

tagttggcaa ggtaacggcc taccaaggca atgatgcata gccgagttga gagactgatc 240

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 300

ccacaatgga cgcaagtctg atggagcaac gccgcgtgag tgaagaaggt tttcggatcg 360

taaagctctg ttgttggtga agatgacggt aatcaaccag aaagtcacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 480

gagcgcaggc ggaaaaataa gtctaatgtg aaagccctcg gcttaaccga ggaattgcat 540

cggaaactgt ttttcttgag tgcagaagag gagagtggaa ctccatgtgt agcggtggaa 600

tgcgtagata tatggaagaa caccagtggc gaaggcggct ctctggtctg actgacgctg 660

aggctcgaaa gcatgggtag cgaacaggat tagataccct ggtagtccat gccgtaaacg 720

atgagtgcta agtgttggga tctcagtgct gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttgttat tagttgccag catgggcact ctaatgagac tgccggtgac aaaccggagg 1020

aaggtgggga tgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggacagca acgagcagcg agcctgcgaa ggcaagcgaa tctctgctgt tctcagttcg 1140

gatgcagtct gcaactcgac tgcagaagct ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtctgcaa 1260

tgcccaaagc cggtgcctaa ggagccgtct aaggcagggc agatgactgg ggtgaagtcg 1320

tacaaggtag ccgtaggaaa cctgcggctg gacacctcct t 1361

<210> 1137
<211> 994
<212> DNA
<213> Lactobacillus sp. oral taxon 052

<220>
<221> modified_base
<222> (43)..(43)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (45)..(45)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (633)..(633)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (635)..(635)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (637)..(637)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (727)..(727)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (876)..(876)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (944)..(945)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (978)..(978)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (984)..(986)
<223> a, c, t, g, unknown or other

<400> 1137
cgcactggcc caactgagat gacgtgcttg cactgatttg acnanggatt accagtgagt 60

ggcggacggg tgagtaacac gtaggcaacc tgcccaagag cgggggataa catttggaaa 120

caagtgctaa taccgcataa gattgatgac cacatggtca tcaatttaaa gatggcttcg 180

gctatcactc ttggatgggc ctgcggtgca ttagctagtt ggtaaggtaa cggcttacca 240

aggcagtgat gcatagccga gttgagagac tgatcggcca caatgggact gagacacggc 300

ccatactcct acgggaggca gcagtaggga atcttccaca atgggcgcaa gcctgatgga 360

gcgacaccgc gtgagtgaag aagggtttcg gctcgtaaag ctctgttgtt gaagaagaac 420

gtgcgtgaga gtaactgttc acgcagtgac ggtattcaac cagaaagtca cggctaacta 480

cgtgccagca gccgcggtaa tacgtaggtg gcaagcgtta tccggattta ttgggcgtaa 540

agcgagcgca ggcggttttc taagtctgat gtgaaagcct tcggcttaac cgaagaaggg 600

catcggaaac tggatgactt gagtgcagaa gangncngtg gaactccatg tgtagcggtg 660

gaatgcgtag atatatggaa gaacaccagt ggcgaaggcg gctgcctagt ctgcaactga 720

cgctgangct cgaaagcatg ggtagcgaac aggattagat accctggtag tccatgccgt 780

aaacgatgag tgctaggtgt tggagggttt ccgcccttca gtgccgcagc taacgcaata 840

agcactccgc ctggggagta cgaccgcaag gttganctca aaggaattga cgggggcccg 900

cacaagcggt ggagcatgtg gtttaattcg aagctacgcg agannttacc aggtcttgac 960

atcttgcgct aacctaanag attnnngttc cctt 994

<210> 1138
<211> 1557
<212> DNA
<213> Lactobacillus tucceti

<220>
<221> modified_base
<222> (1548)..(1548)
<223> a, c, t, g, unknown or other

<400> 1138
ttaagagttt gatttaggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg 60

agcgaactct ggtaactgaa cgatgggtgc ttgcaccgga gtgatgatac atttgagtga 120

gcggcggatg ggtgagtaac acgtgggtaa cctgccctaa agtgggggat aacatctgga 180

aacaggtgct aataccgcat aacaacattt accacatggt ttatgtttga aagatggttc 240

tgctatcgct ttaggatgga cccgcggcgt attagctagt tggtgaggta acggctcacc 300

aaggcaatga tacgtagccg acctgagagg gtaatcggcc acattgggac tgagacacgg 360

cccaaactcc tacgggaggc agcagtaggg aatcttccac aatggacgaa agtctgatgg 420

agcaacgccg cgtgagtgaa gaaggttttc ggatcgtaaa actctgttgt tgaagaagaa 480

catgcgtgag agtaactgtt catgtattga cggtattcaa ccagaaagcc acggctaact 540

acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggattt attgggcgta 600

aagcgagcgt aggcggttta ttaagtctga tgtgaaagcc ctcggctcaa ccgaggaagt 660

gcatcggaaa ctggtaaact tgagtgcaga agaggaaagt ggaactccat gtgtagcggt 720

ggaatgcgta gatatatgga agaacaccag tggcgaaggc ggctttctgg tctgtaactg 780

acgctgaggt tcgaaagcgt gggtagcaaa caggattaga taccctggta gtccacgccg 840

taaacgatga gtgctaagtg ttggagggtt tccgcccttc agtgctgcag ctaacgcatt 900

aagcactccg cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc 960

cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggtct 1020

tgacatatct tgaaagtcta agagattaga ggttcccttc ggggacaaga atacaggtgg 1080

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1140

cccttattac tagttgccag cattaagttg ggcactctag tgagactgcc ggtgacaaac 1200

cggaggaagg tggggacgac gtcaaatcat catgcccctt atgacctggg ctacacacgt 1260

gctacaatgg tcggtacaac gtgctgcgaa ctcgcgaggg taagcaaatc acttaaaacc 1320

gatctcagtt cggattgcag gctgcaactc gcctgcatga agctggaatc gctagtaatc 1380

gtggatcagc atgccacggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc 1440

atgagagttt gtaacaccca aagccggtgg ggtaaccttt taggagctag ccgtctaagg 1500

tgggacaaat gattagggtg aagtcgtaac aaggtagccg taggagancc tgcggct 1557

<210> 1139
<211> 1561
<212> DNA
<213> Lactobacillus ultunensis

<400> 1139
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcgagcggaa ccagcagatc tgcttcggca gtgacgctgg gaaagcgagc ggcggatggg 120

tgagtaacac gtggggaacc tgccccaaag tctgggatac cacttggaaa caggtgctaa 180

taccggataa gaaagcagat cgcatgatca gcttttaaaa ggcggcgtaa gctgtcgcta 240

tgggatggcc ccgcggtgca ttagctagtt ggtagagtaa cggcctacca aggcaatgat 300

gcatagccga gttgagagac tgatcggcca cattgggact gagacacggc ccaaactcct 360

acgggaggca gcagtaggga atcttccaca atggacgcaa gtctgatgga gcaacgccgc 420

gtgagtgaag aaggttttcg gatcgtaaag ctctgttgtt ggtgaagaag gatagaggta 480

gtaactggcc tttatttgac ggtaatcaac cagaaagtca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ttgggcgtaa agcgagcgca 600

ggcggaaaaa taagtctaat gtgaaagccc tcggcttaac cgaggaactg catcggaaac 660

tgtttttctt gagtgcagaa gaggagagtg gaactccatg tgtagcggtg gaatgcgtag 720

atatatggaa gaacaccagt ggcgaaggcg gctctctggt ctgcaactga cgctgaggct 780

cgaaagcatg ggtagcgaac aggattagat accctggtag tccatgccgt aaacgatgag 840

tgctaagtgt tgggaggttt ccgcctctca gtgctgcagc taacgcatta agcactccgc 900

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 960

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatctagt 1020

gccatcttca gagatgaaga gttcccttcg gggacgctaa gacaggtggt gcatggctgt 1080

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgttatt 1140

agttgccagc attaagttgg gcactctaat gagactgccg gtgacaaacc ggaggaaggt 1200

ggggatgacg tcaagtcatc atgccccttа tgacctgggc tacacacgtg ctacaatggg 1260

cagtacaacg agaagcgagc ctgcgaaggc aagcgaatct ctgaaagctg ttctcagttc 1320

ggactgcagt ctgcaactcg actgcacgaa gctggaatcg ctagtaatcg cggatcagca 1380

cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgggagtctg 1440

caacgcccaa agccggtggc ctaaccgaaa ggaaggagcc gtctaaggca gggcagatga 1500

ctggggtgaa gtcgtaacaa ggtagccgta ggagaacctg cggctggatc acctcctttc 1560

t 1561

<210> 1140
<211> 1410
<212> DNA
<213> Lactobacillus vaginalis

<400> 1140
gggggataac atctggaaac aggtgctaat accgcataac aacgaaaacc acatggtttt 60

cgtttcaaag atggtttcgg ctatcacttc aggatgggcc cgcggtgcat tagctagttg 120

gtaaggtaac ggcttaccaa ggcaatgatg catagccgag ttgagagact gatcggccac 180

aatggaactg agacacggtc catactccta cgggaggcag cagtagggaa tcttccacaa 240

tgggcgcaag cctgatggag caacaccgcg tgagtgaaga agggtttcgg ctcgtaaagc 300

tctgttgttg gagaagaacg tgcgtgagag taactgttca cgcagtgacg gtatccaacc 360

agaaagtcac ggctaactac gtgccagcag ccgcggtaat acgtaggtgg caagcgttat 420

ccggatttat tgggcgtaaa gcgagcgcag gcggttgctt aggtctgatg tgaaagcctt 480

cggcttaacc gaagaagggc atcggaaacc gggcgacttg agtgcagaag aggacagtgg 540

aactccatgt gtagcggtgg aatgcgtaga tatatggaag aacaccagtg gcgaaggcgg 600

ctgtctggtc tgcaactgac gctgaggctc gaaagcatgg gtagcgaaca ggattagata 660

ccctggtagt ccatgccgta aacgatgagt gctaggtgtt ggagggtttc cgcccttcag 720

tgccggagct aacgcattaa gcactccgcc tggggagtac gaccgcaagg ttgaaactca 780

aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg aagctacgcg 840

aagaacctta ccaggtcttg acatcttgcg ctaacctaag agattaggcg ttcccttcgg 900

ggacgcaatg acaggtggtg catggtcgtc gtcagctcgt gtcgtgagat gttgggttaa 960

gtcccgcaac gagcgcaacc cttgttacta gttgccagca ttcagttggg cactctagtg 1020

agactgccgg tgacaaaccg gaggaaggtg gggacgacgt cagatcatca tgccccttat 1080

gacctgggct acacacgtgc tacaatggac ggtacaacga gttgcgaact cgcgagagta 1140

agctaatctc ttaaagccgt tctcagttcg gactgtaggc tgcaactcgc ctacacgaag 1200

tcggaatcgc tagtaatcgc ggatcagcat gccgcggtga atacgttccc gggccttgta 1260

cacaccgccc gtcacaccat ggaagtttgc aatgcccaaa gtcggtggcc taaccatttg 1320

gagggaaccg cctaaggcag ggcagatgac tggggtgaag tcgtaacaag gtagccgtag 1380

gagaacctgc ggctggatca cctcctttct 1410

<210> 1141
<211> 1503
<212> DNA

<213> Lactobacillus vini

<400> 1141
agagtttgat tatggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gagacttttt atttgatgct tgcatctttt aaaaagttga gtggcgaacg ggtgagtaac 120

acgtgggtaa cctgccttaa agtgggggat aacacttgga aacaggtgct aataccgcat 180

aaccatcaaa accgcctggt tttgatgtta aagatggttc tgctatcgct ttaagatgga 240

cccgcggcgt attagctagt tggtgaggta acggcttacc aaggcaatga tacgtagccg 300

aactgagagg ttgatcggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

agcagtaggg aatcttccac aatggacgaa agtctgatgg agcaacgccg cgtgagtgaa 420

gaaggttttc ggatcgtaaa actctgttgt cagagaagaa cgtgtgtgag agtaactgtt 480

cacgcagtga cggtatctga ccagaaagtc acggctaact acgtgccagc agccgcggta 540

atacgtaggt ggcaagcgtt gtccggattt attgggcgta aagggaacgc aggcggtctt 600

ttaagtctga tgtgaaagcc ttcggcttaa ccgaagtcgg gcattggaaa ctgggagact 660

tgagtgcaga agaagagagt ggaactccat gtgtagcggt gaaatgcgta gatatatgga 720

agaacaccag tggcgaaagc ggctctctgg tctgtaactg acgctgaggt tcgaaagcgt 780

gggtagcaaa caggattaga taccctggta gtccacgccg taaacgatga atgctaagtg 840

ttggagggtt tccgcccttc agtgccgcag ctaacgcatt aagcattccg cctggggagt 900

acgatcgcaa gattgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcttt tgctaacctg 1020

agagatcagg tgttcccttc ggggacaaaa tgacaggtgg tgcatggttg tcgtcagctc 1080

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttattgt tagttgccag 1140

catttagttg ggcactctaa cgagactgcc ggtgacaaac cggaggaagg tggggatgac 1200

gtcaaatcat catgcccctt atgacctggg ctacacacgt gctacaatgg acggtacaac 1260

gagtcgcaag accgcgaggt caagctaatc tctgaaaacc gttctcagtt cggattgcag 1320

gctgcaactc gcctgcatga agtcggaatc gctagtaatc gcggatcagc atgccgcggt 1380

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgagagttt gtaacaccca 1440

aagccggtgg ggtaaccttt gggagccagc cgtctaaggt gggacagatg attggggtga 1500

aga 1503

<210> 1142
<211> 1450
<212> DNA
<213> Lactobacillus vitulinus

<400> 1142
gatgaacgct ggcggcgtgc ctaatacatg caagtcgaac gggaatcttc ggattccagt 60

ggcgaacggg tgaggaatac ataggtaacc tgcccctccg agggggacaa cagacggaaa 120

catctgctaa gaccgcatag ccacagggaa ggcatcttcc ctgtgccaaa tgtcctttcg 180

gggacagcgg ggggatggac ctatgccgca ttagctggtt ggcggggcaa cggcccacca 240

aggcgacgat gcgtagccgg cctgagaggg cggacggcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtaggga attttcggca atgggggaaa ccctgaccga 360

gcaacgccgc gtgaacgatg aaggccttcg ggtcgtaaag ttctgttgcg aaggaagaac 420

gccggtgtca ggaaatgggc gccgggtgac ggtacttcgc atagaaagcc acggctaact 480

acgtgccagc agccgcggta atacgtaggt ggcgagcgtt atccggaatc attgggcgta 540

aagagggagc aggcggcgat acaggtctgt ggtgaaattc cgaagctaaa cttcggccag 600

ccaaagaaac cggatcgcta gagtgcggaa gaggatcgtg gaattccatg tgtagcggtg 660

aaatgcgtag atatatggag gaacaccagt ggcgaaggcg acggtctggg ccgcaactga 720

cgctcattcc cgaaagcgtg gggagcaaat aggattagat accctagtag tccacgccgt 780

aaacgatcga tactaagtgt cgggggtcaa acctcggtgc tggagtcaac gcaataagta 840

tcgcgcctga gtagtacgtt cgcaagaatg aaactcaaag gaattgacgg gggcccgcac 900

aagcggtgga gcatgtggtt taattcgaag caacgcgaag aaccttacca ggtcttgaca 960

tcgatccaaa agggacggaa acgtccccat agctatggag aagacaggtg gtgcatggtg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctgtcgc 1080

cagttgccag cattgagttg gggactctgg cgagactgcc tctgcaagga ggaggaaggc 1140

ggggatgacg tcaaatcatc atgcccctta tgacctgggc cacacacgtg ctacaatgga 1200

cggagcagag ggaagcgaag cggcgacgcc aagcggatcc cagaaacccg ttctcagttc 1260

ggactgcagt ctgcaactcg actgcacgaa gctggaatcg ctagtaatcg cggatcagca 1320

tgccgcggtg aatacgttct cgggccttgt acacaccgcc cgtcacacca tgagagtcgg 1380

caacacccga agccggtggc tcaacccttc tgggagggag ctgtctaagg tggggccgat 1440

gattggggtg 1450

<210> 1143
<211> 1419
<212> DNA
<213> Lactobacillus zeae

<400> 1143
cgagttttgg tcgatgaacg gtgcttgcat cgtgattcaa cttaaaacga gtggcggacg 60

ggtgagtaac acgtgggtaa cctgccctta agtgggggat aacatttgga aacagatgct 120

aataccgcat aaatccaaga accgcatggt tcttggctga aagatggcgt aagctatcgc 180

ttttggatgg acccgcggcg tattagctag ttggtgaggt aacggctcac caaggcgatg 240

atacgtagcc gaactgagag gttgatcggc cacattggga ctgagacacg gcccaaactc 300

ctacgggagg cagcagtagg gaatcttcca caatggacgc aagtctgatg gagcaacgcc 360

gcgtgagtga agaaggcttt cgggtcgtaa aactctgttg ttggagaaga atggtcggca 420

gagtaactgt tgtcggcgtg acggtatcca accagaaagc cacggctaac tacgtgccag 480

cagccgcggt aatacgtagg tggcaagcgt tatccggatt tattgggcgt aaagcgagcg 540

caggcggttt tttaagtctg atgtgaaagc cctcggctta accgaggaag cgcatcggaa 600

actgggaaac ttgagtgcag aagaggacag tggaactcca tgtgtagcgg tgaaatgcgt 660

agatatatgg aagaacacca gtggcgaagg cggctgtctg gtctgtaact gacgctgagc 720

tcgaaagcat gggtagcgaa caggattaga taccctggta gtccatgccg taaacgatga 780

atgctaggtg ttggagggtt tccgcccttc agtgccgcag ctaacgcatt aagcattccg 840

cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg 900

gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacgtcttt 960

tgatcacctg agagatcagg tttccccttc gggggcaaaa tgacaggtgg tgcatggttg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttatgac 1080

tagttgccag cattcagttg ggcactctag taagactgcc ggtgacaaac cggaggaagg 1140

tggggatgac gtcaaatcat catgcccctt atgacctggg ctacacacgt gctacaatgg 1200

atggtacaac gagttgcgag accgcgaggt caagctaatc tcttaaagcc attctcagtt 1260

cggactgtag gctgcaactc gcctacacga agtcggaatc gctagtaatc gcggatcagc 1320

acgccgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc atgagagttt 1380

gtaacacccg aagccggtgg cgtaaccctt ttagggagc 1419

<210> 1144
<211> 1485
<212> DNA
<213> Lactococcus garvieae

<400> 1144
aacgctggcg gcgtgcctaa tacatgcaag tcgagcgatg attaaagata gcttgctatt 60

tttatgaaga gcggcgaacg ggtgagtaac gcgtgggaaa tctgccgagt agcgggggac 120

aacgtttgga aacgaacgct aataccgcat aacaatgaga atcgcatgat tcttatttaa 180

aagaagcaat tgcttcacta cttgatgatc ccgcgttgta ttagctagtt ggtagtgtaa 240

aggactacca aggcgatgat acatagccga cctgagaggg tgatcggcca cactgggact 300

gagacacggc ccagactcct acgggaggca gcagtaggga atcttcggca atgggggcaa 360

ccctgaccga gcaacgccgc gtgagtgaag aaggttttcg gatcgtaaaa ctctgttgtt 420

agagaagaac gttaagtaga gtggaaaatt acttaagtga cggtatctaa ccagaaaggg 480

acggctaact acgtgccagc agccgcggta atacgtaggt cccaagcgtt gtccggattt 540

attgggcgta aagcgagcgc aggtggtttc ttaagtctga tgtaaaaggc agtggctcaa 600

ccattgtgtg cattggaaac tgggagactt gagtgcagga gaggagagtg gaattccatg 660

tgtagcggtg aaatgcgtag atatatggag gaacaccgga ggcgaaagcg gctctctggc 720

ctgtaactga cactgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag 780

tccacgccgt aaacgatgag tgctagctgt agggagctat aagttctctg tagcgcagct 840

aacgcattaa gcactccgcc tggggagtac gaccgcaagg ttgaaactca aaggaattga 900

cgggggcccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta 960

ccaggtcttg acatactcgt gctatcctta gagataagga gttccttcgg gacacgggat 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttattacta gttgccatca ttaagttggg cactctagtg agactgccgg 1140

tgataaaccg gaggaaggtg gggatgacgt caaatcatca tgccccttat gacctgggct 1200

acacacgtgc tacaatggat ggtacaacga gtcgccaacc cgcgagggtg cgctaatctc 1260

ttaaaaccat tctcagttcg gattgcaggc tgcaactcgc ctgcatgaag tcggaatcgc 1320

tagtaatcgc ggatcagcac gccgcggtga atacgttccc gggccttgta cacaccgccc 1380

gtcacaccac ggaagttggg agtacccaaa gtaggttgcc taaccgcaag gagggcgctt 1440

cctaaggtaa gaccgatgac tggggtgaag tcgtaacaag gtagc 1485

<210> 1145
<211> 1554
<212> DNA
<213> Lactococcus lactis

<400> 1145
ctttatttga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagttgagcg ctgaaggttg gtacttgtac cgactggatg agcagcgaac gggtgagtaa 120

cgcgtgggga atctgccttt gagcggggga caacatttgg aaacgaatgc taataccgca 180

taaaaacttt aaacacaagt tttaagtttg aaagatgcaa ttgcatcact caaagatgat 240

cccgcgttgt attagctagt tggtgaggta aaggctcacc aaggcgatga tacatagccg 300

acctgagagg gtgatcggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

agcagtaggg aatcttcggc aatggacgaa agtctgaccg agcaacgccg cgtgagtgaa 420

gaaggttttc ggatcgtaaa actctgttgg tagagaagaa cgttggtgag agtggaaagc 480

tcatcaagtg acggtaacta cccagaaagg gacggctaac tacgtgccag cagccgcggt 540

aatacgtagg tcccgagcgt tgtccggatt tattgggcgt aaagcgagcg caggtggttt 600

attaagtctg gtgtaaaagg cagtggctca accattgtat gcattggaaa ctggtagact 660

tgagtgcagg agaggagagt ggaattccat gtgtagcggt gaaatgcgta gatatatgga 720

ggaacaccgg tggcgaaagc ggctctctgg cctgtaactg acactgaggc tcgaaagcgt 780

ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatga gtgctagatg 840

tagggagcta taagttctct gtatcgcagc taacgcaata agcactccgc ctggggagta 900

cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 960

ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatactcg tgctattcct 1020

agagatagga agttccttcg ggacacggga tacaggtggt gcatggttgt cgtcagctcg 1080

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt agttgccatc 1140

attaagttgg gcactctaac gagactgccg gtgataaacc ggaggaaggt ggggatgacg 1200

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatgga tggtacaacg 1260

agtcgcgaga cagtgatgtt tagctaatct cttaaaacca ttctcagttc ggattgtagg 1320

ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg cggatcagca cgccgcggtg 1380

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgggagttgg gagtacccga 1440

agtaggttgc ctaaccgcaa ggagggcgct tcctaaggta agaccgatga ctggggtgaa 1500

gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acctcctttc taag 1554

<210> 1146
<211> 1440
<212> DNA
<213> Lactococcus raffinolactis

<400> 1146
agttgaacgc ttgattttca ccgaagcttg cttcaccgaa aatcaagagt agcgaacggg 60

tgagtaacgc gtgggtaacc tacctatcag cgggggataa ctattggaaa cgatagctaa 120

taccgcataa caatgttgga tgcatattcg acatttgaaa gtaccaaatg gtacactgag 180

agatggaccc gcgttgtatt agctagttgg tagtgtaatg gactaccaag gcgatgatac 240

atagccgacc tgagagggtg atcggccaca ttgggactga gacacggccc aaactcctac 300

gggaggcagc agtagggaat cttcggcaat ggacgaaagt ctgaccgagc aacgccgcgt 360

gagtgaagaa ggttttcgga tcgtaaaact ctgttgttag agaagaacgt tgcatagagt 420

ggaaaattat gcaagtgacg gtatctaacc agaaagggac ggctaactac gtgccagcag 480

ccgcggtaat acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag 540

gtggtttaat aagtctgatg taaaaggcag tggctcaacc attgtgtgca ttggaaactg 600

ttagacttga gtgcagtaga ggagagtgga attccatgtg tagcggtgaa atgcgtagat 660

atatggagga acaccggtgg cgaaagcggc tctctggact gtcactgaca ctgaggctcg 720

aaagcgtggg tagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg 780

ctagttgttt ggggctatcc agccctaagt gacgcagcaa acgcattaag cactccgcct 840

ggggagtacg accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg 900

gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga catactcgtg 960

ctattcctag agataggaag ttccttcggg acacgggata caggtggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctattgttag 1080

ttgccatcat taagttgggc actctagcga gactgccggt aataaaccgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccccttatg acctgggcta cacacgtgct acaatggttg 1200

gtacaacgag tcgcaaggca gtgatgtcaa gctaatctct taaagccaat ctcagttcgg 1260

attgtaggct gcaactcgcc tacatgaagt cggaatcgct agtaatcgcg gatcagcacg 1320

ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta 1380

atacccaaag ccggtgagct aacctttag gaggcagccg tctaaggtag gatagatgat 1440

<210> 1147

<211> 1281
<212> DNA
<213> Lactonifactor longoviformis

<400> 1147
gagtttgatt atggctcagg atgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcggac gggtgagtaa cgcgtggata acctgcctca tacaggggga taacagttag 120

aaatgactgc taataccgca taagaaaagg cggtatgaga tggatccgcg tttgattagc 180

tagttggtgg ggtaaaggcc taccaaggcg acgatcaata gccgacctga gagggtgacc 240

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg ggaaaccctg atgcagcgac gccgcgtgaa ggaagaagta tttcggtatg 360

taaacttcta tcagcaggga agatgacggt acctgactaa gaagccccgg ctaattacgt 420

gccagcagcc gcggtaatac gtaaggggca agcgttatcc ggatttactg ggtgtaaagg 480

gagcgtagac ggcagtgcaa gtctgatgtg aaagcccggg gctcaacccc gggactgcat 540

tggaaactgt gcagctagag tgtcggagag gtaagtggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaggaa caccagtggc gaaggcggct tactggacga actgacgttg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgaatacta ggtgtcgggc gttcggtgcc gcagcaaacg caataagtat tccacctggg 780

gagtacgttc gcaagaatga aactcaaagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccaa gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttatcct tagtagccag cagctgggca ctctagggag actgccaggg acaacctgga 1020

ggaaggtggg gatgacgtca aatcatcatg ccccttatga tttgggctac acacgtgcta 1080

caatggcgta caaagggaag cgaaggggtg acctgaagca aatcccaaaa cgtctcagtt 1140

cggatgtagt ctgcaactcg actacagaag ctggaatcgc tagtaatcgc gaatcagaat 1200

gtcgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat gggagtcgga 1260

tatgcccgaa gccggtaccg a 1281

<210> 1148
<211> 1544
<212> DNA
<213> Laribacter hongkongensis

<400> 1148
tgaacgaaag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcgaacgg taacagggac ttcggtctgc tgacgagtgg cgaacgggtg agtaatgcat 120

cggaacgtac cgagtaatgg gggataacgc atcgaaaggt gtgctaatac cgcatacgcc 180

ctgaggggga aagcggggga tcgaaagacc tcgcgttatt cgagcggccg atgccggatt 240

agctagttgg tggggtaaag gctcaccaag gcgacgatcc gtagcaggtc tgagaggatg 300

atctgccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

tttggacaat gggggcaacc ctgatccagc catgccgcgt gtctgaagaa ggccttcggg 420

ttgtaaagga cttttgtcag ggaggaaatc cttaaggcta taccccttgg gggatgacag 480

tacctgaaga ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 540

aagcgttaat cggaattact gggcgtaaag cgtgcgcagg cggtttgaaa agtcagctgt 600

gaaagccccg ggctcaacct gggaactgcg gttgaaactc tcaagctaga gtgcgtcaga 660

gggggggtgga attccacgtg tagcagtgaa atgcgtagag atgtggagga acaccaatgg 720

cgaaggcagc cccctgggat gacactgacg ctcatgcacg aaagcgtggg gagcaaacag 780

gattagataa cctggtagtc cacgccctaa acgatgtcga ctagccgttg gagatttcgg 840

tttctggtgg cgcagctaac gcgtgaagtc gaccgcctgg ggagtacggt cgcaagatta 900

aaactcaaag gaattgacgg gggcccgcac aagcggtgga tgatgtggat taattcgatg 960

caacgcgaaa aaccttacct ggtcttgaca tgtaccgaac ctcgaagaga tttgagggtg 1020

cccgaaaggg agcggtaaca caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgtcattag ttgccagcat taagttgggc 1140

actctaatga gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aagtcctcat 1200

ggcccttatg accagggctt cacacgtcat acaatggtcg gtacagaggg tcgctaagcc 1260

gcgaggtagt gccaatctca taaaaccgat cgtagtccgg atcgcagtct gcaactcgac 1320

tgcgtgaagt cggaatcgct agtaatcgcg gatcagcatg tcgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtggaat ccgccagaag tgggtagggt 1440

aaccgtaagg agcccgctta ccacggtagg tttcatgact ggggtgaagt cgtaacaagg 1500

tagccgtagg ggaacctgcg gctggatcac ctcctttcta gaga 1544

<210> 1149
<211> 1534
<212> DNA
<213> Lautropia mirabilis

<400> 1149
ttgaactgaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcgaacg gcagcgcggg cttcggcctg gcggcgagtg gcgaacgggt gagtaataca 120

tcggaacgtg cccagtagtg ggggatagct cggcgaaagc cggattaata ccgcatacga 180

cctgagggtg aaagcggggg atcttcggac ctcgcgctat tggagcggcc gatggcagat 240

tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc tgtagctggt ctgagaggac 300

gaccagccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

ttttggacaa tgggcgaaag cctgatccag caatgccgcg tgtgtgatga aggccttcgg 420

gttgtaaagc acttttggcg ggaacgaaaa ggactgtgcc aataccacgg ttcgatgacg 480

gtacccgcag aataagcacc ggctaactac gtgccagcag ccgcggtaat acgtagggtg 540

caagcgttaa tcggaattac tgggcgtaaa gagtgcgcag gcggttttgc aagaccgatg 600

tgaaatcccc gggcttaacc tgggaactgc attggtgact gcaaggctag agtgtgtcag 660

agggaggtgg aattccgcat gtagcagtga aatgcgtaga tatgcggagg aacaccgatg 720

gcgaaggcag cctcctggga taacactgac gctcatgcac gaaagcgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgcccta aacgatgtct actagttgtc ggggattaat 840

ttccttggta acgcagctaa cgcgtgaagt agaccgcctg gggagtacgg tcgcaagatt 900

aaaactcaaa ggaattgacg gggacccgca caagcggtgg atgatgtgga ttaattcgat 960

gcaacgcgaa aaaccttacc tacgcttgac atgtccggaa ccctgaagag atttgggggt 1020

gctcgaaaga gagccggaac acaggtgctg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cttatcatta gttgctacgc aagggcactc 1140

taatgagact gccggtgaca aaccggagga aggtggggat gacgtcaagt cctcatggcc 1200

cttatgtgta gggcttcaca cgtcatacaa tggtcggtac agagggttgc gaagccgcga 1260

ggtggagcca atcccaaaaa accgatcgta gtccggattg cagtctgcaa ctcgactgca 1320

tgaagtcgga atcgctagta atcgcggatc agcatgccgc ggtgaatacg ttcccgggtc 1380

ttgtacacac cgcccgtcac accatgggag tgggttttac cagaagtagg tagcttaacc 1440

gcaaggaggg cgcttaccac ggtagggctc atgactgggg tgaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gatcacctcc tttc 1534

<210> 1150
<211> 1491
<212> DNA
<213> Lautropia sp. oral clone AP009

<400> 1150
agagtttgat tatggctcag attgaacgct ggcggcatgc tttacacatg caagtcgaac 60

ggcagcgcgg gcttcggcct ggcggcgagt ggcgaacggg tgagtaatac atcggaacgt 120

gcccagtagt gggggatagc tcggcgaaag ccggattaat accgcatacg acctgagggt 180

gaaagcgggg gatcttcgga cctcgcgcta ttggagcggc cgatggcaga ttagctggtt 240

ggtggggtaa aggcctacca aggcgacgat ctgtagctgg tctgagagga cgaccagcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga attttggaca 360

atgggcgcaa gcctgatcca gcaatgccgc gtgtgtgatg aaggccttcg ggttgtaaag 420

cacttttggc gggaacgaaa aggactgtgc caataccacg gttcgatgac ggtacccgca 480

gaataagcac cggctaacta cgtgccagca gccgcggtaa tacgtagggt gcgagcgtta 540

atcggaatta ctgggcgtaa agagtgcgca ggcggttttg caagaccgat gtgaaatccc 600

cgggcttaac ctgggaactg cattggtgac tgcaaggcta gagtgtgtca gagggaggtg 660

gaactccgca tgtagcagtg aaatgcgtag atatgcggaa gaacaccgat ggcgaaggca 720

gcctcctggg ataacactga cgctcatgca cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgccct aaacgatgtc tactagttgt cggggattaa tttccttggt 840

aacgcagcta acgcgtgaag tagaccgcct ggggagtacg gtcgcaagat taaaactcaa 900

aggaattgac ggggacccgc acaagcggtg gatgatgtgg attaattcga tgcaacgcga 960

aaaaccttac ctacgcttga catgtccgga accttggaga gattcgaggg tgcccgaaag 1020

ggaaccggaa cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttatcatt agttgctacg caagggcact ctaatgagac 1140

tgccggtgac aaacckgagk aaggtgggga tgacgtcaag tcctcatggc ccttatgtgt 1200

agggcttcac acgtcataca atggtcggta cagagggttg ccaagccgcg aggtggagcc 1260

aatcccacaa aaccgatcgt agtccggatt gcagtctgca actcgactgc atgaagtcgg 1320

aatcgctagt aatcgcggwt cagcatgccg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccatggga gtgggtttta ccagaagtag gtagcttaac cgcaaggggg 1440

gcgcttacca cggtagggct catgactggg gtgaagtcgt aacaaggtaa c 1491

<210> 1151
<211> 1467
<212> DNA
<213> Legionella hackeliae

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (23)..(24)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (42)..(42)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (70)..(71)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (74)..(74)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (82)..(82)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (112)..(112)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (149)..(149)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (158)..(158)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (164)..(164)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (174)..(174)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (210)..(210)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (216)..(216)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (243)..(243)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (359)..(359)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (414)..(414)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (420)..(420)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (447)..(447)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (466)..(466)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (471)..(471)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (502)..(502)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (525)..(525)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (546)..(546)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (565)..(565)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (583)..(584)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (592)..(592)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (596)..(596)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (613)..(613)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (625)..(625)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (629)..(629)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (632)..(632)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (646)..(646)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (686)..(686)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (734)..(734)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (739)..(739)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (833)..(833)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (879)..(879)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (938)..(938)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (950)..(952)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (961)..(961)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (976)..(976)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (986)..(986)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1085)..(1085)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1110)..(1110)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1205)..(1205)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1268)..(1268)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1280)..(1280)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1288)..(1288)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1294)..(1294)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1344)..(1344)
<223> a, c, t, g, unknown or other

<400> 1151
agagtttnat cctggctcag atnnaacgct ngcggcatgc tnaacacatg caagtcgaac 60

ggcagcatgn nctngctggc tnggaagatg gcgagtggcg aacgggtgag tnacgcgtag 120

gaatrtgcct taaagagggg gacaacctng ggaaactnag gctnataccg catnatttct 180

gaggaaaaaa gctggggacc gcaaggcctn gcgctnaaag attagcctgc gtccgattag 240

ctngttggtg gggtaagggc ctaccaaggc gacgatcggt agctggtctg agaggatgat 300

cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatnt 360

tggacaatgg ggggaaccct ratccagcaa tgccgcgtgt gtgaagaagg cctnagggtn 420

gtaaagcact ttcagtgggg aggaganrag gttaggttaa gagctngact naaggacgca 480

cccacagaag aagcaccggc tnactccgtg ccagcagccg cggtnatacg gagggtgcaa 540

gcgttnatcg gaattactgg gcgtnaaggg tgcgtaggtg gtnnaataag tnagtngtga 600

aatccctrgg ctnaacctgg gaatngcanc tnagactgtt agactngagt ataggagagg 660

gtagtggaat ttccggtgta gcggtnaaat gcgtagagat cggaaggaac accagtggcg 720

aaggcggcta cctngcctna tactgacact gaggcacgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgctgtaaac gatgtcaact agctrttggt ctnataaatg 840

agattagtgg cgcagcaaac gcgataagtt gaccgcctng ggagtacggt cgcaagatya 900

aaactcaaag gaattgacgg gggcccgcac aagcggtnga gcatgtggtn nnattcgatg 960

naacgcgaag aacctnacct accctngaca tacagtgaat gatgcagaga tgcatyagtg 1020

ccttcgggaa cactgataca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggtnaagtc ccgtaacgag cgcaaccctn gtccttagtt gccagcgcgt agaggcggga 1140

actctaggga gactgccggt gacaaaccgg aggaaggcgg ggatgacgtc aagtcatcat 1200

rgccnttacg ggtagggcta cacacgtgct acaatggccg gtacagaggg aagcgaaggg 1260

gcgacctnga gcaaatcctn aaaagctngt cgtngtccgg attggagtct gcaactcgac 1320

tccatgaagt cggaatcgct agtnatcgcg aatcagcatg tcgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gcaccagaag tagatagtct 1440

aaccttcggg gggacgtrta ccacggt 1467

<210> 1152
<211> 1473
<212> DNA
<213> Legionella longbeachae

<220>
<221> modified_base
<222> (13)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (29)..(30)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (37)..(37)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (48)..(48)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (84)..(84)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (88)..(88)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (92)..(92)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (137)..(137)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (164)..(164)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (170)..(170)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (177)..(177)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (216)..(216)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (222)..(222)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (236)..(236)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (249)..(249)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (365)..(365)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (420)..(420)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (464)..(464)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (471)..(471)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (478)..(479)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (508)..(508)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (552)..(552)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (571)..(571)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (590)..(590)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (598)..(598)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (619)..(619)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (740)..(740)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (745)..(745)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (765)..(765)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (846)..(846)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (885)..(885)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (906)..(906)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (944)..(944)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (956)..(958)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (982)..(982)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (992)..(992)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1091)..(1091)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1116)..(1116)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1211)..(1211)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1274)..(1274)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1300)..(1300)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1374)..(1374)
<223> a, c, t, g, unknown or other

<400> 1152
aactgaagag ttnnatcctg gctcagatnn aacgctngcg gcatgctnaa cacatgcaag 60

tcgaacggca gcatgaccta gctngctngg tngatggcga gtgccgaacg ggtgagtaac 120

gcgtaggaat rtgcctnaaa gactgggata acttggggaa actnaagctn ataccgnatg 180

atgtctgagg acgaaagctg gggaccttcg ggcctngcgc tnaaagatta gcctgngtcc 240

gatyagctng ttggtggggt aagggcctac caaggcgacg atcggtagct ggtctgagag 300

gatgaccagc cacactggaa ctgagacacg gtccaggctc ctacgggagg cagcagtggg 360

gaatnttgga caatgggggc aaccctratc cagcaatgcc gcgtgtgtga agaaggcctn 420

agggtygtaa agcactttca gtggggagga gggtygatag gtgnagagct natggatnng 480

acgttaccca cagaagaagc accggctnac tccgtgccag cagccgcggt aatacggagg 540

gtgctagcgt tnatcggaat tactgggcgt naagcgtgcg taggtggttn attaagtnat 600

ctgtgaaatc cctrggctna acctgggcag gtcagatgat actggttgac tcgagtatgg 660

gagagggtag tggaatttcc ggtgtagcgg tgaaatgcgt agagatcgga aggaacacca 720

gtggcgaagg cggctacctn gcctnatact gacactgagg cacgnaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgcc gtaaacgatg tcaactagct rttggatata 840

tgaatntrtt tagtggcgca gcaaacgcga taagtwgacc gcctngggag tacggtcgca 900

agayynaaac tcaaaggaat tgacgggggc ccgcacaagc ggtngagcat gtggtnnnat 960

tcgatgcaac gcgaagaacc tnacctaccc tngacataca gtgaatgatg cagagatgca 1020

tyagtgcctt cgggaacact gatacaggtg ctgcatggct gtcgtcagct cgtgtcgtga 1080

gatgttgggt naagtcccgt aacgagcgca accctngtcc ttagttgcca gcacgtaaag 1140

gtgggaactc taaggagact gccggtgaca aaccggagga aggcggggat gacgtcaagt 1200

catcatrgcc nttacgggta gggctacaca cgtgctacaa tggacgatac agagggaagc 1260

gaaggggtga cctngagcca atcttagaaa gtygttcgtn gtccggattg gagtctgcaa 1320

ctcgactcca tgaagtcgga atcgctagta atcgcgaatc agcatgtcgc ggtnaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggctgcac cagaagtaga 1440

tagtctaacc ttcgggggga cgtgtaccac ggt 1473

<210> 1153
<211> 1546
<212> DNA
<213> Legionella pneumophila

<400> 1153
tgaactgaag agtttgatcc tggctcagat tgaacgctgg cggcatgctt aacacatgca 60

agtcgaacgg cagcattgtc tagcttgcta gacagatggc gagtggcgaa cgggtgagta 120

acgcgtagga atatgccttg aagaggggga caacttgggg aaactcaagc taataccgca 180

taatgtctga ggacgaaagc tggggacctt cgggcctggc gctttaagat tagcctgcgt 240

ccgattagct agttggtggg gtaagggcct accaaggcga cgatcggtag ctggtctgag 300

aggatgacca gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg 360

gggaatattg gacaatgggg gcaaccctga tccagcaatg ccgcgtgtgt gaagaaggcc 420

tgagggttgt aaagcacttt cagtggggag gagggttgat aggttaagag ctgattaact 480

ggacgttacc cacagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga 540

gggtgcgagc gttaatcgga attactgggg gtaaagggtg cgtaggtggt tgattaagtt 600

atctgtgaaa ttcctgggct taacctggga cggtcagata atactggttg actcgagtat 660

gggagagggt agtggaattt ccggtgtagc ggtgaattgc gtagagatcg gaaggaacac 720

cagtggcgaa ggcggctacc tggcctaata ctgacactga ggcacgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ctgtaaacga tgtcaactag ctgttggtta 840

tatgaaaata attagtggcg cagcaaacgc gataagttga ccgcctgggg agtacggtcg 900

caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac ccttgacata cagtgaattt tgcagagatg 1020

cattagtgcc ttcgggaaca ctgatacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gtaacgagcg caacccttat ccttagttgc cagcatgtga 1140

tggtggggac tctaaggaga ctgccggtga caaaccggag gaaggcgggg atgacgtcaa 1200

gtcatcatgg cccttacggg tagggctaca cacgtgctac aatggccgat acagagggcg 1260

gcgaaggggc gacctggagc aaatccttaa aagtcggtcg tagtccggat tggagtctgc 1320

aactcgactc catgaagtcg gaatcgctag taatcgcgaa tcagcatgtc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc accagaagta 1440

gatagtctaa ccttcggggg gacgtttacc acggtgtggt tcatgactgg ggtgaagtcg 1500

taacaaggta gccgtagggg aacctgcggc tggatcacct ccttac 1546

<210> 1154
<211> 1362
<212> DNA
<213> Legionella sp. D3923

<400> 1154
catgcttaac acatgcaagt cgaacggcag cacggtctag cttgctagat gggtggcgag 60

tggcgaacgg gtgagtaacg cgtaggaata tgccttaaag tttgggataa catggggaaa 120

ctcatgctaa taccggatga gctctgagga ggaaagctgg ggaccgtaag gcctggcgct 180

ttaagattag cctgcgtccg attagctagt tggtggggta agggcctacc aaggcgacga 240

tcggtagctg gtctgagagg atgaccagcc acactgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtgggg aatattggac aatgggggca accctgatcc agcaatgccg 360

cgtgtgtgaa gaaggcctga gggttgtaaa gcactttcag tggggaggag gattgattgg 420

ttaagagctg attgattgga cgttacccac agaagaagca ccggctaact ccgtgccagc 480

agccgcggta atacggaggg tgcgagcgtt aatcggaatt actgggcgta aagggtgcgt 540

aggtggttgt ataagttagc tgtgaaatcc ccgggctcaa cctgggcagg tcagctaaga 600

ctgtatgact cgagtatagg agagggtagt ggaatttccg gtgtagcggt gaaatgcgta 660

gagatcggaa ggaacaccag tggcgaaggc ggctacctgg cctaatactg acactgaggc 720

acgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgctg taaacgatgt 780

caactagttg ttggccttat gaatgaggtt agtgacgcag caaacgcgat aagttgaccg 840

cctggggagt acggtcgcaa gattaaaact caaaggaatt gacggggcc cgcacaagcg 900

gtggagcatg tggtttaatt cgatgcaacg cgaagaacct tacctaccct tgacatacag 960

tgaactttgc agagatgcat tggtgccttc gggagcactg atacaggtgc tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgta acgagcgcaa cccttatcct 1080

tagttgccag cgcgtgatgg tgggaactct aaggagactg ccggtgacaa accggaggaa 1140

ggcggggatg acgtcaagtc atcatggccc ttacgggtag ggctacacac gtgctacaat 1200

ggccggtaca gagggcagcg aaggggcgac ctggagcaaa tcttgtaaag ctggtcgtag 1260

tccggattgg agtctgcaac tcgactccat gaagtcggaa tcgctagtaa tcgcgaatca 1320

gcatgtcgcg gtgaatacgt tcccgggcct tgtacacacc gc 1362

<210> 1155
<211> 1203
<212> DNA
<213> Legionella sp. D4088

<400> 1155
catgcttaac acatgcaagt cgaacgagtg gcgaacgggt gagtaatgcg taggaatatg 60

ccttgaagag ggggataacc cggggaaact cgggctaata ccgcataatg aaaggcgctt 120

taagattagc ctacgtccga ttagctagtt ggtggggtaa gggcctacca aggctgtgat 180

cggtagctgg tctgagagga tggacagcca cactgggact gagacacggc ccagactcct 240

acgggaggca gcagtgggga atattggaca atgggggaa ccctgatcca gcaatgccgc 300

gtgtgtgaag aaggcctgag ggttgtaaag cactatcggt ggggaggatg acgttaccca 360

cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg gtgcgagcgt 420

taatcggaat tactgggcgt aaagggtgcg taggtggttt tttaagttat ctgtgaaatt 480

cctgggctta acctgggctg gtcagataag actggaagac ttgagtatgg gagagggcag 540

tggaatttcc ggtgtagcgg tgaaatgcgt agagatcgga aggaacacca gtggcgaagg 600

cggctgcctg gcctgactga cactgaggca cgaaagcgtg ggtagcgaac aggattagat 660

accctggtag tccacgctgt aaacgatgtc aactagctgt tggctagtta gtggcgcagc 720

aaacgcgata agttgaccgc ctggggagta cggtcgcaag actaaaactc aaaggaattg 780

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc gaagaacctt 840

acctaccctt gacatataca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 900

gggttaagtc ccgtaacgag cgcaaccctt attcctagtt accagcacgt ggggactcta 960

gggagactgc cggtgacaaa ccggaggaag gcggggacga cgtcaagtca tcatggccct 1020

tacgggtagg gctacacacg tgctacaatg gacggcagag ggcggcgaag gggcgacctg 1080

gagcgaatcc ttactgttcg tagtccggat ggagtctgga actcgactcc agaagtcgga 1140

atcgctagta atcgcgaatc agcatgtcgc ggtgaatacg ttcccgggcc ttgtacacac 1200

cgc 1203

<210> 1156
<211> 1423
<212> DNA
<213> Legionella sp. H63

<400> 1156
aagtcgaacg gcagcatttt ctagcttgct aggaagatgg cgagtggcga acgggtgagt 60

aacgcgtagg aatatgcctt aaagaggggg ataacatggg gaaactcatg ctaataccgc 120

ataatttctt aggaaaaaag ctggggaccg taaggcctgg cgctttaaga ttagcctgcg 180

tccgattagc tagttggtgg ggtaagggcc taccaaggcg acgatcggta gctggtctga 240

gaggatggcc agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

ggggaatatt ggacaatggg gggaaccctg atccagcaat gccgcgtgtg tgaagaaggc 360

ctgagggttg taaagcactt tcagtgggga ggagtgattg ataggttaag agctaattga 420

ttggacgtta cccacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg 480

gagggtgcaa gcgttaatcg gaattactgg gcgtaaaggg tgcgtaggtg gtttggtaag 540

ttagttgtga aatccctggg cttaacctgg gaactgcaac taagactgtc agactcgagt 600

ataggagagg gtagtggaat ttccggtgta gcggtgaaat gcgtagagat cggaaggaac 660

accagtggcg aaggcggcta cctggcctaa tactgacact gaggcacgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgctgtaaac gatgtcaact agctgttggt 780

cttataaatg agattagtgg cgcagcaaac gcgataagtt gaccgcctgg ggagtacggt 840

cgcaagatta aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 900

taattcgatg caacgcgaag aaccttacct acccttgaca tacagtgaac tttgcagaga 960

tgcattggtg ccttcgggag cactgataca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgtaacgag cgcaaccctt gtccttagtt gccagcatgt 1080

aatggtgggg actctaagga gactgccggt gacaaaccgg aggaaggcgg ggatgacgtc 1140

aagtcatcat ggcccttacg ggtagggcta cacacgtgct acaatggccg gtacagaggg 1200

cagcgaaggg gtgacctgga gcaaatcttt taaagctggt cgtagtccgg attggagtct 1260

gcaactcgac tccatgaagt cggaatcgct agtaatcgcg aatcagcatg tcgcggtgaa 1320

tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gcaccagaag 1380

tagatagtct aacctttggg gggacgttta ccacggtgtg att 1423

<210> 1157
<211> 1508
<212> DNA
<213> Legionella sp. NML 93L054

<400> 1157
ggctcagatt gaacgctggc ggcatgctta acacatgcaa gtcgaacggc agcatggtcc 60

agcttgctgg actgatggcg agtggcgaac gggtgagtaa tgcgtaggaa tatgccttga 120

agaggggat aacccgggga aactcgggct aataccgcat aatctcttag gaggaaagct 180

ggggacctta tggcctggcg ctttaagatt agcctacgtc cgattagcta gttggtgggg 240

taagggccta ccaaggctgt gatcggtagc tggtctgaga ggatggacag ccacactggg 300

actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgg acaatggggg 360

gaaccctgat ccagcaatgc cgcgtgtgtg aagaaggcct gagggttgta aagcactatc 420

ggtggggagg aagtttgatt ggttaagagc tgattggatt gacgttaccc acagaagaag 480

caccggctaa ctccgtgcca gcagccgcgg taatacggag ggtgcgagcg ttaatcggaa 540

ttactgggcg taaagggtgc gtaggtggtt ttttaagtta tctgtgaaat tcctgggctt 600

aacctgggct ggtcagataa gactggaaga cttgagtatg ggagagggca gtggaatttc 660

cggtgtagcg gtgaaatgcg tagagatcgg aaggaacacc agtggcgaag gcggctgcct 720

ggcctgatac tgacactgag gcacgaaagc gtgggtagcg aacaggatta gataccctgg 780

tagtccacgc tgtaaacgat gtcaactagc tgttggcttt atagataaag ttagtggcgc 840

agcaaacgcg ataagttgac cgcctgggga gtacggtcgc aagactaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac 960

cttacctacc cttgacatac agtggagctt gcagagatgc gagtgtgcct ttgggaacac 1020

tgatacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

taacgagcgc aacccttatt cctagttacc agcacgtgat ggtggggact ctagggagac 1140

tgccggtgac aaaccggagg aaggcgggga cgacgtcaag tcatcatggc ccttacgggt 1200

agggctacac acgtgctaca atggacggta cagagggcgg cgaaggggcg acctggagcg 1260

aatccttaaa agctgttcgt agtccggatt ggagtctgga actcgactcc atgaagtcgg 1320

aatcgctagt aatcgcgaat cagcatgtcg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca caccatggga gtgggctgca ccagaagtag atagtctaac cttcgggggg 1440

acgtttacca cggtgtggtt catgactggg gtgaagtcgt aacaaggtag ccgtagggga 1500

acctgcgg 1508

<210> 1158
<211> 1362
<212> DNA
<213> Legionella steelei

<400> 1158
catgcttaac acatgcaagt cgaacggcag catgatctag cttgctagat tgatggcgag 60

tggcgaacgg gtgagtaacg cgtaggaata tgccttgaag tgggggacaa cttggggaaa 120

ctcaagctaa taccgcataa tgtctaagga cgaaagctgg ggaccttagg gcctggcgct 180

ttaagattag cctgcgtccg attagctagt tggtggggta agggcctacc aaggcgacga 240

tcggtagctg gtctgagagg atgaccagcc acactggaac tgagacacgg tccagactcc 300

tacgggaggc agcagtgggg aatattggac aatgggggca accctgatcc agcaatgccg 360

cgtgtgtgaa gaaggcctga gggttgtaaa gcactttcag tagggaggag gattgctagg 420

ttaagagcta agtgattgga cgttacctac agaagaagca ccggctaact ccgtgccagc 480

agccgcggta atacggaggg tgcaagcgtt aatcggaatt actgggcgta aagcgtgcgt 540

aggtggttaa ttaagttatc tgtgaaatcc ctgggcttaa cctgggcagg tcagatgata 600

ctggttgact cgagtatggg agagggtagt ggaatttccg gtgtagcggt gaaatgcgta 660

gagatcggaa ggaacaccag tggcgaaggc ggctacctgg cctaatactg acactgaggc 720

acgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatgt 780

caactagctg ttggttatat gaaaataatt agtggcgcag caaacgcgat aagttgaccg 840

cctggggagt acggtcgcaa gattaaaact caaaggaatt gacggggcc cgcacaagcg 900

gtggagcatg tggtttaatt cgatgcaacg cgaagaacct tacctaccct tgacatacag 960

tgaattttgc agagatgcat tagtgccttc gggaacactg atacaggtgc tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgta acgagcgcaa cccttgtcct 1080

tagttgccag cacgtaatgg tgggaactct aaggagactg ccggtgacaa accggaggaa 1140

ggcggggacg acgtcaagtc atcatggccc ttacgggtag ggctacacac gtgctacaat 1200

gggtgataca gagggaagcg aaggggtgac ctggagctaa tcttagaaag tcgctcgtag 1260

tccggattgg agtctgcaac tcgactccat gaagtcggaa tcgctagtaa tcgcgaatca 1320

gcatgtcgcg gtgaatacgt tcccgggcct tgtacacacc gc 1362

<210> 1159
<211> 1482
<212> DNA
<213> Leminorella grimontii

<400> 1159
ggcggcaggc ctaacacatg caagtcgaac ggcagcggga agtagcttgc tactttgccg 60

gcgagtggcg gacgggtgag taatgtctgg gaaactgccc gatggagggg gataactact 120

ggaaacggta gctaataccg catgacgtct tcggaccaaa gaggggacc ttagggcctc 180

ttgccatcgg atgtgcccag atgggattag ctagtaggcg gggtaatggc ccacctaggc 240

gacgatccct agctggtctg agaggatgac cagccacact gggactgaga cacggcccag 300

actcctacgg gaggcagcag tggggaatat tgcacaatgg gggaaaccct gatgcagcca 360

tgccgcgtgt gtgaagaagg ccttcgggtt gtaaagcact ttcagcgagg aggaaggggt 420

tgtatttaat acatgcaatc attgacgtta ctcgcagaag aagcaccggc taactccgtg 480

ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg gcgtaaagcg 540

cacgcaggcg gttgattaag ttagatgtga aatccccggg cttaacctgg gaactgcatt 600

taaaactggt cagctagagt cttgtagagg ggggtagaat tccacgtgta gcggtgaaat 660

gcgtagagat gtggaggaat accggtggcg aaggcggccc cctggacaaa gactgacgct 720

caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgctgtaaac 780

gatgtcgatt tggaggttgt gcccttgagg cgtggcttcc ggagctaacg cgttaaatcg 840

accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg ggcccgcaca 900

agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta ctcttgacat 960

ccagagaact tagcagagat gctttggtgc cttcgggaac tctgagacag gtgctgcatg 1020

gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc gcaaccctta 1080

tcctttgttg ccagcggttc ggccgggaac tcaaaggaga ctgccagtga taaactggag 1140

gaaggtgggg atgacgtcaa gtcatcatgg cccttacgag tagggctaca cacgtgctac 1200

aatggcgtat acaaagagaa gcgacctcgc gagagcaagc ggacctcata aagtacgtcg 1260

tagtccggat tggagtctgc aactcgactc catgaagtcg gaatcgctag taatcgcgga 1320

tcagaatgcc gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatggg 1380

agtgggttgc aaaagaagta ggtagcttaa ccttcggggg ggcgcttacc actttgtgat 1440

ccatgactgg ggtgaagtcg taacaaggta accgtagggg aa 1482

<210> 1160
<211> 1516
<212> DNA
<213> Leminorella richardii

<400> 1160
attgaacgct ggcggcaggc ctaacacatg caagtcgaac ggtagcagga agaagcttgc 60

ttctttgctg acgagtggcg gacgggtgag taatgtctgg gaaactgccc gatggagggg 120

gataactact ggaaacggta gctaataccg cataacgtct tcggaccaaa gtgggggacc 180

ttcgggcctc acaccatcgg atgtgcccag atgggattag ctagtaggcg gggtaatggc 240

ccaccctagg cgacgatccc tagctggtct gagaggatga ccagccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc 360

tgatgcagcc atgccgcgtg tgtgaagaag gccttcgggt tgtaaagcac tttcagcgag 420

gaggaagggt gtggagttaa taacttcatg cattgacgtt actcgcagaa gaagcaccgg 480

ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttaatc ggaattactg 540

ggcgtaaagc gcacgcaggc ggttgattaa gtcagatgtg aaatccccgg gctcaacctg 600

ggaactgcat ttgaaactgg tcagctagag tcttgtagag gggggtagaa ttccacgtgt 660

agcggtgaaa tgcgtagaga tgtggaggaa taccggtggc gaaggcggcc ccctggacaa 720

agactgacgc tcaggtgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgctgtaaa cgatgtcgac ttggaggttg ttcccttgag gagtggcttc cggagctaac 840

gcgttaagtc gaccgcctgg ggagtacggc cgcaaggtta aaactcaaat gaattgacgg 900

gggcccgcac aagcggtgga gcatgtggtt taattcgatg caacgcgaag aaccttacct 960

actcttgaca tccagagaag tttgcagaga tgcgaatgtg ccttcgggaa ctctgagaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt atcctttgtt gccagcggtt cggccgggaa ctcaaaggag actgccagtg 1140

ataaactgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1200

acacgtgcta caatggcgta tacaaagaga agcgacctcg cgagagcaag cggacctcac 1260

aaagtacgtc gtagtccgga ttggagtctg caactcgact ccatgaagtc ggaatcgcta 1320

gtaatcgcgg atcagaatgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtgggatg caaaagaagt aggtagctta accttcgggg gggcgcttac 1440

cactttgtgt ttcatgactg gggtgaagtc gtaacaaggt aaccgtaggg gaacctgcgg 1500

ttggatcacc tcctta 1516

<210> 1161
<211> 1511
<212> DNA
<213> Leptospira borgpetersenii

<400> 1161
aacacggaga gtttgatcct ggctcagaac taacgctggc ggcgcgtctt aaacatgcaa 60

gtcaagcgga gtagcaatac tcagcggcga acgggtgagt aacacgtggg taatcttcct 120

ccgagtctgg gataactttc cgaaagggga gctaatactg gatagtcccg agaggtcata 180

ggatttttcg ggtaaagatt tattgctcgg agatgagccc gcgcccgatt agctagttgg 240

tgaggtaatg gctcaccaag gcgacgatcg gtagccggcc tgagagggtg ttcggccaca 300

atggaactga gacacggtcc atactcctac gggaggcagc agttaagaat cttgctcaat 360

gggggggaacc ctgaaagcag cgacgccgcg tgaacgatga aaggtcttcg gattgtaaag 420

ttcaataagc agggaaaaat aagcagcgat gtgatgatgg tacctgccta aagcaccggc 480

taactacgtg ccagcagccg cggtaatacg tatggtgcaa gcgttgttcg gaatcattgg 540

gcgtaaaggg tgcgtaggcg gacatgtaag tcaggtgtga aaactgcggg ctcaactcgc 600

agcctgcact tgaaactatg tgtctggagt ttgggagagg caagtggaat tccaggtgta 660

gcggtgaaat gcgtagatat ctggaggaac accagtggcg aaggcgactt gctggcctaa 720

aactgacgct gaggcacgaa agcgtgggta gtgaacggga ttagataccc cggtaatcca 780

cgccctaaac gttgtctacc agttgttggg ggttttaacc ctcagtaacg aacctaacgg 840

attaagtaga ccgcctgggg actatgctcg caagagtgaa actcaaagga attgacgggg 900

gtccgcacaa gcggtggagc atgtggttta attcgatgat acgcgaaaaa cctcacctag 960

gcttgacatg gagtggaatc atgtagagat acatgagcct tcgggccgct tcacaggtgc 1020

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

ccctcacctt atgttgccat cattcagttg ggcactcgta aggaactgcc ggtgacaaac 1140

cggaggaagg cggggatgac gtcaaatcct catggccttt atgtctaggg caacacacgt 1200

gctacaatgg ccggtacaaa gagtagccaa ctcgcgaggg ggagctaatc tcaaaaagcc 1260

ggtcccagtt cggattggag tctgcaactc gactccatga agtcggaatc gctagtaatc 1320

gcggatcagc atgccgcggt gaatacgttc ccggaccttg tacacaccgc ccgtcacacc 1380

acctgagtgg ggagcacccg aagtggtctt tgccaaccgc aaggaagcag actactaagg 1440

tgaaactcgt gaaggggggtg aagtcgtaac aaggtagccg tatcggaagg tgcggctgga 1500

tcacctcctt t 1511

<210> 1162
<211> 1293
<212> DNA
<213> Leptospira broomii

<400> 1162
aactaacgct ggcggcgcgt cttaaacatg caagtcgagc gagcggcgaa cgggtgagta 60

acacgtgggt aatcttcctc cgagtctggg ataactttcc gaaaggaaag ctaataccgg 120

atagttaaag ttgcttggag atgagcccgc ggccgattag ctagttggtg aggtaatggc 180

tcaccaaggc gacgatcggt agccggcctg agagggtgtc cggccacaat ggaactgaga 240

cacggtccat actcctacgg gaggcagcag ttaagaatct tgctcaatgg gggaaaccct 300

gaagcagcga cgccgcgtga acgaagaagg tcttcggatt gtaaagttca ttaagcaggg 360

aaaatgatgg tacctgccta aagcaccggc taactacgtg ccagcagccg cggtaatacg 420

tatggtgcaa gcgttgttcg gaatcattgg gcgtaaaggg tgcgtaggcg gatttgtaag 480

tcaggtgtga aaactgcggg ctcaacccgt ggcctgcact tgaaactaca agtctggagt 540

ttgggagagg caagtggaat tccaggtgta gcggtgaaat gcgtagatat ctggaggaac 600

accagtggcg aaggcgactt gctggctcaa ctgacgctga ggcacgaaag cgtgggtagt 660

aaacgggatt agataccccg gtaatccacg ccctaaacgt tgtctaccag ttgttggggc 720

ctcagtaacg aacctaacgg attaagtaga ccgcctgggg actatgctcg caagagtgaa 780

actcaaagga attgacgggg gtccgcacaa gcggtggagc atgtggttta attcgatgat 840

acgcgaaaaa cctcacctgg gcttgacatg cacaggtgct gcatggttgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctatcgta tgttgctacc 960

atgggcactc gtacgaaact gccggtgaca aaccggagga aggcggggat gacgtcaaat 1020

cctcatggcc tttatgtcca gggccacaca cgtgctacaa tggccgacag agggtcgcca 1080

actcgcaaga gggagctaat ctctatcggt cccagttcgg atggggtctg caactcgacc 1140

ccagaagtcg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata cgttcccgga 1200

ccttgtacac accgcccgtc acaccacctg agtggggagc acccgaagtg gtttgttaga 1260

cagactacta aggtgaaact cgtaaagggg gtg 1293

<210> 1163
<211> 1508
<212> DNA
<213> Leptospira interrogans

<400> 1163
aacacggaga gtttgatcct ggctcagaac taacgctggc ggcgcgtctt aaacatgcaa 60

gtcaagcgga gtagcaatac tcagcggcga acgggtgagt aacacgtggg taatcttcct 120

ctgagtctgg gataactttc cgaaagggaa gctaatactg gatggtcccg agagatcata 180

agatttttcg ggtaaagatt tattgctcgg agatgagccc gcgtccgatt agctagttgg 240

tgaggtaaag gctcaccaag gcgacgatcg gtagccggcc tgagagggtg ttcggccaca 300

atggaatgag acacggtcca tactcctacg ggaggcagca gttaagaatc ttgctcaatg 360

gggggaaccc tgaagcagcg acgccgcgtg aacgatgaag gtcttcggat tgtaaagttc 420

agtaagcagg gaaaaataag cagcaatgtg atgatggtac ctgcctaaag caccggctaa 480

ctacgtgcca gcagccgcgg taatacgtat ggtgcaagcg ttgttcggaa tcattgggcg 540

taaagggtgc gtaggcggac atgtaagtca ggtgtgaaaa ctgcgggctc aactcgcagc 600

ctgcacttga aactatgtgt ctggagtttg ggagaggcaa gtggaattcc aggtgtagcg 660

gtgaaatgcg tagatatctg gaggaacacc agtggcgaag gcgacttgct ggcctaaaac 720

tgacgctgag gcacgaaagc gtgggtagtg aacgggatta gataccccgg taatccacgc 780

cctaaacgtt gtctaccagt tgttgggggt tttaaccctc agtaacgaac ctaacggatt 840

aagtagaccg cctggggact atgctcgcaa gagtgaaact caaaggaatt gacgggggtc 900

cgcacaagcg gtggagcatg tggtttaatt cgatgatacg cgaaaaacct cacctaggct 960

tgacatggag tggaatcatg tagagataca tgagccttcg ggccgcttca caggtgctgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

tcaccttatg ttgccatcat tcagttgggc actcgtaagg aactgccggt gacaaaccgg 1140

aggaaggcgg ggatgacgtc aaatcctcat ggcctttatg tctagggcaa cacacgtgct 1200

acaatggccg gtacaaaggg tagccaactc gcgaggggga gctaatctca aaaatccggt 1260

cccagttcgg attggagtct gcaactcgac tccatgaagt cggaatcgct agtaatcgcg 1320

gatcagcatg ccgcggtgaa tacgttcccg gaccttgtac acaccgcccg tcacaccacc 1380

tgagtgggga gcacccgaag tggtctttgc caaccgcaag gaagcagact actaaggtga 1440

aactcgtgaa gggggtgaag tcgtaacaag gtagccgtat cggaaggtgc ggctggatca 1500

cctccttt 1508

<210> 1164
<211> 1348
<212> DNA
<213> Leptospira licerasiae

<400> 1164
caagtcgagc ggagtagcaa tacttagcgg cgaacgggtg agtaacacgt gggtaatctt 60

cctccgaatc tgggataact ttccgaaagg aaagctaata ccggatagtt ctattggatc 120

acaggatttg atagataaag gtttactgtt cggagatgag cccgcggccg attagctagt 180

tggtgaggta atggctcacc aaggcgacga tcggtagccg gcctgagagg gtgtccggcc 240

acaatggaac tgagacacgg tccatactcc tacgggaggc agcagttaag aatcttgctc 300

aatgggcgca agcctgaagc agcgacgccg cgtgaacgaa gaaggtcttc ggattgtaaa 360

gttcagtaag cagggaaaaa taagcagcaa tgtgatgatg gtacctgcct aaagcaccgg 420

ctaactacgt gccagcagcc gcggtaatac gtatggtgca agcgttgttc ggaatcattg 480

ggcgtaaagg gtgcgtaggc ggacatgtaa gtcaggtgtg aaaactgggg gctcaaccct 540

cagcctgcac ttgaaactat gtgtctggag tttgggagag gcaagtggaa ttccaggtgt 600

agcggtgaaa tgcgtagata tctggaggaa caccagtggc gaaggcgact tgctggctca 660

aaactgacgc tgaggcacga aagcgtgggt agtaaacggg attagatacc ccggtaatcc 720

acgccctaaa cgttgtctac cagttgttgg gggttttaac cctcagtaac gaacctaacg 780

gattaagtag accgcctggg gactatgctc gcaagagtga aactcaaagg aattgacggg 840

ggtccgcaca agcggtggag catgtggttt aattcgatga tacgcgaaaa acctcacctg 900

ggcttgacat ggagtggaat catatagaga tatatgagcc ttcgggccgc ttcacaggtg 960

ctgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1020

acccctatcg tatgttgcta ccatttagtt gggcactcgt acgaaactgc cggtgacaaa 1080

ccggaggaag gcggggatga cgtcaaatcc tcatggcctt tatgtccagg gccacacacg 1140

tgctacaatg gccgatacag agggttgcca actcgcaaga gggagctaat ctctaaaagt 1200

cggtcccagt tcggattgga gtctgcaact cgactccatg aagtcggaat cgctagtaat 1260

cgcggatcag catgccgcgg tgaatacgtt cccggacctt gtacacaccg cccgtcacac 1320

cacctgagtg gggagcaccc gaagtggt 1348

<210> 1165
<211> 1510
<212> DNA
<213> Leptotrichia buccalis

<400> 1165
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caagtctttg 60

gcgaatctgt gcttgcacag gctagccaag gcggacgggt gagtaacgcg taaagaactt 120

accctgcaga cagggataac agacggaaac gactgataat acctgataca attgccagca 180

cgcatgtgcc cggcaatgaa aagtgatgct gcaggagagc tttgcgtcct attagcttgt 240

tggtgaggta atggctcacc aaggcgatga taggtagccg gcctgagagg gtgaacggcc 300

acaaggggac tgagatacgg cccttactcc tacgggaggc agcagtgggg aatattggac 360

aatgggggca accctgatcc agcaattctg tgtgcatgaa gaaggttttc ggattgtaaa 420

gtgctttcag cagggaagaa gaaagtgacg gtacctgcag aagaagcgac ggctaaatac 480

gtgccagcag ccgcggtaat acgtatgtcg caagcgttat ccggaattat tgggcataaa 540

gggcatctag gcggccagac aagtctgggg tgaaaacttg cggctcaacc gcaagcctgc 600

cctggaaact gtttggctag agtgctggag aggtggacgg aactgcacga gtagaggtga 660

aattcgtaga tatgtgcagg aatgccgatg atgaagatag ttcactggac ggtaactgac 720

gctgaagtgc gaaagctggg ggagcgaaca ggattagata ccctggtagt cccagccgta 780

aacgatgatt actgggtgtg ggcatgaaga gtgtccgtgc cgaagctaat gcgataagta 840

atccgcctgg ggagtacggc cgcaaggctg aaactcaaag gaattgacgg ggacccgcac 900

aagcggtgga gcatgtggtt taattcgacg caacgcgagg aaccttacca gatcttgaca 960

tcctacgaat gcctgtgaga acaggcagtg ccttcgggaa cgtagagaca ggtggtgcat 1020

ggctgtcgac agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct 1080

atcgctagtt gccatcatta agttggggac tctagcgaga ctgcctgcga agagcaggag 1140

gaaggtgggg atgacgtcaa gtcatcatgc cccttatgat ctgggctaca cacgtgctac 1200

aatggccggt acaaagagct gcaaaacggt aacgtttagc caatctttaa agccggtcca 1260

agttcggatt gaagtctgca actcgacttc atgaagccgg aatcgctagt aatcgcagat 1320

cagcaatgct gcggtgaata cgttctcggg tcttgtacac accgcccgtc acaccacgag 1380

agttgtttgc acctgaagcc gccggtccaa ccgtaaggag gaaggcgtct aaggtgtgga 1440

tagtgattgg ggtgaagtcg taacaaggta tccgtaccgg aaggtgcgga tggatcacct 1500

cctttctaag 1510

<210> 1166
<211> 1294
<212> DNA
<213> Leptotrichia genomosp. C1

<400> 1166
gatgaacgct gacagaatgc ttaacacatg caagtctggc gagcggcgga cgggtgagta 60

acgcgtaagg aacttgccct gcagtcaggg ataacagacg gaaacgactg ataagacctg 120

gtaaagaaaa tgctgcagga gagccttgcg tcctattagc ttgttggtgg ggtaacggcc 180

caccaaggca atgataggta gccggcctga gagggtggac ggccacaagg ggactgagat 240

acggccctta ctcctacggg aggcagcagt ggggaatatt ggacaatggg ggcaaccctg 300

atccagcaat tctgtgtgca cgatgaaggt tttcggattg taaagtgctt tcagcaggga 360

agatgacggt acctgcagaa gaagcgacgg ctaaatacgt gccagcagcc gcggtaatac 420

gtatgtcgca agcgttatcc ggaattattg ggcataaagg gcatctaggc ggccagataa 480

gtctggggtg aaaacttgcg gctcaaccgc aagcctgccc tggaaactat gtggctagag 540

tactggagag gtggacggaa ctgcacgagt agaggtgaaa ttcgtagata tgtgcaggaa 600

tgccgatggt gaagatagtt cactggacgg actgacgctg aagtgcgaaa gctaggggag 660

caaacaggat tagataccct ggtagtccta gctgtaaacg atgattactg ggtgtgggca 720

tgtccgtgcc gaagctaatg cgataagtaa tccgcctggg gagtacggcc gcaaggctga 780

aactcaaagg aatagacggg gacccgcaca agcggtggag catgtggttt aattcgacgc 840

aacgcgagga accttaccag atcttgacat cgacaggtgg tgcatggctg tcgacagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgc tagttgccat 960

catgggaact ctagcaagac tgcctgcgaa gagcaggagg aaggtgggga tgacgtcaag 1020

tcatcatgcc ccttatgatc tgggctacac acgtgctaca atggccggca gagagccgca 1080

aggcggcaac gccaagccaa tctttccggt ccaagttcgg atgaagtctg caactcgact 1140

tcagaagctg gaatcgctag taatcgcaga tcagcaatgc tgcggtgaat acgttctcgg 1200

gtcttgtaca caccgcccgt cacaccacga gagttgtctg cacctgaagc tgccgtccag 1260

gaaagcatct aaggtgtgga tagtgattgg ggtg 1294

<210> 1167
<211> 1515
<212> DNA
<213> Leptotrichia goodfellowii

<400> 1167
ttgaatgaag agtttgatcc tggctcagga tgaacgctga cagaatgctt aacacatgca 60

agtcgatggg gaagaattaa cttgttaatt tggtaaccat ggcggacggg tgagtaacgc 120

gtaaagaact tacctttcag actgggataa cagagggaaa cttctgataa gaccggatat 180

aattaattga ttgcatgaga gattaatgaa aagagatgct gaaagagagc tttgcgtcct 240

attagctagt tggtaaggta acggcttacc aaggcgatga taggtagccg gcctgagagg 300

gtggacggcc acaaggggac tgagatacgg cccttactct tacgggaggc agcagtgggg 360

aatattggac aatggaggag actctgatcc agcaattctg tgtgcacgaa gaaggttttc 420

ggattgtaaa gtgctttcag tggggaagaa ggaagtgacg gtacccacag aagaagcgac 480

ggctaaatac gtgccagcag ccgcggtaat acgtatgtcg cgagcgttat ccggaattat 540

tgggcataaa gggcatctag gcggacgatc aagtcagggg tgaaaacttg cggctcaact 600

gtaagcttgc ctttgaaact gattgtctag agtattggaa aggtgggcgg aactacacga 660

gtagaggtga aattcgtaga tatgtgtagg aatgccgatg atgaagatag ctcactggac 720

gataactgac gctgaagtgc gaaagctagg ggagcgaaca ggattagata ccctggtagt 780

cctagctgta aacgatgatc actgggtgtg ggcaggaaga ctgtctgtgc cgaagcaaat 840

gcgataagtg atccgcctgg ggagtacgac cgcaaggttg aaactcaaag gaattgacgg 900

ggacccgcac aagcggtgga gcatgtggtt taattcgacg caacgcgagg aaccttacca 960

gatcttgaca tcctacgaac atgtatgagg atacatggtg ccttcgggaa cgtagagaca 1020

ggtggtgcat ggctgtcgac agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt atcgttagtt accatcatta agttggggac tctagcgaga ctgcctgcga 1140

agagcaggag gaaggtgggg atgacgtcaa gtcatcatgc cccttatgat ctgggctaca 1200

cacgtgctac aatgggcagt acagagagga gcgagatagt gatatggagc gaatcttgaa 1260

agctgttcta agttcggatt gaagtctgca actcgacttc atgaagttgg aatcgctagt 1320

aatcgcaaat cagcaatgtt gcggtgaata cgttctcggg tcttgtacac accgcccgtc 1380

acaccacgag agttgtttgc acctgaagtt actggtctaa cttaggagga aggtacctaa 1440

ggtgtgaata gtgattgggg tgaagtcgta acaaggtatc cgtaccggaa ggtgcggatg 1500

gatcacctcc tttct 1515

<210> 1168
<211> 1507
<212> DNA
<213> Leptotrichia hofstadii

<400> 1168
tgaagagttt gatcctggct caggatgaac gctgacagaa tgcttaacac atgcaagtct 60

ttggcgaatc tgtgcttgca caggctagcc aaggcggacg ggtgagtaac gcgtaaagaa 120

cttgccctgc agacagggat aacagacgga aacgactgac aacacctgat acagttgccg 180

gcacgcatgt gcctggcaat gaaaagagat gctgcgggag agctttgcgt cctattagct 240

tgttggcggg gtaacggccc accaaggcga tgataggtag ccggcctgag agggtgaacg 300

gccacaaggg gactgagata cggcccttac tcctacggga ggcagcagtg gggaatattg 360

gacaatgggg gcaaccctga tccagcaatt ctgtgtgcac gatgaaggtt ttcggattgt 420

aaagtgcttt cagcagggaa gaaggaagtg acggtacctg cagaagaagc gacggctaaa 480

tacgtgccag cagccgcggt aatacgtatg tcgcaagcgt tatccggaat tattgggcat 540

aaagggcatc taggcggcca ggcaagtctg gggtgaaaac ttgcggctca accgcaagcc 600

tgccctggaa actgcctggc tagagtgctg gagaggtgga cggaactgca cgagtagagg 660

tgaaattcgt agatatgtgc aggaatgccg atgatgaaga tagttcactg gacggcaact 720

gacgctgaag tgcgaaagct gggggagcga acaggattag ataccctggt agtcccagcc 780

gtaaacgatg attactgggt gtgggcatga agagtgtccg tgccgaagca aatgcgataa 840

gtaatccgcc tggggagtac ggccgcaagg ctgaaactca aaggaattga cggggacccg 900

cacaagcggt ggagcatgtg gtttaattcg acgcaacgcg aggaacctta ccagatcttg 960

acatcccacg tatgcctgcg agagcgggca gtgccttcgg gaacgtggag acaggtggtg 1020

catggctgtc gacagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cctatcgcca gttgccatca ttaagttggg gactctggcg agactgcctg cgaagagcag 1140

gaggaaggtg gggatgacgt caagtcatca tgcccccttat gatctgggct acacacgtgc 1200

tacaatggcc ggtacagaga gctgcgaagc ggcaacgccc agcgaatctt caaagccggt 1260

ccaagttcgg attgaagtct gcaactcgac ttcatgaagc tggaatcgct agtaatcgca 1320

gatcagcaat gctgcggtga atacgttctc gggtcttgta cacaccgccc gtcacaccac 1380

gagagttgtc tgcacctgaa gctgccggtc taaccgcaag gaggaaggca tctaaggtgt 1440

ggacagtgat tggggtgaag tcgtaacaag gtatccgtac cggaaggtgc ggatggatca 1500

cctcctt 1507

<210> 1169
<211> 1485
<212> DNA
<213> Leptotrichia shahii

<400> 1169
gagtttgaty ctggctcagg atgaacgctg acagaatgct taacacatgc aagtctttgg 60

cgaagctgcg cttgcgcaga cgagccaagg cggacgggtg agtaacgcgt aaggaacttg 120

ccctgcagac agggataaca gacggaaacg actgacaaga cctgatacag ttgccggcac 180

gcatgtgcct ggcgatgaaa ggagacgctg caggagagcc ttgcgtccta ttagcttgtt 240

ggcggggtaa tggcccacca aggcgatgat aggtagccgg cctgagaggg tggacggcca 300

caaggggact gagatacggc ccttactcct acgggaggca gcagtgggga atattggaca 360

atgggggcaa ccctgatcca gcaattctgt gtgcacgaag aaggttttcg gattgtaaag 420

tgctttcagc agggaagaag aaagtgacgg tacctgcaga agaagcgacg gctaaatacg 480

tgccagcagc cgcggtaata cgtatgtcgc gagcgttatc cggaattatt gggcataaag 540

ggcatctagg cggccctgta agtctagggt gaaaacctgc ggctcaaccg caggcctgcc 600

ccggaaacta cagggctaga gtgctggaga ggtggacgga actgcacgag tagaggtgaa 660

attcgtagat atgtgcagga atgccgatga tgaagatagt tcactggacg gcaactgacg 720

ctgaagtgcg aaagctaggg gagcaaacag gattagatac cctggtagtc ctagctgtaa 780

acgatgatta ctgggtgtgg gcatgaagag tgtccgtgcc gaagctaatg cgataagtaa 840

tccgcctggg gagtacggcc gcaaggctga aactcaaagg aattgacggg gacccgcaca 900

agcggtggag catgtggttt aattcgacgc aacgcgagga accttaccag atcttgacat 960

cctgcgaagg cctgcgagag caggccgtgc cttcgggaac gcagagacag gtggtgcatg 1020

gctgtcgaca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta 1080

tcgctagttg ccatcattag gttggggact ctagcgagac tgcctgcgaa gagcaggagg 1140

aaggcgggga tgacgtcaag tcatcatgcc ccttatgatc tgggctacac acgtgctaca 1200

atggccggta caaagagctg ccaggcggca acgccaagcg aatctttaaa gccggtccaa 1260

gttcggattg aagcctgcaa ctcggcttca tgaagctgga atcgctagta atcgcagatc 1320

agcaatgctg cggtgaatac gttctcgggt cttgtacaca ccgccgtcac accacgagag 1380

ttgtctgcac ctgaagccgc cggtccaacc gaaaggagga aggcgtctaa ggtgtggaca 1440

gtgattgggg tgaagtcgta acaaggtatc cgtaccggaa ggtgc 1485

<210> 1170
<211> 1506
<212> DNA
<213> Leptotrichia sp. neutropenicPatient

<400> 1170
tggagagttt gatcctggct caggatgaac gctgacagaa tgcttaacac atgcaagtca 60

ttggcgaagc tgcgcttgcg cagtctagcc aaggcggacg ggtgagtaac gcgtaaggaa 120

cttgccctgc agacagggat aacagacgga aacgactgat aacacctggt attgtcaggc 180

tggcgcatgc cggcctgatg aaaggagacg ctgcaggaga gccttgcgtc ctattagcta 240

gttggtgggg taacggccca ccaaggcgat gataggtagc cggcctgaga gggtgaacgg 300

ccacaagggg actgagatac ggcccttact cctacgggag gcagcagtgg ggaatattgg 360

acaatggggg caaccctgat ccagcaattc tgtgtgcacg aagaaggttt tcggattgta 420

aagtgctttc agcagggaag aagaaagtga cggtacctgc agaagaagcg acggctaaat 480

acgtgccagc agccgcggta atacgtatgt cgcaagcgtt atccggaatt attgggcata 540

aagggcatct aggccgccct gtaagtctag ggtgaaaacc tgcggctcaa ccgcaggcct 600

gccccggaaa ctacagggct agagtatcgg agaggtggac ggaactgcac gagtagaggt 660

gaaattcgta gatatgtgca ggaatgccga tgatgaagat agttcactgg acggtaactg 720

acgctgaagt gcgaaagcta ggggagcaaa caggattaga taccctggta gtcctagctg 780

taaacgatga ttactgggtg tgggcatgaa gagtgtccgt gccgaagcaa atgcgataag 840

taatccgcct ggggagtacg gccgcaaggc tgaaactcaa aggaattgac ggggacccgc 900

acaagcggtg gagcatgtgg tttaattcga cgcaacgcga ggaaccttac cagatcttga 960

catcctgcga atgcccgtga gaacgggcag tgccttcggg aacgcagaga caggtggtgc 1020

atggctgtcg acagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ctatcgttag ttgccatcat taagttgggg actctagcga gactgcctgc gaagagcagg 1140

aggaaggtgg ggatgacgtc aagtcatcat gccccttatg atctgggcta cacacgtgct 1200

acaatggccg gtacagagag cagccaggcg gcaacgccga gcgaatcttt aaagccggtc 1260

caagttcgga ttgaagcctg caactcggct tcatgaagct ggaatcgcta gtaatcgcag 1320

atcagcaatg ctgcggtgaa tacgttctcg ggtcttgtac acaccgcccg tcacaccacg 1380

agagttgtct gcacctgaag ctgctggtcc aaccgcaagg aggaaggcat ctaaggtgtg 1440

gatagtgatt ggggtgaagt cgtaacaagg tatccgtacc ggaaggtgcg gytggatcac 1500

ctcctt 1506

<210> 1171
<211> 1363
<212> DNA
<213> Leptotrichia sp. oral clone GT018

<400> 1171
gagtttgatt ctggctcagg atgaacgctg acagaatgct taacacatgc aagtctggcg 60

agcggcggac gggtgagtaa cgcgtaagga acttgccctg cagtcaggga taacagacgg 120

aaacgactga taagacctgg taaagaaaat gctgcaggag agccttgcgt cctattagct 180

tgttggtggg gtaacggccc accaaggcga tgataggtag ccggcctgag agggtggacg 240

gccacaaggg gactgagata cggcccttac tcctacggga ggcagcagtg gggaatattg 300

gacaatgggg gcaaccctga tccagcaatt ctgtgtgcac gatgaaggtt ttcggattgt 360

aaagtgcttt cagcagggaa gatgacggta cctgcagaag aagcgacggc taactacgtg 420

ccagcagccg cggtaatacg tatgtcgcaa gcgttatccg gaattattgg gcataaaggg 480

catctaggcg gccagataag tctggggtga aaacttgcgg ctcaaccgca agcctgccct 540

ggaaactatg tggctagagt actggagagg tggacggaac tgcacgagta gaggtgaaat 600

tcgtagatat gtgcaggaat gccgatgatg aagatagttc actggacgga ctgacgctga 660

agtgcgaaag ctaggggagc aaacaggatt agataccctg gtagtcctag ctgtaaacga 720

tgattactgg gtgtgggcat gtccgtgccg aagctaatgc gataagtaat ccgcctgggg 780

agtacggccg caaggctgaa actcaaagga attgacgggg acccgcacaa gcggtggagc 840

atgtggttta attcgacgca acgcgaggaa ccttaccaga tcttgacatc gacaggtggt 900

gcatggctgt cgacagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctattgct agttgccatc atgggaactc tagcaagact gcctgcgaag agcaggagga 1020

aggtggggat gacgtcaagt catcatgccc cttatgatct gggctacaca cgtgctacaa 1080

tggctggcag agagatgcga cgcagcaatg ccaagccaac ctctccagtc caagttcgga 1140

tgaagcctgc aactcggctt cagaagttgg aatcgctagt aatcgcggat cagcaatgcc 1200

gcggtgaata cgttctcggg ccttgtacac accgcccgtc acaccacgag agttgtctgc 1260

acctgaagct gccgtctaag aaggcatcta aggtgtggac agtgattggg gtgaagtcgt 1320

aacaaggtat ccgtaccgga aggtgcggct ggatcacctc ctt 1363

<210> 1172
<211> 1362
<212> DNA
<213> Leptotrichia sp. oral clone GT020

<400> 1172
gagtttgatc ctggctcagg atgaacgctg acagaatgct taacacatgc aagtctttgc 60

aaggcggacg ggtgagtaac gcgtaaagaa cttgccctgc agtctgggat aacagacgga 120

aacgactgat aaaacctgat atagaaaatg ctgcaggaga gctttgcgtc ctattagctt 180

gttggtgggg taatggccca ccaaggcaat gataggtagc cggcctgaga gggtgaccgg 240

ccacaagggg actgagatac ggcccttact cctacgggag gcagcagtgg ggaatattgg 300

acaatggggg caaccctgat ccagcaattc tgtgtgcacg aagaaggttt tcggattgta 360

aagtgctttc agcagggaag atgactgtac ctgcagaaga agcgacggct aaatacgtgc 420

cagcagccgc ggtaatacgt atgtcgcaag cgttatccgg aattattggg cataaagggc 480

atctaggcgg ccagataagt ctggggtgaa aacttgcggc tcaaccgcaa gcctgccctg 540

gaaactatat ggctagagta ctggagaggt ggacggaact gcacgagtag aggtgaaatt 600

cgtagatatg tgcaggaatg ccgatgatga agatagttca ctggacggac tgacgctgaa 660

gtgcgaaagc taggggagca aacaggatta gataccctgg tagtcctagc tgtaaacgat 720

gattactggg tgtgggcatg tctgtgccga agctaatgcg ataagtaatc cgcctgggga 780

gtacggccgc aaggctgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca 840

tgtggtttaa ttcgacgcaa cgcgaggaac cttaccagat cttgacatcg acaggtggtg 900

catggctgtc gacagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cctatcgtta gttgccatca tgggaactct agcgagactg cctgcgaaga gcaggaggaa 1020

ggtggggatg acgtcaagtc atcatgcccc ttatgatctg ggctacacac gtgctacaat 1080

ggccggcaaa aagctgcaaa acggtaacgt ttagccaatc tttccggtcc aagttcggat 1140

gaagtctgca actcgacttc agaagctgga atcgctagta atcgcagatc agcaatgctg 1200

cggtgaatac gttctcgggt cttgtacaca ccgcccgtca caccacgaga gttgtctgca 1260

cctgaagctg ccgtctaaga aggtatctaa ggtgtggata gtgattgggg tgaagtcgta 1320

acaaggtatc cgtaccggaa ggtgcggctg gatcacctcc tt 1362

<210> 1173
<211> 1363
<212> DNA
<213> Leptotrichia sp. oral clone HE012

<400> 1173
gagtttgatt ctggctcagg atgaacgctg acagaatgct taacacatgc aagtctggcg 60

agcggcggac gggtgagtaa cgcgtaaaga acttgccctg cagacaggga taacagacgg 120

aaacgactga taacacctga tacagaaaat gctgcgggag agctttgcgt cctattagct 180

tgttggtgag gtaacggctc accaaggcga tgataggtag ccggcctgag agggtgaacg 240

gccacaaggg gactgagata cggcccttac tcctacggga ggcagcagtg gggaatattg 300

gacaatgggg gcaaccctga tccagcaatt ctgtgtgcac gaagaaggtt ttcggattgt 360

aaagtgcttt cagcagggaa gatgacggta cctgcagaag aagcgacggc taattacgtg 420

ccagcagccg cggtaatacg tatgtcgcaa gcgttatccg gaattattgg gcataaaggg 480

catctaggcg gccagacaag tctggggtga aaacttgcgg ctcaaccgca agcctgccct 540

ggaaactgtt tggctagagt gctggagagg tggacggaac tgcacgagta gaggtgaaat 600

tcgtagatat gtgcaggaat accgatgatg aagatagttc actggacgga ctgacgctga 660

agtgcgaaag ctaggggagc gaacaggatt agataccctg gtagtcctag ctgtaaacga 720

tgattactgg gtgtggacat gtccgtgccg aagcaaatgc gataattaat ccgcctgggg 780

agtacggccg caaggctgaa actcaaagga attgacgggg acccgcacaa gcggtggagc 840

atgtggttta attcgacgca acgcgaggaa ccttaccaga tcttgacatc gacaggtggt 900

gcatggctgt cgacagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctatcgtt agttaccatc atggggactc tagcgagact gcctgcgaag agcaggagga 1020

aggtggggat gacgtcaagt catcatgccc cttatgatct gggctacaca cgtgctacaa 1080

tggccggcag agagctgcga agcggcaacg cccagcgaat ctttccggtc caagttcgga 1140

tgaagtctgc aactcgactt cagaagctgg aatcgctagt aatcgcagat cagcaatgct 1200

gcggtgaata cgttctcggg tcttgtacac accgcccgtc acaccacgag agttgtttgc 1260

acctgaagct gccgtctagg aaggcatcta atgtgtggat agtgattggg gtgaagtcgt 1320

aacaaggtat ccgtaccgga aggtgcggtt ggaacacctc ctt 1363

<210> 1174
<211> 1362
<212> DNA
<213> Leptotrichia sp. oral clone IK040

<400> 1174
gagtttgatc ctggctcagg atgaacgctg acagaatgct taacacatgc aagtcgatgg 60

atggcggacg ggtgagtaac gcgtaaagaa cttgccggat ggaccgggat aacagctgga 120

aacggctggc aagaccggat actgaaaatg ccgtccgaga gctttgcgtc ctattagctg 180

gttggtaagg tgacggctta ccaaggcgat gataggtagc cggcctgaga gggtggacgg 240

ccacaagggg actgagatac ggcccttact cctacgggag gcagcagtgg ggaatattgg 300

acaatggggg caaccctgat ccagcaattc tgtgtgcacg aagaaggttt tcggatcgta 360

aagtgctttc agcagggagg atgactgtac ctgcagaaga agcgacggct aaatacgtgc 420

cagcagccgc ggtaatacgt atgtcgcgag cgttatccgg aattattggg cataaagggc 480

atctaggcgg ccgggtaagt ccggggtgaa aactgctggc tcaaccagca gcctgccttg 540

gaaactaccc ggcttgagtg ctggagaggt ggacggaact gcacgagtag aggtgaaatt 600

cgtagatatg tgcaggaatg ccgatgatga agatagttca ctggacggac tgacgctgaa 660

gtgcgaaagc taggggagcg aacaggatta gataccctgg tagtcctagc tgtaaacgat 720

gattactggg tgtgggcatg tccgtgccga agctaatgcg ataagtaatc cgcctgggga 780

gtacggccgc aaggctgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca 840

tgtggtttaa ttcgacgcaa cgcgaggaac cttaccagat cttgacatcg acaggtggtg 900

catggctgtc gacagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cctatcgcta gttgccatca tggggactct agcgagactg cctgcgaaga gcaggaggaa 1020

ggtggggatg acgtcaagtc atcatgcccc ttatgatctg ggctacacac gtgctacaat 1080

ggctggcaga gagatgcgac gcagcaatgc caagccaacc tctccagtcc aagttcggat 1140

gaagcctgca actcggcttc agaagttgga atcgctagta atcgcggatc agcaatgccg 1200

cggtgaatac gttctcgggt cttgtacaca ccgcccgtca caccacgaga gttgtctgca 1260

cctgaagctg ccgtctaaga aggcatctaa ggtgtggaca gtgattgggg tgaagtcgta 1320

acaaggtatc cgtaccggaa ggtgcggctg gaacacctcc tt 1362

<210> 1175
<211> 1293
<212> DNA
<213> Leptotrichia sp. oral clone P2PB_51 P1

<400> 1175
gatgaacgct gacagaatgc ttaacacatg caagtcgatg gatggcggac gggtgagtaa 60

cgcgtaagga acttacctgc gggactggga taacggaggg aaacttctga caagaccgga 120

taaagaaagc gcctgcggag agtcttgcgt cctattagct agttggttgg gtaacggctg 180

accaaggcga agataggtag ccggcctgag agggtggacg gccacaaggg gactgagata 240

cggcccttac tcctacggga ggcagcagtg gggaatattg gacaatgggg gcaaccctga 300

tccagcaatt ctgtgtgcac gaagaaggtt ttcggattgt aaagtgcttt cagcagggaa 360

gatgacggta cctgcagaag aagcgacggc taaatacgtg ccagcagccg cggtaatacg 420

tatgtcgcga gcgttatccg gaattattgg gcataaaggg catctaggcg gcctaacaag 480

tcaggggtga aaacctgcgg ctcaaccgca ggcctgcctt tgaaactgta aggctggagt 540

accggagagg tggacggaac tgcacgagta gaggtgaaat tcgtagatat gtgcaggaat 600

gccgatgatg aagatagtcc actggacgga ctgacgctga agtgcgaaag ccgggggagc 660

gaacaggatt agataccctg gtagtcccgg ccgtaaacga tgattactgg gtgtgggcat 720

gtctgtgccg aagcgaatgc gataagtaat ccgcctgggg agtacggccg caaggctgga 780

actcaaagga attgacgggg acccgcacaa gcggtggagc atgtggttta attcgacgca 840

acgcgaggaa ccttaccaga tcttgacatc gacaggtggt gcatggctgt cgacagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttttgct agttaccatc 960

atggggactc tagcgagact gcctgcgaag agcaggagga aggtggggat gacgtcaagt 1020

catcatgccc cttatgatct gggctacaca cgtgctacaa tgggctgcag agaggagcga 1080

ggtggtgaca cggagcgaat cttgcagttc gaagttcgga tgaagtctgc aactcgactt 1140

cagaagttgg aatcgctagt aatcgcggat cagcaatgcc gcggtgaata cgttctcggg 1200

tcttgtacac accgcccgtc acaccacgag agttgtctgc acctgaagtt actgtctagg 1260

aaggtaccta aggtgtggat agtgattggg gtg 1293

<210> 1176
<211> 1432
<212> DNA
<213> Leptotrichia sp. oral taxon 223

<400> 1176
gatgaacgct gacagaatgc ttaacacatg caagtctttg gcgaatctgc gcttgcccag 60

gctagccaag gcggacgggt gagtagcgcg taaagaactt gccctgcaga cagggataac 120

agacggaaac gactgacaac acctgatacg gttgccggca cgcatgtgcc aggcaatgaa 180

aagcgatgct gcaggagagc tttgcgtcct attagcttgt tggtgaggta acggctcacc 240

aaggcgacga taggtagccg gcctgagagg gtgaacggcc acaaggggac tgagatacgg 300

cccttactcc tacgggaggc agcagtgggg aatattggac aatgggggca accctgatcc 360

agcaattctg tgtgcacgaa gaaggctttc gggctgtaaa gtgctttcag cagagaagaa 420

gcaagtgacg gtacctgcag aagaagcgac ggctaaatac gtgccagcag ccgcggtaat 480

acgtatgccg caagcgttat ccggaattat tgggcataaa gggcatctag gcggccaggc 540

aagtctgggg tgaaaacctg cggctcaacc gcaggcctgc cctggaaact gcgtggctag 600

agtgctggag aggtggacgg aactgcacga gtagaggtga aattcgtaga tatgtgcagg 660

aatgccgatg atgaagatag ttcactggac ggcaactgac gctgaagtgc gaaagccggg 720

ggagcgaaca ggattagata ccctggtagt cccggccgta aacgatgatt actgggtgtg 780

ggcatgaaga gtgtccgtgc cgaagctaat gcgataagta atccgcctgg ggagtacggc 840

cgcaaggctg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 900

taattcgacg caacgcgagg aaccttacca gatcttgaca tcctgcggat gcccgtgaga 960

gcgggcagtg ccctcgggaa cgcagagaca ggtggtgcat ggctgtcgac agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct atcgccagtt gccatcatta 1080

ggttggggac tctggcgaga ctgcctgcga agagcaggag gaaggtgggg atgacgtcaa 1140

gtcatcatgc cccttatgat ctgggctaca cacgtgctac catggccggt acagagagct 1200

gcgaggcggc gacgccaagc gaacctgcaa agccggtcca agttcggatt gaagcctgca 1260

actcggcttc atgaagctgg aatcgctagt aatcgcagat cagcaatgct gcggtgaata 1320

cgttctcggg tcttgtacac accgcccgtc acaccacgag agctgtctgc acctgaagcc 1380

gccggtccaa ccgcaagggg gaaggcgtct aaggtgtgga cagtgattgg gg 1432

<210> 1177
<211> 1450
<212> DNA
<213> Leuconostoc carnosum

<400> 1177
cgcggcgtgc ctaatacatg caagtcgaac gcacagcgaa aggtgcttgc acctttcaag 60

tgagtggcga acgggtgagt aacacgtgga caacctgcct caaggctggg gataacattt 120

ggaaacagat gctaataccg aataaaactt agtatcgcat gataccaggt taaaaggcgc 180

tacggcgtca cctagagatg gatccgcggt gcattagtta gttggtgggg taaaggccta 240

ccaagacaat gatgcatagc cgagttgaga gactgatcgg ccacattggg actgagacac 300

ggcccaaact cctacgggag gctgcagtag ggaatcttcc acaatgggcg aaagcctgat 360

ggagcaacgc cgcgtgtgtg atgaaggctt tcgggtcgta aagcactgtt gtatgggaag 420

aaaagttaag gtagggaatg accttagcct gacggtacca taccagaaag ggacggctaa 480

atacgtgcca gcagccgcgg taatacgtat gtcccgagcg ttatccggat ttattgggcg 540

taaagcgagc gcagacggtt ggttaagtct gatgtgaaag cccggagctc aactccggaa 600

aggcattgga aactggttaa cttgagtgca gtagaggtaa gtggaactcc atgtgtagcg 660

gtggaatgcg tagatatatg gaagaacacc agcggcgaag gcggcttact ggactgtaac 720

tgacgttgag gctcgaaagt gtgggtagca aacaggatta gataccctgg tagtccacac 780

cgtaaacgat gaacactagg tgttaggagg tttccgcctc ttagtgccga agctaacgca 840

ttaagtgttc cgcctgggga gtacgaccgc aaggttgaaa ctcaaaggaa ttgacgggga 900

cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt 960

cttgacatcc tttgaagctt ttagaaatag aagtgttctc ttcggagaca aagtgacagg 1020

tggtgcatgg tcgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccttat tgttagttgc cagcattcag atgggcactc tagcgagact gccggtgaca 1140

aaccggagga aggcggggac gacgtcagat catcatgccc cttatgacct gggctacaca 1200

cgtgctacaa tggcgtatac aacgagttgc caacctgcga aggtgagcta atctcttaaa 1260

gtacgtctca gttcggactg cagtctgcaa ctcgactgca cgaagtcgga atcgctagta 1320

atcgcggatc agcacgccgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac 1380

accatggaag tttgtaatgc ccaaagccgg tggcctaacc gtaaggaggg aaccgtctaa 1440

ggcaggacag 1450

<210> 1178
<211> 1576
<212> DNA
<213> Leuconostoc citreum

<400> 1178
gaattcacta gtgattagag tttgattaat ggctcaggat gaacgctggc ggcgtgccta 60

atacatgcaa gtcgaacgcg cagcgagagg tgcttgcacc tttcaagcga gtggcgaacg 120

ggtgagtaac acgtggataa cctgcctcaa ggctggggat aacatttgga aacagatgct 180

aataccgaat aaaacttagt atcgcatgat atcaagttaa aaggcgccac ggcgtcacct 240

agagatggat ccgcggtgca ttagttagtt ggtggggtaa aggcttacca agacgatgat 300

gcatagccga gttgagagac tgatcggcca cattgggact gagacacggc ccaaactcct 360

acgggaggct gcagtaggga atcttccaca atgggcgcaa gcctgatgga gcaacgccgc 420

gtgtgtgatg aaggctttcg ggtcgtaaag cactgttgta tgggaagaaa tgctaaaata 480

gggaatgatt ttagtttgac ggtaccatac cagaaaggga cggctaaata cgtgccagca 540

gccgcggtaa tacgtatgtc ccgagcgtta tccggattta ttgggcgtaa agcgagcgca 600

gacggttgat taagtctgat gtgaaagccc ggagctcaac tccggaatgg cattggaaac 660

tggttaactt gagtgttgta gaggtaagtg gaactccatg tgtagcggtg gaatgcgtag 720

atatatggaa gaacaccagt ggcgaaggcg gcttactgga caacaactga cgttgaggct 780

cgaaagtgtg ggtagcaaac aggattagat aaccctggta gtccacaccg taaacgatga 840

atactaggtg ttaggaggtt tccgcctctt agtgccgaag ctaacgcatt aagtattccg 900

cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacggggacc cgcacaagcg 960

gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcctt 1020

tgaagctttt agagatagaa gtgttctctt cggagacaaa gtgacaggtg gtgcatggtc 1080

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttattg 1140

ttagttgcca gcattcagtt gggcactcta gcgagactgc cggtgacaaa ccggaggaag 1200

gcggggacga cgtcagatca tcatgcccct tatgacctgg gctacacacg tgctacaatg 1260

gcgtatacaa cgagttgcca acctgcgaag gtgagctaat ctcttaaagt acgtctcagt 1320

tcagactgca gtctgcaact cgactgcacg aagtcggaat cgctagtaat cgcggatcag 1380

cacgccgcgg tgaatacgtt cccgggtctt gtacacaccg cccgtcacac catgggagtt 1440

tgtaatgccc aaagccggtg gcctaacctt cgggagggag ccgtctaagg caggacagat 1500

gactggggtg aagtcgtaac aaggtaaccg taaatcgaat ttcccgcggc cgccatggcg 1560

gccggagctg ratcgc 1576

<210> 1179
<211> 1554
<212> DNA
<213> Leuconostoc gasicomitatum

<400> 1179
tttaaattga gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg cacagcgaaa ggtgcttgca cctttcaagt gagtggcgaa cgggtgagta 120

acacgtggat aacctacctc aaggttgggg ataacatttg gaaacagatg ctaataccga 180

ataaaactta gtatcgcatg ataccaggtt aaaaggcgct acggcgtcac ctagagatgg 240

atccgcggtg cattagttag ttggtggggt aaaggcttac caagacaatg atgcatagcc 300

gagttgagag actgatcggc cacattggga ctgagacacg gcccaaactc ctacgggagg 360

ctgcagtagg gaatcttcca caatgggcga aagcctgatg gagcaacgcc gcgtgtgtga 420

tgaaggcttt cgggtcgtaa agcactgttg tatgggaaga acagctagag tagggaatga 480

ctttagtttg acggtaccat accagaaagg gacggctaaa tacgtgccag cagccgcggt 540

aatacgtatg tcccgagcgt tatccggatt tattgggcgt aaagcgagcg cagacggtta 600

attaagtctg atgtgaaagc ccggagctca actccggaaa ggcattggaa actggttaac 660

ttgagtgcag tagaggtaag tggaactcca tgtgtagcgg tggaatgcgt agatatatgg 720

aagaacacca gcggcgaagg cggcttactg gactgtaact gacgttgagg ctcgaaagtg 780

tgggtagcaa acaggattag ataccctggt agtccacacc gtaaacgatg aacactaggt 840

gttaggaggt ttccgcctct tagtgccgaa gctaacgcat taagtgttcc gcctggggag 900

tacgaccgca aggttgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatcct ttgaagcttt 1020

tagagataga agtgttctct tcggagacaa agtgacaggt ggtgcatggt cgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt gttagttgcc 1140

agcattcaga tgggcactct agcgagactg ccggtgacaa accggaggaa ggcggggacg 1200

acgtcagatc atcatgcccc ttatgacctg ggctacacac gtgctacaat ggcgtataca 1260

acgagttgcc aacctgtgaa ggtgagctaa tctcttaaag tacgtctcag ttcggactgc 1320

agtctgcaac tcgactgcac gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg 1380

gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccatgggagt ttgtaatgcc 1440

caaagccggt ggcctaaccg taaggaggga accgtctaag gcaggacaga tgactggggt 1500

gaagtcgtaa caaggtagcc gtaggagaac ctgcggctgg atcacctcct ttct 1554

<210> 1180

<211> 1474
<212> DNA
<213> Leuconostoc inhae

<400> 1180
ctggcggcgt gcctaataca tgcaagtcga acgcacagcg aaaggtgctt gcacctttca 60

agtgagtggc gaacgggtga gtaacacgtg gataacctac ctcaaggttg gggataacat 120

ttggaaacag atgctaatac cgaatgagac ttcttgttgc atgacaggaa gttaaaaggc 180

gctacggcgt cgcctagaga tggatccgcg gtgcattagt tagttggtgg ggtaaaggcc 240

taccaagaca atgatgcata gccgagttga gagactgatc ggccacattg ggactgagac 300

acggcccaaa ctcctacggg aggctgcagt agggaatctt ccacaatggg cgaaagcctg 360

atggagcaac gccgcgtgtg tgatgaaggc tttcgggtcg taaagcactg ttgtatggga 420

agaacagcta gagtagggaa tgactttagt ttgacggtac cataccagaa agggacggct 480

aaatacgtgc cagcagccgc ggtaatacgt atgtcccgag cgttatccgg atttattggg 540

cgtaaagcga gcgcagacgg ttgattaagt ctgatgtgaa agcccggagc tcaactccgg 600

aaaggcattg gaaactggtc aacttgagtg cagtagaggt aagtggaact ccatgtgtag 660

cggtggaatg cgtagatata tggaagaaca ccagcggcga aggcggctta ctggactgta 720

actgacgttg aggctcgaaa gtgtgggtag caaacaggat tagataccct ggtagtccac 780

accgtaaacg atgaacacta ggtgttagga ggtttccgcc tcttagtgcc gaagctaacg 840

cattaagtgt tccgcctggg gagtacgacc gcaagttgaa actcaaagga attgacgggg 900

acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg 960

tcttgacatc ctttgaagct tttagagata gaagtgttct cttcggagac aaagtgacag 1020

gtggtgcatg gtcgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctta ttgttagttg ccagcattca gatgggcact ctagcgagac tgccggtgac 1140

aaaccggagg aaggcgggga cgacgtcaga tcatcatgcc ccttatgacc tgggctacac 1200

acgtgctaca atggcgtata caacgagttg ccaacctgtg aaggtgagct aatctcttaa 1260

agtacgtctc agttcggact gcagtctgca actcgactgc acgaagtcgg aatcgctagt 1320

aatcgcggat cagcacgccg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca 1380

caccatggga gtttgtaatg cccaaagccg gtggcctaac cgtaaggagg gaaccgtcta 1440

aggcaggaca gatgactggg gtgaagtcgt aaca 1474

<210> 1181
<211> 1558
<212> DNA
<213> Leuconostoc kimchii

<400> 1181
ttaaattgag agtttgatcc tggctcagga tgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacgc gcagcgagag gtgcttgcac ctttcaagcg agtggcgaac gggtgagtaa 120

cacgtggata acctgcctca aggctgggga taacatttgg aaacagatgc taataccgaa 180

taaaacttag tatcgcatga tataaagtta aaaggcgcta cggcgtcacc tagagatgga 240

tccgcggtgc attagttagt tggtgaggta aaggctcacc aagacaatga tgcatagccg 300

agttgagaga ctgatcggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

tgcagtaggg aatcttccac aatgggcgca agcctgatgg agcaacgccg cgtgtgtgat 420

gaaggctttc gggtcgtaaa gcactgttgt atgggaagaa cagctagaat agggaatgat 480

tttagtgtga cggtaccata ccagaaaggg acggctaaat acgtgccagc agccgcggta 540

atacgtatgt cccgagcgtt atccggattt attgggcgta aagcgagcgc agacggttgt 600

ttaagtctga tgtgaaagcc cggagctcaa ctccggaaag gcattggaaa ctggacaact 660

tgagtgcagt agaggtaagt ggaactccat gtgtagcggt ggaatgcgta gatatatgga 720

agaacaccag cggcgaaggc ggcttactgg actgtaactg acgttgaggc tcgaaagtgt 780

gggtagcaaa caggattaga taccctggta gtccacaccg taaacgatga acactaggtg 840

ttaggaggtt tccgcctctt agtgccgaag ctaacgcatt aagtgttccg cctggggagt 900

acgaccgcaa ggttgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcctt tgaagctttt 1020

agagatagaa gtgttctctt cggagacaaa gtgacaggtg gtgcatggtc gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttattg ttagttgcca 1140

gcattcagat gggcactcta gcgagactgc cggtgacaaa ccggaggaag gcggggacga 1200

cgtcagatca tcatgcccct tatgacctgg gctacacacg tgctacaatg gcgtatacaa 1260

cgagttgcca acctgcgaag gtgagctaat ctcttaaagt acgtctcagt tcggactgca 1320

gtctgcaact cgactgcacg aagtcggaat cgctagtaat cgcggatcag cacgccgcgg 1380

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac catgggagtt tgtaatgccc 1440

aaagccggtg gcctaaccgt aaggagggaa ccgtctaagg caggacagat gactggggtg 1500

aagtcgtaac aaggtagccg taggagaacc tgcggctgga tcacctcctt tctaagga 1558

<210> 1182
<211> 1451
<212> DNA
<213> Leuconostoc lactis

<400> 1182
ggcggcgtgc ctaatacatg caagtcgaac gcgcagcgaa aggtgcttgc acctttcaag 60

cgagtggcga acgggtgagt aacacgtgga taacctgcct caaggctggg gataacattt 120

ggaaacagat gctaataccg aataaaactt agtatcgcat gatacaaagt tgaaaggcgc 180

tacggcgtca cctagagatg ggtccgcggt gcattagtta gttggtgggg taaaggccta 240

ccaagacaat gatgcatagc cgagttgaga gactgatcgg ccacattggg actgagacac 300

ggcccaaact cctacgggag gctgcagtag ggaatcttcc acaatgggcg aaagcctgat 360

ggagcaacgc cgcgtgtgtg atgaaggctt tagggtcgta aagcactgtt gtatgggaag 420

aaatgctaga atagggaatg attctagttc gacggtacca taccagaaag ggacggctaa 480

atacgtgcca gcagccgcgg taatacgtat gtcccgagcg ttatccggat ttattgggcg 540

taaagcgagc gcagacggtt gattaagtct gatgtgaaag cccggagctc aactccggaa 600

tggcattgga aactggttaa cttgagtgtt gtagaggtaa gtggaactcc atgtgtagcg 660

gtggaatgcg tagatatatg gaagaacacc agtggcgaag gcggcttact ggacaacaac 720

tgacgttgag gctcgaaagt gtgggtagca aacaggatta gataccctgg tagtccacac 780

cgtaaacgat gaatactagg tgttaggagg tttccgcctc ttagtgccga agctaacgca 840

ttaagtattc cgcctgggga gtacgaccgc aaggttgaaa ctcaaaggaa ttgacgggga 900

cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt 960

cttgacatcc tttgaagctt ctagagatag aagtgttctc ttcggagaca aagtgacagg 1020

tggtgcatgg tcgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccttat tgttagttgc cagcattcag ttgggcactc tagcgagact gccggtgaca 1140

aaccggagga aggcggggac gacgtcagat catcatgccc cttatgacct gggctacaca 1200

cgtgctacaa tggcgtatac aacgagttgc caacccgcga gggtgagcta atctcttaaa 1260

gtacgtctca gttcggactg cagtctgcaa ctcgactgca cgaagtcgga atcgctagta 1320

atcgcggatc agcacgccgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac 1380

accatgggag tttgtaatgc ccaaagccgg tggcctaacc ttatggaggg agccgtctaa 1440

ggcaggacag a 1451

<210> 1183
<211> 1555
<212> DNA
<213> Leuconostoc mesenteroides

<400> 1183
ttcaaattga gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg catagcgaaa ggtgcttgca cctttcaagt gagtggcgaa cgggtgagta 120

acacgtggac aacctgcctc aaggctgggg ataacatttg gaaacagatg ctaataccga 180

ataaaactta gtgtcgcatg acacaaagtt aaaaggcgct tcggcgtcac ctagagatgg 240

atccgcggtg cattagttag ttggtggggt aaaggcctac caagacaatg atgcatagcc 300

gagttgagag actgatcggc cacattggga ctgagacacg gcccaaactc ctacgggagg 360

ctgcagtagg gaatcttcca caatgggcga aagcctgatg gagcaacgcc gcgtgtgtga 420

tgaaggcttt cgggtcgtaa agcactgttg tatgggaaga acagctagaa taggaaatga 480

ttttagtttg acggtaccat accagaaagg gacggctaaa tacgtgccag cagccgcggt 540

aatacgtatg tcccgagcgt tatccggatt tattgggcgt aaagcgagcg cagacggttt 600

attaagtctg atgtgaaagc ccggagctca actccggaat ggcattggaa actggttaac 660

ttgagtgcag tagaggtaag tggaactcca tgtgtagcgg tggaatgcgt agatatatgg 720

aagaacacca gtggcgaagg cggcttactg gactgcaact gacgttgagg ctcgaaagtg 780

tgggtagcaa acaggattag ataccctggt agtccacacc gtaaacgatg aacactaggt 840

gttaggaggt ttccgcctct tagtgccgaa gctaacgcat taagtgttcc gcctggggag 900

tacgaccgca aggttgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatcct ttgaagcttt 1020

tagagataga agtgttctct tcggagacaa agtgacaggt ggtgcatggt cgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt gttagttgcc 1140

agcattcaga tgggcactct agcgagactg ccggtgataa accggaggaa ggcggggacg 1200

acgtcagatc atcatgcccc ttatgacctg ggctacacac gtgctacaat ggcgtataca 1260

acgagttgcc aacccgcgag ggtgagctaa tctcttaaag tacgtctcag ttcggattgt 1320

agtctgcaac tcgactacat gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg 1380

gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccatgggagt ttgtaatgcc 1440

caaagccggt ggcctaacct tttaggaagg agccgtctaa ggcaggacag atgactgggg 1500

tgaagtcgta acaaggtagc cgtaggagaa cctgcggctg gatcacctcc tttct 1555

<210> 1184
<211> 1448
<212> DNA
<213> Leuconostoc pseudomesenteroides

<400> 1184
gcggcgtgcc taatacatgc aagtcgaacg cacagcgaaa ggtgcttgca cctttcaagt 60

gagtggcgaa cgggtgagta acacgtggac aacctgcctc aaggctgggg ataacatttg 120

gaaacagatg ctaataccga ataaaactca gtgtcgcatg acacaaagtt aaaaggcgct 180

ttggcgtcac ctagagatgg atccgcggtg cattagttag ttggtggggt aaaggcctac 240

caagacaatg atgcatagcc gagttgagag actgatcggc cacattggga ctgagacacg 300

gcccaaactc ctacgggagg ctgcagtagg gaatcttcca caatgggcga aagcctgatg 360

gagcaacgcc gcgtgtgtga tgaaggcttt cgggtcgtaa agcactgttg tatgggaaga 420

acagctagaa tagggaatga ttttagtttg acggtaccat accagaaagg gacggctaaa 480

tacgtgccag cagccgcggt aatacgtatg tcccgagcgt tatccggatt tattgggcgt 540

aaagcgagcg cagacggtta attaagtctg atgtgaaagc ccggagctca actccggaat 600

ggcattggaa actggttaac ttgagtgcag tagaggtaag tggaactcca tgtgtagcgg 660

tggaatgcgt agatatatgg aagaacacca gtggcgaagg cggcttactg gactgtaact 720

gacgttgagg ctcgaaagtg tgggtagcaa acaggattag ataccctggt agtccacacc 780

gtaaacgatg aacactaggt gttaggaggt ttccgcctct tagtgccgaa gctaacgcat 840

taagtgttcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat tgacggggac 900

ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc 960

ttgacatcct ttgaagcttt tagagataga agtgttctct tcggagacaa agtgacaggt 1020

ggtgcatggt cgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1080

aacccttatt gttagttgcc agcattcaga tgggcactct agcgagactg ccggtgacaa 1140

accggaggaa ggcggggacg acgtcagatc atcatgcccc ttatgacctg ggctacacac 1200

gtgctacaat ggcgtataca acgagttgcc aacccgcgag ggtgagctaa tctcttaaag 1260

tacgtctcag ttcggattgt agtctgcaac tcgactacat gaagtcggaa tcgctagtaa 1320

tcgcggatca gcacgccgcg gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca 1380

ccatgggagt ttgtaatgcc caaagccggt ggcctaacct tttaggggga gccgtctaag 1440

gcaggaca 1448

<210> 1185
<211> 1549
<212> DNA
<213> Listeria grayi

<400> 1185
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgaa 60

cgaatgacct taggagcttg ctcctttggt cgttagtggc ggacgggtga gtaacacgtg 120

ggcaacctgc ctgtaagatt gggataactc cgggaaaccg gagctaatac cgaataataa 180

tcagctccgc atggagcggg tttgaaaggc ggcttcggct gtcacttaca gatgggcccg 240

cggtgcatta gctagttggt ggggtaaagg cctaccaagg cgacgatgca tcgccgacct 300

gagagggtga tcggccacac tgggactgag acacggccca gactcctccg ggaggcagca 360

gtagggaatc ttccgcaatg gacgaaagtc tgacggagca acgccgcgtg tgtgaagaag 420

gttttcggat cgtaaagcac tgttgttaga gaagaacaag gataagagta actgcttgtc 480

ccttgacggt atctaaccag aaagccacgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc ggtttcttaa 600

gtctgatgtg aaagcccccg gcttaaccgg ggagggtcat tggaaactgg gagacttaga 660

gtgcagaaga ggagagtgga attccatgtg tagcggtgaa atgccgagat atatggagga 720

acaccagtgg cgaaggcgac tctctggtct gtaactgacg ctgaggcgcg aaagcgtggg 780

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaagtgtta 840

gggggtttcc gcccccttagt gctgcagcta acgcattaag cactccgcct ggggagtacg 900

accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 960

tttaattcga agcaacgcga agaaccttac caggtcttga catcctttga ccactctgga 1020

gacagagctt tcccttcggg gacaaagtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgattttag ttgccagcat 1140

ttagttgggc actctaaagt gactgacggt gcaagccgga ggaaggtggg gatgacgtca 1200

aatcatcatg cccctttatga cctgggctac acacgtgcta caatggatga tacaaagggt 1260

cgcgaagccg cgaggtgaag ctaatcccat aaaatcattc tcagttcgga ttgtaggctg 1320

caactcgcct acatgaagcc ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt 1440

cggtagggta acctttatgg agccagccgc cgaaggtggg acagataatt ggggtgaagt 1500

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1549

<210> 1186
<211> 1514
<212> DNA
<213> Listeria innocua

<400> 1186
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

gaacggagga agagcttgct cttccaatgt tagtggcgga cgggtgagta acacgtgggc 120

aacctgcccg taagttgggg ataactccgg gaaaccgggg ctaataccga atgatagagt 180

gtgacgcatg tcacactctt gaaagatggt ttcggctatc gcttacagat gggcccgcgg 240

tgcattagct agttggtagg gtaaaggcct accaaggcaa cgatgcatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgtat gaagaaggtt 420

ttcggatcgt aaagtactgt tgttagagaa gaacaaggat aagagtaact gcttgtccct 480

tgacggtatc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttgtccgga tttattgggc gtaaagcgcg cgcaggcggt cttttaagtc 600

tgatgtgaaa gcccccggct taaccgggga gggtcattgg aaactggaag actggagtgc 660

agaagaggag agtggaattc cccgtgtatc gctgaaatgc gtagatatgt ggaggaacac 720

cagtggcgaa ggcgactctc tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagggg 840

gtttccgccc cttagtgctg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctttgaccac tctggagaca 1020

gagctttccc ttcggggaca aagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttga ttttagttgc cagcatttag 1140

ttgggcactc taaagtgact gccggtgcaa gccggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggatggtaca aagggtcgcg 1260

aagccgcgag gtggagccaa tcccataaaa ccattctcag ttcggattgt aggctgcaac 1320

tcgcctacat ggagccggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt 1440

agggtaacct ttatggagcc agccgccgaa ggtgggacag ataattgggg tgaagtcgta 1500

acaaggtaac cgta 1514

<210> 1187
<211> 1487

<212> DNA
<213> Listeria ivanovii

<220>
<221> modified_base
<222> (251)..(251)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (533)..(533)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (573)..(573)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (593)..(593)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (602)..(602)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (621)..(621)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (629)..(630)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (654)..(654)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (742)..(742)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (829)..(829)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (853)..(853)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (887)..(887)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (968)..(968)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (983)..(983)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1025)..(1025)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1052)..(1052)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1057)..(1057)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1060)..(1060)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1091)..(1091)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1171)..(1171)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1193)..(1193)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1325)..(1325)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1371)..(1371)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1401)..(1401)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1444)..(1444)
<223> a, c, t, g, unknown or other

<400> 1187
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgaa 60

cgaacggagg aagagcttgc tcttccaatg ttagtggcgg acgggtgagt aacacgtggg 120

caacctgcct gtaagttggg gataactccg ggaaaccggg gctaataccg aatgataagt 180

agtgacgcat gtcatcactt tgaaagatgg tttcgctatc gcttacagat gggcccgcgg 240

tgcattagct ngttggtagg gtaaaggcct accaaggcaa cgatgcatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgtat gaagaaggtt 420

ttcggatcgt aaagtactgt tgttagagaa gaacaaggat aagagtaact gcttgtccct 480

tgacggtatc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtnatacgta 540

ggtggcaagc gttgtccgga tttattgggc gtnaagcgcg cgcaggcggt ctnttaagtc 600

tnatgtgaaa gcccccggct naaccgggnn gggtcattgg aaactggaag actngagtgc 660

agaagaggag agtggaattc cacgtgtagc ggtgaaatgc gtagatatgt ggaggaacac 720

cagtggcgaa ggcgactctc tngtctgtaa ctgacgctga ggcgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctna gtgttagggg 840

gtttccgccc ctnagtgctg cagctaacgc attaagcact ccgcctnggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gccgcacaag cggtggagca tgtggtttaa 960

ttcgaagnaa cgcgaagaac ctnaccaggt cttgacatcc tttgaccact ctggagacag 1020

agctntcctt cggggacaaa gtgacaggtg gngcatngtn gtcgtcagct cgtgtcgtga 1080

gatgttgggt naagtcccgc aacgagcgca acccttgatt ttagttgcca gcatttagtt 1140

gggcactcta aagtgactgc cggtgcaagc nggaggaagg tggggatgac gtnaaatcat 1200

catgcccctt atgacctggg ctacacacgt gctacaatgg atggtacaaa gggtcgcgaa 1260

gccgcgaggt ggagccaatc ccataaaacc attctcagtt cggattgtag gctgcaactc 1320

gcctncatga agccggaatc gctagtaatc gcggatcagc atgccgcggt naatacgttc 1380

ccgggccttg tacacaccgc ncgtcacacc acgagagttt gtaacacccg aagtcggtag 1440

ggtnaccttt taggagccag ccgccgaagg tgggacagat gattggg 1487

<210> 1188
<211> 1556
<212> DNA
<213> Listeria monocytogenes

<400> 1188
attttaaaga gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg aacggaggaa gagcttgctc ttccaaagtt agtggcggac gggtgagtaa 120

cacgtgggca acctgcctgt aagttgggga taactccggg aaaccggggc taataccgaa 180

tgatagaatg tggcgcatgc cacgcttttg aaagatggtt tcggctatcg cttacagatg 240

ggcccgcggt gcattagcta gttggtaggg taatggccta ccaaggcaac gatgcatagc 300

cgacctgaga gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag 360

gcagcagtag ggaatcttcc gcaatggacg aaagtctgac ggagcaacgc cgcgtgtatg 420

aagaaggttt tcggatcgta aagtactgtt gttagagaag aacaaggata agagtaactg 480

cttgtccctt gacggtatct aaccagaaag ccacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtggcaagcg ttgtccggat ttattgggcg taaagcgcgc gcaggcggtc 600

ttttaagtct gatgtgaaag cccccggctt aaccggggag ggtcattgga aactggaaga 660

ctggagtgca gaagaggaga gtggaattcc acgtgtagcg gtgaaatgcg tagatatgtg 720

gaggaacacc agtggcgaag gcgactctct ggtctgtaac tgacgctgag gcgcgaaagc 780

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag 840

tgttaggggg tttccgcccc ttagtgctgc agctaacgca ttaagcactc cgcctgggga 900

gtacgaccgc aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 960

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc tttgaccact 1020

ctggagacag agctttccct tcggggacaa agtgacaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgat tttagttgcc 1140

agcatttagt tgggcactct aaagtgactg ccggtgcaag ccggaggaag gtggggatga 1200

cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg gatagtacaa 1260

agggtcgcga agccgcgagg tggagctaat cccataaaac tattctcagt tcggattgta 1320

ggctgcaact cgcctacatg aagccggaat cgctagtaat cgtggatcag catgccacgg 1380

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc 1440

gaagtcggta gggtaacctt tatggagcca gccgccgaag gtgggacaga taattggggt 1500

gaagtcgtaa caaggtagcc gtatcggaag gtgcggctgg atcacctcct ttctaa 1556

<210> 1189
<211> 1555
<212> DNA
<213> Listeria welshimeri

<400> 1189
tattttaaag agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg 60

caagtcgaac gaacggagga agagcttgct cttccaaagt tagtggcgga cgggtgagta 120

acacgtgggc aacctgcctg taagttgggg ataactccgg gaaaccgggg ctaataccga 180

ataataagtg gtggcgcatg ccacggcttt gaaagatggt ttcggctatc gcttacagat 240

gggcccgcgg tgcattagct agttggtagg gtaatggcct accaaggcaa cgatgcatag 300

ccgacctgag agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga 360

ggcagcagta gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgtat 420

gaagaaggtt ttcggatcgt aaagtactgt tgttagagaa gaacaaggat aagagtaact 480

gcttgtccct tgacggtatc taaccagaaa gccacggcta actacgtgcc agcagccgcg 540

gtaatacgta ggtggcaagc gttgtccgga tttattgggc gtaaagcgcg cgcaggcggt 600

cttttaagtc tgatgtgaaa gcccccggct taaccgggga gggtcattgg aaactggaag 660

actggagtgc agaagaggag agtggaattc cacgtgtagc ggtgaaatgc gtagatatgt 720

ggaggaacac cagtggcgaa ggcgactctc tggtctgtaa ctgacgctga ggcgcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa 840

gtgttagggg gtttccgccc cttagtgctg cagctaacgc attaagcact ccgcctgggg 900

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 960

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctttgaccac 1020

tctggagaca gagctttccc ttcggggaca aagtgacagg tggtgcatgg ttgtcgtcag 1080

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttaa ttttagttgc 1140

cagcatttag ttgggcactc taaagtgact gccggtgcaa gccggaggaa ggtggggatg 1200

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat ggatggtaca 1260

aagggtcgcg aagccgcgag gtggagccaa tcccataaaa ccattctcag ttcggattgt 1320

aggctgcaac tcgcctacat gaagccggaa tcgctagtaa tcgtggatca gcatgccacg 1380

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc 1440

cgaagtcggt agggtaacct ttatggagcc agccgccgaa ggtgggacag ataattgggg 1500

tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1555

<210> 1190
<211> 1247
<212> DNA
<213> Luteococcus sanguinis

<400> 1190
aacgggtgag taacacgtga gtaacctgcc ccaaactctg ggataacagt cggaaacggc 60

tgctaatacc ggatatggaa aggcggtttg ggatggactc gcggcctatc agcttgttgg 120

tgaggtagtg gctcaccaag gcttcgacgg gtagccggcc tgagagggcg accggccaca 180

ttgggactga gatacggccc aaactcctac gggaggcagc agtggggaat attgcacaat 240

gggcgaaagc ctgatgcagc aacgccgcgt gcgggatgac ggccttcggg ttgtaaaccg 300

ctttcagcgc agacgatgac ggtatgcgca gaagaagcac cggccaacta cgtgccagca 360

gccgcggtga tacgtagggt gcgagcgttg tccggaatta ttgggcgtaa agagcttgta 420

ggcggtttgt tgcgtcagaa gtgaaaactc agggcttaac cctgagcctg cttctgatac 480

gggcagacta gaggaagtta ggggagaacg gaattcctgg tggagcggtg gaatgcgcag 540

atatcaggag gaacaccggt ggcgaaggcg gttctctggg actcctgacg ctgagaagcg 600

aaagcgtggg gagcaaacag gcttagatac cctggtagtc cacgccgtaa acggtgggta 660

ctaggtgtgg gtcgatccgt gccgcagcta acgcattaag taccccgcct ggggagtacg 720

gccgcaaggc taaaactcaa aggaattgac ggggccccgc acaagcggcg gagcatgcgg 780

attaattcga tgcaacgcga agaaccttac ctgggtttga catgcacagg tggtgcatgg 840

ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctcgt 900

ccaatgttgc cagcggccgg ggactcattg gagaccgccg gggtcaactc ggaggaaggt 960

ggggatgacg tcaagtcatc atgcccctta tgtccagggc ttcacgcatg ctacaatggc 1020

cggcaaaggg ctgcgaacct gcaagggtga gcgaatccca accggtctca gttcggatgg 1080

ggtctgcaac tcgaccccag aagtcggagt cgctagtaat cgcagatcag caacgctgcg 1140

gtgaatacgt tcccggggct tgtacacacc gcccgtcaag tcatgaaagt cggtaacacc 1200

cgaagccggt gcctagggag ccgtcgaagg tgggaccggt aattagg 1247

<210> 1191
<211> 1438
<212> DNA
<213> Lutispora thermophila

<400> 1191
gacgaacgct ggcggcgtgc ctaacacatg caagtcgaac ggagatggtg ggatagcttg 60

ctattttatc atcttagtgg cggacgggtg agtaacacgt gggcaacctg ccctaaagag 120

ggggataaca ccgagaaatc ggtgctaata ccgcatgaaa ttagagtttc gcatgaagct 180

ttaatcaaag gagcaatccg ctttaggatg ggcccgcgtc tgattagcta gttggtgagg 240

taacggctca ccaaggcgac gatcagtagc cgatctgaga ggatgaccgg ccacactgga 300

actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgc acaatggggg 360

aaaccctgat gcagcaacgc cgcgtggagg aagaaggtct tcggattgta aactcctgtc 420

ttctgggacg aaatatgacg gtaccagagg aggaagccac ggctaactac gtgccagcag 480

ccgcggtaat acgtaggtgg cgagcgttgt ccggaattac tgggcgtaaa gggcgcgtag 540

gcggcctgtt aagtcagatg tgaaaacccc gggctcaacc tggggagtgc atttgaaact 600

gatgggctag agtgtcggag agggaagcgg aattcctagt gtagcggtga aatgcgtaga 660

tattaggagg aacaccagtg gcgaaggcgg ctttctggac gataactgac gctgaggcgc 720

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgctgta aacgatggat 780

actaggtgtg ggaggtatcg acccccttccg tgccgcagta aacgcaataa gtatcccgcc 840

tggggagtac ggccgcaagg ttgaaactca aaggaattga cgggggcccg cacaagcagc 900

ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccagagcttg acatctcctg 960

catagtccgt aatgggatga agtccttcgg gacaggaaga caggtggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttatacttag 1080

ttgccatcat taagttgggc actctaagta gactgccgga gacaattcgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccccttatg ttctgggcta cacacgtgct acaatgggta 1200

taacaacggg aagcaagcca gtgatggtaa gcaaatccct aaaaagtact cccagttcag 1260

attgttctct gaaactcgag aacatgaagt cggagttgct agtaatcgcg aatcagcatg 1320

tcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagttggaa 1380

gcacccgaag ccggtgactt aaccgcaagg agagagccgt cgaaggtgaa gccaatga 1438

<210> 1192
<211> 1356
<212> DNA
<213> Lysinibacillus fusiformis

<400> 1192
ggggaaaccg gggctaatac cgaataatct gtttcacctc atggtgaaac actgaaagac 60

ggtttcggct gtcgctatag gatgggcccg cggcgcatta gctagttggt gaggtaacgg 120

ctcaccaagg cgacgatgcg tagccgacct gagagggtga tcggccacac tgggactgag 180

acacggccca gactcctacg ggaggcagca gtagggaatc ttccacaatg ggcgaaagcc 240

tgatggagca acgccgcgtg agtgaagaag gatttcggtt cgtaaaactc tgttgtaagg 300

gaagaacaag tacagtagta actggctgta ccttgacggt accttattag aaagccacgg 360

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggaattattg 420

ggcgtaaagc gcgcgcaggt ggtttcttaa gtctgatgtg aaagcccacg gctcaaccgt 480

ggagggtcat tggaaactgg gagacttgag tgcagaagag gatagtggaa ttccaagtgt 540

agcggtgaaa tgcgtagaga tttggaggaa caccagtggc gaaggcgact atctggtctg 600

taactgacac tgaggcgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 660

acgccgtaaa cgatgagtgc taagtgttag ggggtttccg ccccttagtg ctgcagctaa 720

cgcattaagc actccgcctg gggagtacgg tcgcaagact gaaactcaaa ggaattgacg 780

ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 840

aggtcttgac atcccgttga ccactgtaga gatatggttt ccccttcggg ggcaacggtg 900

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 960

gagcgcaacc cttgatctta gttgccatca tttagttggg cactctaagg tgactgccgg 1020

tgacaaaccg gaggaaggtg gggatgacgt caaatcatca tgccccttat gacctgggct 1080

acacacgtgc tacaatggac gatacaaacg gttgccaact cgcgagaggg agctaatccg 1140

ataaagtcgt tctcagttcg gattgtaggc tgcaactcgc ctacatgaag ccggaatcgc 1200

tagtaatcgc ggatcagcat gccgcggtga atacgttccc gggccttgta cacaccgccc 1260

gtcacaccac gagagtttgt aacacccgaa gtcggtgagg taacctttg gagccagccg 1320

ccgaaggtgg gatagatgat tggggtgaag tcgtaa 1356

<210> 1193
<211> 1541
<212> DNA
<213> Lysinibacillus sphaericus

<400> 1193
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaacagagaa ggagcttgct cctttgacgt tagcggcgga cgggtgagta acacgtgggc 120

aacctacctt atagtttggg ataactccgg gaaaccgggg ctaataccga ataatctatt 180

tcacctcatg gtgaattatt gaaagacggt ttcggctgtc gctataggat gggcccgcgg 240

cgcattagct agttggtgag gtaacggctc accaaggcga cgatgcgtag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cacaatgggc gaaagcctga tggagcaacg ccgcgtgagt gaagaaggat 420

ttcggttcgt aaaactctgt tgtaagggaa gaacaagtac agtagtaact ggctgtacct 480

tgacggtacc ttattagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttgtccgga attattgggc gtaaagcgcg cgcaggtggt ttcttaagtc 600

tgatgtgaaa gcccacggct caaccgtgga gggtcattgg aaactgggag acttgagtgc 660

agaagaggat agtggaattc caagtgtagc ggtgaaatgc gtagagattt ggaggaacac 720

cagtggcgaa ggcgactatc tggtctgtaa ctgacactga ggcgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagggg 840

gtttccgccc cttagtgctg cagctaacgc attaagcact ccgcctgggg agtacggtcg 900

caagactgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccgttgacac tgtaagatat 1020

ggtttcccct tcgggggcac ggtgacaggt ggtgcatgga ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caaccttgat cttagttgcc atcatttagt 1140

tgggcactct aaggtgactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggacgataca aacggttgcc 1260

aactcgcgag agggagctaa tccgataaag tcgttctcag ttcggattgt aggctgcaac 1320

tcgcctacat gaagccggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gtccgtcaca ccacgagagt ttgtaacacc cgaagtcggt 1440

gaggtaacct tttggagcca gccgccgaag gtgggataga tgattggggt gaagtcgtaa 1500

caaggtagcc gtatcggaag gtgcggctgg atcacctcct t 1541

<210> 1194
<211> 1547
<212> DNA
<213> Macrococcus caseolyticus

<400> 1194
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaacggacga gagtgcttgc actctctgat gttagcggcg gacgggtgag taacacgtgg 120

gtaacctacc tataagactg ggataacttc gggaaaccgg agctaatacc ggataatatt 180

tagcttcgca tgaagcaata gtgaaagacg gttctgctgt cacttataga tggacccgcg 240

gtgtattagc tagttggtga ggtaacggct caccaaggca acgatacata gccgacctga 300

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

agggaatctt ccgcaatgga cgaaagtctg acggagcaac gccgcgtgag tgaagaaggt 420

tttcggatcg taaaactctg ttgtaaggga agaacaagta cgttagtaac tgaacgtacc 480

ttgacggtac cttaccagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtggcaag cgttatccgg aattattggg cgtaaagcgc gcgtaggcgg tctcttaagt 600

ctgatgtgaa agcccccggc tcaaccgggg agggtcattg gaaactggga gacttgagtg 660

cagaagagga gagtggaatt ccatgtgtag cggtgaaatg cgcagagata tggaggaaca 720

ccagtggcga aggcggctct ctggtctgta actgacgctg aggtgcgaaa gcgtggggat 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttgggg 840

ggtttccgcc cctcagtgct gcagctaacg cattaagcac tccgcctggg gagtacggtc 900

gcaagactga aactcaaagg aattgacggg gacccgcaca agcggtggag catgtggttt 960

aattcgaagc aacgcgaaga accttaccaa atcttgacat cctttgacaa ctctagagat 1020

agagctttcc ccttcggggg acaaagtgac aggtggtgca tggttgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tatctttagt tgccatcatt 1140

aggttgggca ctctagagag actgccggtg acaaaccgga ggaaggtggg gatgacgtca 1200

aatcatcatg ccccttatga tttgggctac acacgtgcta caatggatgg tacaaagggc 1260

agcaaaaccg cgaggtcaag caaatcccat aaaaccattc tcagttcgga ttgtagtctg 1320

caactcgact acatgaagct ggaatcgcta gtaatcgtag atcagcatgc tacggtgaat 1380

acgttcccgg gtcttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagc 1440

cggtggagta acctttttagg agctagccgt cgaaggtggg acagatgatt ggggtgaagt 1500

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctccttt 1547

<210> 1195
<211> 1516
<212> DNA
<213> Mannheimia haemolytica

<400> 1195
agagtttgat catggctcag attgaacgct ggcggcaggc ttaacacatg caagtcgaac 60

ggtagcacat aggagtttgc tccttgggtg acgagtggcg gacgggtgag taatgcttgg 120

gaatctggct tatggagggg gataactact ggaaacggta gctaataccg cgtaatgtct 180

taggactaaa gggtgggacc atttggccac ctgccataag atgagcccaa gtgggattag 240

gtagttggtg aggtaaaggc tcaccaagcc cgcgatctct agctggtctg agaggatgac 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg ggggaaccct gatgcagcca tgccgcgtga atgaagaagg ccttcgggtt 420

gtaaagttct ttcggtgacg aggaaggcga ttgttttaat agaacagtcg attgacgtta 480

atcacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gggggtgcga 540

gcgttaatcg gaataactgg gcgtaaaggg cacgcaggcg gttgtttaag tgaggtgtga 600

aagccccggg cttaacctgg gaattgcatt tcagactgaa caactagagt actttaggga 660

ggggtagaat tccacgtgta gcggtgaaat gcgtagagat gtggaggaat accgaaggcg 720

aaggcagccc cttggaaatg tactgacgct catgtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gctgtcgatt tggggattgg ggtttaactc 840

tggtgcccgt agctaacgtg ataaatcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctact cttgacatcc atggaatctt gtagagatat gagagtgcct 1020

tcgggaacca tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcgattagg tcgggaactc 1140

aaaggagact gccggtgata aaccggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgagta gggctacaca cgtgctacaa tggcgtatac agagggcggc gagccagcga 1260

tggggagcga atctcagaaa gtacgtctaa gtccggattg gagtctgcaa ctcgactcca 1320

tgaagtcgga atcgctagta atcgcaaatc agaatgttgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgtac cagaagtaga tagcttaacc 1440

gaaaggggg cgtttaccac ggtatgattc atgactgggg tgaagtcgta acaaggtaac 1500

cgtaggggaa cctgcg 1516

<210> 1196
<211> 1300
<212> DNA
<213> Marvinbryantia formatexigens

<400> 1196
tggcggcgtg cttaacacat gcaagtcgag cgagcggcgg acgggtgagt aacgcgtgga 60

taacctgcct tatacagggg gataacagcc agaaatggct gctaataccg cataagaaaa 120

agtggtataa gatgggtccg cgttggatta ggcagttggc ggggtaaagg cccaccaaac 180

cgacgatcca tagccggcct gagagggtgg acggccacat tgggactgag acacggccca 240

gactcctacg ggaggcagca gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg 300

acgccgcgtg ggtgaagaag tatttcggta tgtaaagccc tatcagcagg gaagatgacg 360

gtacctgacc aagaagcccc ggctaactac gtgccagcag ccgcggtaat acgtaggggg 420

caagcgttat ccggatttac tgggtgtaaa gggagcgtag acggccatgc aagtctggtg 480

tgaaaggcgg gggctcaacc cccggactgc attggaaact gtatggcttg agtgccggag 540

aggtaagcgg aattcctggt gtagcggtga aatgcgtaga tatcaggagg aacaccagtg 600

gcgaaggcgg cttactggac ggactgacgt tgaggctcga aagcgtgggg agcaaacagg 660

attagatacc ctggtagtcc acgccgtaaa cgatgaatac caggtgtcgg ggcttcggtg 720

ccgcagcaaa cgcactaagt attccacctg gggagtacgt tcgcaagaat gaaactcaaa 780

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 840

gaaccttacc aggtcttgac atcgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 900

agatgttggg ttaagtcccg caacgagcgc aacccctgtt cccagtagcc agcatatggg 960

cactctgggg agactgccag ggataacctg gaggaaggcg gggatgacgt caaatcatca 1020

tgccccttat gatctgggct acacacgtgc tacaatggcg tgcagaggga agcgaacccg 1080

cgagggggag caaatcccag aacgtcccag ttcggatgta gtctgcaacc cggctacaga 1140

agctggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc ccgggtcttg 1200

tacacaccgc ccgtcacacc atgggagtcg gaaatgcccg aagtcagtac ccagggagct 1260

gccgaaggcg gggccggtaa ctggggtgaa gtcgtaacaa 1300

<210> 1197
<211> 1450
<212> DNA
<213> Massilia sp. CCUG 43427A

<400> 1197
acgctggcgg catgctttac acatgcaagt cgaacggtaa cagggagctt gctccgctga 60

cgagtggcga acgggtgagt aatatatcgg aacgtaccca gaagtggggg ataacgtagc 120

gaaagttacg ctaataccgc atacgatcca cggatgaaag taggggacct tcgggcctta 180

tgcttttgga gcggccgata tctgattagc tagttggtag ggtaaaggcc taccaaggcg 240

acgatcagta gctggtctga gaggacgacc agccacactg gaactgagac acggtccaga 300

ctcctacggg aggcagcagt ggggaatttt ggacaatggg cgcaagcctg atccagcaat 360

gccgcgtgag tgaagaaggc cttcgggttg taaagctctt ttgtcaggga agaaacggta 420

gaggctaata tcctttgcta atgacggtac ctgaagaata agcaccggct aactacgtgc 480

cagcagccgc ggtaatacgt agggtgcaag cgttaatcgg aattactggg cgtaaagcgt 540

gcgcaggcgg ttttgtaagt ctgacgtgaa atccccgggc tcaacctggg aattgcgttg 600

gagactgcaa ggctagaatc tggcagaggg gggtagaatt ccacgtgtag cagtgaaatg 660

cgtagagatg tggaggaaca ccgatggcga aggcagcccc ctgggtcaag attgacgctc 720

atgcacsaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccctaaacg 780

atgtctacta gttgtcgggt tttaattaac ttggtaacgc agctaacgcg tgaagtagac 840

cgcctgggga gtacggtcgc aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag 900

cggtggatga tgtggattaa ttcgatgcaa cgcgaaaaac cttacctacc cttgacatgt 960

acggaatgcc gaagagattt ggcagtgctc gaaagagaac cgtaacacag gtgctgcatg 1020

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccttg 1080

tcattagttg ctacattcag ttgagcactc taatgagact gccggtgaca aaccggagga 1140

aggtggggat gacgtcaagt cctcatggcc cttatgggta gggcttcaca cgtcatacaa 1200

tggtacatac agagggccgc caacccgcga gggggagcta atcccagaaa gtgtatcgta 1260

gtccggatcg tagtctgcaa ctcgactacg tgaagttgga atcgctagta atcgcggatc 1320

agcatgccgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accatgggag 1380

cgggttttac cagaagtagg tagcttaacc gcaaggaggg cgcttaccac ggtaggattc 1440

gtgactgggg 1450

<210> 1198
<211> 1342
<212> DNA
<213> Megamonas funiformis

<400> 1198
ctttgacata agcttccgct tgaagatgag cttgcgtctg attagctagt tggtgagggt 60

aaaggcccac caaggcgacg atcagtagcc ggtctgagag gatgaacggc cacattggga 120

ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatcttccg caatgggcga 180

aagcctgacg gagcaacgcc gcgtgaacga tgaaggtctt aggatcgtaa agttctgttg 240

ttagggacga aggataagga ttataataca gtctttgttt gacggtacct aacgaggaag 300

ccacggctaa ctacgtgcca gcagccgcgg taatacgtag gcggcaagcg ttgtccggaa 360

ttattgggcg taaagggagc gcaggcggga aactaagcgg atcttaaaag tgcggggctc 420

aaccccgtga tggggtccga actggttttc ttgagtgcag gagaggaaag cggaattccc 480

agtgtagcgg tgaaatgcgt agatattggg aagaacacca gtggcgaagg cggctttctg 540

gactgtaact gacgctgagg ctcgaaagct agggtagcga acgggattag ataccccggt 600

agtcctagcc gtaaacgatg gatactaggt gtgggaggta tcgactcctt ccgtgccgga 660

gttaacgcaa taagtatccc gcctggggag tacggccgca aggttgaaac tcaaaggaat 720

tgacgggggc ccgcacaagc ggtggagtat gtggtttaat tcgacgcaac gcgaagaacc 780

ttaccaagac ttgacattga ttgaaagact tagagataag ttccttctct tcggagaaca 840

agaaaacagg tggtgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 900

gcaacgagcg caacccctat actatgttgc cagcatttcg gatgggaact catagtagac 960

tgccgcggac aacgcggagg aaggcgggga tgacgtcaag tcatcatgcc ccttacgtct 1020

tgggctacac acgtactaca atgggatgaa cagagggaag cgaaatcgcg aggtggagcg 1080

gatccctaaa agcatctctc agttcggatt gtaggctgaa actcgcctac atgaagtcgg 1140

aatcgctagt aatcgcaggt cagcatactg cggtgaatac gttcccgggc cttgtacaca 1200

ccgcccgtca caccacgaaa gtcattcaca cccgaagccg gctaagggcc tatggtaccg 1260

accgtctaag gtgggggcga tgattggggt gaagtcgtaa caaggtagcc gtatcggaag 1320

gtgcggctgg atcacctcct ta 1342

<210> 1199
<211> 1518
<212> DNA
<213> Megamonas hypermegale

<400> 1199
cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggggtgttta 60

tttcggtaaa caccaagtgg cgaacgggtg agtaacgcgt aagcaatcta ccttcaagat 120

ggggacaaca cttcgaaagg ggtgctaata ccgaatgaat gagagatgac cgcatggata 180

tttctctaaa ggaggcctct gaaaatgctt ccgcttgaag atgagcttgc gtctgattag 240

ctagttggtg agggtaaagg cccaccaagg cgacgatcag tagccggtct gagaggatga 300

acggccacat tgggactgag acacggccca gactcctacg ggaggcagca gtggggaatc 360

ttccgcaatg ggcgaaagcc tgacggagca acgccgcgtg aacgaagaag gtcttaggat 420

cgtaaagttc tgttgttagg ggcgaagggc aacattttga ataagggtgt tgtttgacgg 480

tacttaacga ggaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggcggc 540

aagcgttgtc cggaattatt gggcgtaaag ggagcgcagg cgggaagtta agcggacttt 600

aaaagtgcgg ggctcaaccc cgtgaggggg tccgaactga ctttcttgag tgcaggagag 660

ggaagcggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaagaa caccagtggc 720

gaaggcggct ttctggactg taactgacgc tgaggctcga aagctagggt agcgaacggg 780

attagatacc ccggtagtcc tagccgtaaa cgatggatac taggtgtggg aggtatcgac 840

cccttccgtg ccggagttaa cgcaataagt atcccgcctg gggagtacgg ccgcaaggtt 900

gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agtatgtggt ttaattcgac 960

gcaacgcgaa gaaccttacc aagacttgac atcgactgac gtagttagag ataagtattt 1020

ttacttcggt aaacaggaag acaggtggtg catggctgtc gtcagctcgt gtcgtgagat 1080

gttgggttaa gtcccgcaac gagcgcaacc cctatactat gttgccagca cgtaaaggtg 1140

ggaactcata gtagactgcc gcggacaacg cggaggaagg cggggatgac gtcaagtcat 1200

catgcccctt acgtcttggg ctacacacgt actacaatgg gatgaacaga gggaagcgaa 1260

gtcgcgaggc agagcggaac cctaaaagca tctctcagtt cggattgcag gctgaaactc 1320

gcctgcatga agtcggaatc gctagtaatc gcaggtcagc atactgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacacc acgaaagtca ttcacacccg aagccggcta 1440

agggccgaaa ggaaccgacc gtcgaaggtg ggggcgatga ttggggtgaa gtcgtaacaa 1500

ggtagccgta tcggaagg 1518

<210> 1200
<211> 1530
<212> DNA
<213> Megasphaera elsdenii

<220>
<221> modified_base
<222> (895)..(895)
<223> a, c, t, g, unknown or other

<400> 1200
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagaagagat gagaagcttg cttcttatcg attcgagtgg caaacgggtg agtaacgcgt 120

aagcaacctg cccttcagat ggggacaaca gctggaaacg gctgctaata ccgaatacgt 180

tctttttgtc gcatggcaga gagaagaaag ggaggctctt cggagctttc gctgaaggag 240

gggcttgcgt ctgattagct agttggaggg gtaacggccc accaaggcga cgatcagtag 300

ccggtctgag aggatgaacg gccacattgg gactgagaca cggcccagac tcctacggga 360

ggcagcagtg gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgaac 420

gatgacggcc ttcgggttgt aaagttctgt tatacgggac gaatggcgta cgacggtcaa 480

tacccgtcgt aagtgacggt accgtaagag aaagccacgg ctaactacgt gccagcagcc 540

gcggtaatac gtaggtggca agcgttgtcc ggaattattg ggcgtaaagg gcgcgcaggc 600

ggcgtcgtaa gtcggtctta aaagtgcggg gcttaacccc gtgaggggac cgaaactgcg 660

atgctagagt atcggagagg aaagcggaat tcctagtgta gcggtgaaat gcgtagatat 720

taggaggaac accagtggcg aaagcggctt tctggacgac aactgacgct gaggcgcgaa 780

agccagggga gcaaacggga ttagataccc cggtagtcct ggcggtaaac gatggatact 840

aggtgtagga ggtatcgacc ccttctgtgc cggagttaac gcaataagta tcccngcctg 900

gggagtacgg ccgcaaaggc tgaaactcaa aggaattgac gggggcccgc acaagcggtg 960

gagtatgtgg tttaattcga cgcacgcgaa gaaccttacc aagccttgac attgattgct 1020

atgggtagag atacccagtt cctcttcgga ggacaagaaa acaggtggtg cacggctgtc 1080

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctatcttct 1140

gttaccagcg agttaagtcg gggactcagg agagactgcc gcagacaatg cggaggaagg 1200

cggggatgac gtcaagtcat catgcccctt atggcttggg ctacacacgt actacaatgg 1260

ctcttaatag agggaagcga aggagcgatc cggagcaaac cccaaaaaca gagtcccagt 1320

tcggattgca ggctgcaact cgcctgcatg aagcaggaat cgctagtaat cgcaggtcag 1380

catactgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgaaagtc 1440

attcacaccc gaagccggtg aggtaacctt ttggagccag ccgtcgaagg tgggggcgat 1500

gattggggtg aagtcgtaac aaggtaaccg 1530

<210> 1201
<211> 1328
<212> DNA
<213> Megasphaera genomosp. C1

<400> 1201
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcaaa cgggtgagta 60

acgcgtaaac aacctgccct acggatgggg acaacagctg gaaacggctg ctaataccga 120

atacggaaag tcgccggagg aggggtttgc gtctgattag ctagttggag gggtaacggc 180

ccaccaaggc gacgatcagt agccggtctg agaggatgaa cggccacatt ggaactgaga 240

cacggtccag actcctacgg gaggcagcag tggggaatct tccgcaatgg gcgaaagcct 300

gacggagcaa cgccgcgtga gtgaagacgg ccttcgggtt gtaaagctct gttatacggg 360

acgatgacgg taccgtaaga gaaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag ggcgcgcagg cggcttctta 480

agtctgtctt aaaagtgcgg ggcttaaccc cgtgatggga tggaaactgg gaagctagag 540

tatcggagag gaaagcggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaggaa 600

caccagtggc gaaagcggct ttctggacga actgacgctg aggcgcgaaa gccaggggag 660

cgaacgggat tagataccc ggtggtcctg gccgtaaacg atgggtacta ggtgtaggag 720

cttctgtgcc ggagttaacg caataagtac cccgcctggg gagtacggcc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc 840

aacgcgaaga accttaccaa gccttgacat taacaggtgg tgcacggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatctt ctgttaccag 960

cacgtgggga ctcaggagag actgccgcag acaatgcggg ggaaggcggg gatgacgtca 1020

agtcatcatg ccccttatgg cttgggctac acacgtacta caatggctct tagagggagg 1080

cgaaggagcg atccggagca aaccccaaga gtctcagttc ggatgtaggc tgcaactcgc 1140

ctacagaagc aggaatcgct agtaatcgca ggtcagcata ctgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcacaccacg aaagtcattc acacccgaag ccggtaggta 1260

gccagccgtc gaaggtgggg gcgatgattg gggtgaagtc gtaacaaggt agccgtatcg 1320

gaaggtgc 1328

<210> 1202
<211> 1567
<212> DNA
<213> Megasphaera genomosp. type_1

<400> 1202
tggagagttt gatcctggct caggacgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgagagga catgggaagc ttgcttccta tgaaatcgag tggcaaacgg gtgagtaacg 120

cgtaaacaac ctgcccttcg gatggggata acagccggaa acggctgcta ataccgaata 180

cgatcttttc gtcgcatgac ggaaagaaga aaggatggcc tctatacaaa gctatcgccg 240

aaggaggggt ttgcgtctga ttagctggtt ggaggggtaa cggcccaaca aggcgatgat 300

cagtagccgg tctgagagga tgaacggcca cattgggact gagacacggc ccagactcct 360

acgggaggca gcagtgggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc 420

gtgagtgaag aaggtcttcg gattgtaaaa gctctgttat acgggacgaa aaagacggat 480

gccaacagta tccgtccgtg acggtaccgt aagagaaagc cacggctaac tacgtgccag 540

cagccgcggt aatacgtagg tggcaagcgt tgtccggaat tattgggcgt aaagggcgcg 600

caggcggttc ggtaagtctg tcttaaaagt gcggggctta accccgtgag gggacggaaa 660

ctgtcgaact tgagtgtcgg agaggaaagc ggaattccta gtgtagcggt gaaatgcgta 720

gatattagga ggaacaccgg tggcgaaagc ggctttctgg acgacaactg acgctgaggc 780

gcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatgg 840

atactaggtg taggaggtat cgacccccttc tgtgccgtag ttaacgctat aagtatcccg 900

cctggggagt acggccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg 960

gtggagtatg tggtttaatt cgacgcaacg cgaagaacct taccaagcct tgacattgat 1020

cgcaattttc agagatgaga agttcctctt cggaggacga gaaaacaggt ggtgcacggc 1080

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctatc 1140

ttctgttacc agcacgtaag ggtggggact caggagagac tgccgcagac aatgcggagg 1200

aaggcgggga tgacgtcaag tcatcatgcc ccttatggct tgggctacac acgtactaca 1260

atggctctaa atagagggaa gcgaaggagc gatccggagc aaaacccaaa aacagagtcc 1320

cagttcggat tgcaggctgc aactcgcctg catgaagcag gaatcgctag taatcgcagg 1380

tcagcatact gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgaa 1440

agtcattcac acccgaagcc ggtgaggtaa ccgcaaggag ccagccgtcg aaggtggggg 1500

cgatgattgg ggtgaagtcg taacaaggta gccgtatcgg aaggtgcggc tggatcacct 1560

cctttct 1567

<210> 1203
<211> 1554
<212> DNA
<213> Megasphaera micronuciformis

<400> 1203
tggagagttt gatcctggct caggacgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgagagcg tagagaaagc ttgctttttc tacaatctag tggcaaacgg gtgagtaacg 120

cgtaaacaac ctgccctacg gatggggaca acagctggaa acggctgcta ataccgaata 180

cgttccgaaa gtcgcatgac tgtcggaaga aaggatggcc tctatttata agctatcgcc 240

ggaggagggg tttgcgtctg attagctagt tggaggggta acggcccacc aaggcgacga 300

tcagtagccg gtctgagagg atgaacggcc acattggaac tgagacacgg tccagactcc 360

tacgggaggc agcagtgggg aatcttccgc aatgggcgaa agcctgacgg agcaacgccg 420

cgtgagtgaa gacggccttc gggttgtaaa gctctgttat acgggacgaa taatcttgtg 480

gttaataccc ataagaagtg acggtaccgt aagagaaagc cacggctaac tacgtgccag 540

cagccgcggt aatacgtagg tggcaagcgt tgtccggaat tattgggcgt aaagggcgcg 600

caggcggctt cttaagtctg tcttaaaagt gcggggctta accccgtgat gggatggaaa 660

ctgggaagct cagagtatcg gagaggaaag cggaattcct agtgtagcgg tgaaatgcgt 720

agatattagg aggaacacca gtggcgaaag cggctttctg gacgaaaact gacgctgagg 780

cgcgaaagcc aggggagcga acgggattag ataccccggt agtcctggcc gtaaacgatg 840

ggtactaggt gtaggaggta tcgacccctt ctgtgccgga gttaacgcaa taagtacccc 900

gcctggggag tacggccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc 960

ggtggagtat gtggtttaat tcgacgcaac gcgaagaacc ttaccaagcc ttgacattga 1020

tcgcaaggag tagagatact ctgttcttct tcggaagacg agaaaacagg tggtgcacgg 1080

ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccctat 1140

cttctgttac cagcacgtaa cggtggggac tcaggagaga ctgccgcaga caatgcggag 1200

gaaggcgggg atgacgtcaa gtcatcatgc cccttatggc ttgggctaca cacgtactac 1260

aatggctctt aatagaggga ggcgaaggag cgatccggag caaaccccaa aaacagagtc 1320

tcagttcgga ttgtaggctg caactcgcct acatgaagca ggaatcgcta gtaatcgcag 1380

gtcagcatac tgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga 1440

aagtcattca cacccgaagc cggtgaggta accgcaagga gccagccgtc gaaggtgggg 1500

gcgatgattg gggtgaagtc gtaacaaggt agccgtatcg gaaggtgcgg ctgg 1554

<210> 1204
<211> 1419
<212> DNA
<213> Megasphaera sp. BLPYG-07

<400> 1204
atcctagagt ttgatcatgg ctcaaggacg aacgctggcg gcgtgcttaa caacatgcaa 60

gtcgaacgag aagagatgag aagcttgctt cttattgatt cgagtggcaa acgggtgagt 120

aacgcgtaag caacctgccc tctagatggg gacaacagct ggaaacggct gctaataccg 180

aatacgttct ttctgtcgca tggcagaagg aagaaaggga ggctcttcgg agctttcgct 240

ggaggagggg cttgcgtctg attagctagt tggaggggta acggcccacc aaggcgacga 300

tcagtagccg gtctgagagg atgaacgcca catggacacc tgagacacgg cccagactcc 360

tacgggaggc agcagtgggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg 420

cgtgaacgat gacggccttc gggttgtaaa gttctgttat acgggacgaa tggtacgacg 480

gtcaataccc gtcgtaagtg acggtaccgt aagagaaagc cacggctaac tacggtgcca 540

gcagccgcgc gtaatacgta ggtggcaagc gttgtcggat tattgggcgt aagggcgcgc 600

aggcggcgtc gtaagtcggt cttaaaagtg cggggcttaa ccccgtgagg ggaccgaaac 660

tgcgatgcta gagtatcgga gaggaaagcg gaattcctag tgtagcggtg aaatgcgtag 720

atattaggag gaacaccagt ggcgaaagcg gctttctgga cgacaactga cgctgaggcg 780

cgaaagccag gggagcaaac gggattagat accccggtag tcctggccgt aaacgtggat 840

actggtgtag gaggtatcga ccccttctgt gccggagtta acgcaataag tatcccgcct 900

ggggagtacg gccgcaaggc tgaaactcaa aaggaattga cgggggcccg cacaagcggt 960

ggagtatgtg gtttaattcg acgcaacgcg aagaacctta ccaagccttg acattgattg 1020

ctaagggtag agataccctg ttcctcttcg gaggacaaga aaacaggtgg tgcacggctg 1080

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatctt 1140

ctgttaccag cgggttaagt cggggactca ggagagactg ccgcagacaa tgcggaggaa 1200

ggcggggatg acgtcaagtc atcatgcccc ttatggcttg ggctacacac gtactacaat 1260

ggctcttaat agagggaagc gaaggagcga tccggagcaa accccaaaaa cagagtccca 1320

gttcggattg caggctgcaa cccgcctgca tgaagcagga atcgctagta atcgcaggtc 1380

agcaaaatac ggtgaatacg ttcccgggcc ttgtacaca 1419

<210> 1205
<211> 1566
<212> DNA
<213> Megasphaera sp. UPII 199-6

<400> 1205
tggagagttt gatcctggct caggacgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgagagga catgggaagc ttgcttccta tgaaatcgag tggcaaacgg gtgagtaacg 120

cgtaaacaac ctgcccttcg gatggggata acagccggaa acggctgcta ataccgaata 180

cgatcttttc gtcgcatgac ggaaagaaga aaggatggcc tctatacaaa gctatcgccg 240

aaggaggggt ttgcgtctga ttagctggtt ggaggggtaa cggcccaaca aggcgatgat 300

cagtagccgg tctgagagga tgaacggcca cattgggact gagacacggc ccagactcct 360

acgggaggca gcagtgggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc 420

gtgagtgaag aaggtcttcg gattgtaaag ctctgttata cgggacgaaa aagacggatg 480

ccaacagtat ccgtccgtga cggtaccgta agagaaagcc acggctaact acgtgccagc 540

agccgcggta atacgtaggt ggcaagcgtt gtccggaatt attgggcgta aagggcgcgc 600

aggcggttcg gtaagtctgt cttaaaagtg cggggcttaa ccccgtgagg ggacggaaac 660

tgtcgaactt gagtgtcgga gaggaaagcg gaattcctag tgtagcggtg aaatgcgtag 720

atattaggag gaacaccggt ggcgaaagcg gctttctgga cgacaactga cgctgaggcg 780

cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgga 840

tactaggtgt aggaggtatc gacccttct gtgccgtagt taacgctata agtatcccgc 900

ctggggagta cggccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 960

tggagtatgt ggtttaattc gacgcaacgc gaagaacctt accaagcctt gacattgatc 1020

gcaattttca gagatgagaa gttcctcttc ggaggacgag aaaacaggtg gtgcacggct 1080

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctatct 1140

tctgttacca gcacgtaagg gtggggactc aggagagact gccgcagaca atgcggagga 1200

aggcggggat gacgtcaagt catcatgccc cttatggctt gggctacaca cgtactacaa 1260

tggctctaaa tagagggaag cgaaggagcg atccggagca aaacccaaaa acagagtccc 1320

agttcggatt gcaggctgca actcgcctgc atgaagcagg aatcgctagt aatcgcaggt 1380

cagcatactg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacgaaa 1440

gtcattcaca cccgaagccg gtgaggtaac cgcaaggagc cagccgtcga aggtgggggc 1500

gatgattggg gtgaagtcgt aacaaggtag ccgtatcgga aggtgcggct ggatcacctc 1560

ctttct 1566

<210> 1206
<211> 1496
<212> DNA
<213> Metallosphaera sedula

<400> 1206
attccggttg atcctgccgg acccgatcgc tatagggta gggctaagcc atgggagtcg 60

tacgctctcg ggaagagggc gtggcggacg gctgagtaac acgtggctaa cctgcccttg 120

ggatctggat aaccccggga aactggggct aatccggagc gggcaaggga atctggaatg 180

atctcttgcc taaaagcctc tcggctgatc ccgtcgagag gcgcccaagg atggggctgc 240

ggcccatcag gctgttgggg gagtaaaggt cccccaaacc gataacgggt aggggccgtg 300

ggagcgggag cccccagttg ggcactgaga caagggccca ggccctacgg ggcgcaccag 360

gcgcggaacg tccccaatgc gggaaaccgt gagggcgtta cccctagtgc cctcgcaaga 420

gggcttttct ccactccaga aaggtggagg aataagcggg gggcaagact ggtgtcagcc 480

gccgcggtaa taccagcccc gcgagtgatc gggacgttta ttgggcttaa agcgcccgta 540

gccggcctgt aaagtcaccg tttaaagacc cgggctcaac tcggggaacg gcggtgatac 600

ttacaggcta gggggcggga gaggtcggag gtactcccgg agtaggggcg aaatcctcag 660

atcccgggag gaccaccagt ggcgaaagcg tccggctaga acgcgcccga cggtgagggg 720

cgaaagccgg ggtagcaaat aggattagat accctagtag tcccggctgt agacgatgca 780

ggctaggtgt cgcgtaggct ttgtgcctgc gcggtgccgc aggaaaactg gtaagcccgc 840

cgcctgggga gtacggccgc aaggctgaaa cttaaaggaa ttggcggggg agcaccacaa 900

ggggtggaac ctgcggctca attggagtca acgcctggaa tctcaccggg ggagaccgca 960

ggatgacggc caggctaacg accttgccag actcgcggag aggaggtgca tggccgtcgc 1020

cagctcgtgt tgtgaaatgt ccggttaagt ccggcaacga gcgagacccc cacttctagt 1080

tggtaaccgt ctctccggag acggtccaca ctagaaggac tgccggtgtt aaaccggagg 1140

aaggaggggg ccacggcagg tcagcatgcc ccgaaacttc cgggccgcac gcgggttaca 1200

atggcaggga cagcgggatc cgaccccgag aggggaaggc aatcccgcaa accctgcctc 1260

agttgggatc gagggctgaa actcgccctc gtgaacgagg aatccctagt aaccgcgggt 1320

caacaacccg cggtgaatac gtccctgctc cttgcacaca ccgcccgtcg ctccacccga 1380

gtggagggga agtgaggcct cttgcccctc ggggtgggag gtcgagcttc tcctccgcga 1440

ggggggagaa gtcgtaacaa ggtagccgta ggggaacctg cggctggatc acctca 1496

<210> 1207
<211> 1376
<212> DNA
<213> Methanobacterium formicicum

<220>
<221> modified_base
<222> (619)..(619)
<223> a, c, t, g, unknown or other

<400> 1207
gattaagcca tgcaagtcga acgatccttc ggggtcgtgg cgtacggctc agtaacacgt 60

ggataaccta accttaggac tgggataacc ctgggaaact ggggataata ccggatatgt 120

agggctgcct ggaatggttc cctattgaaa tgttccgacg cctaaggatg gatctgcggc 180

agattaggta gttggcgggg taaatgccca ccaagccagt aatctgtacg ggttgtgaga 240

gcaagagccc ggagatggaa cctgagacaa ggttccaggc cctacggggc gcagcaggcg 300

cgaaacctcc gcaatgcacg aaagtgcgac gggggaaacc caagtgccac tcttaacggg 360

gtggcttttc ttaagtgtaa aaagcttttg gaataagagc tgggcaagac cggtgccagc 420

cgccgcggta acaccggcag ctcaagtggt ggccgttttt attgggccta aagcgttcgt 480

agccggcttg ataagtctct ggtgaaatct cacggcttaa ccgtgagaat tgctggagat 540

actattaggc ttgaggccgg gagaggttag cggtactccc ggggtagggg tgaaatccta 600

taatcccggg aggaccacnt gtggcgaagg cggctaactg gaacgggcct gacggtgagt 660

aacgaaagcc aggggcgcga accggattag atacccgggt agtcctggcc gtaaacgatg 720

tggacttggt gttgggatgg ctccgagctg ccccagtgcc gaagggaagc tgttaagtcc 780

accgcctggg aagtacggtc gcaagactga aacttaaagg aattggcggg ggagcaccac 840

aacgcgtgga gcctgcggtt taattggatt caacgccgga catctcacca ggggcgacag 900

cagaatgata gccaggttga tgaccttgct tgacaagctg agaggaggtg catggccgcc 960

gtcagctcgt accgtgaggc gtcctgttaa gtcaggcaac gagcgagacc cacgccctta 1020

gttaccagcg gatccttcgg gatgccgggc acactaaggg gaccgccagt gataaactgg 1080

aggaaggagt ggacgacggt aggtccgtat gccccgaatc ccctgggcta cacgcgggct 1140

acaatggtta ggacaatggg ttccgacact gaaaggtgga ggtaatctcc taaacctggc 1200

cttagttcgg attgagggct gtaactcgcc ctcatgaagc tggaatgcgt agtaatcgcg 1260

tgtcataacc gcgcggtgaa tacgtccctg ctccttgcac acaccgcccg tcacgccacc 1320

caaaaagggt ttggatgagg ccatagtctt tggttatggt cgaatctagg ttcttt 1376

<210> 1208
<211> 1359
<212> DNA
<213> Methanobrevibacter acididurans

<220>
<221> modified_base
<222> (988)..(988)
<223> a, c, t, g, unknown or other

<400> 1208
gatttctgtt tgatcctggc agaagctact gctattggga ttcgattaag ccatgcaagt 60

cgaaagaatt tatattcttg gcgtacggct cagtaacacg tggataacct acccttagga 120

ctgggataac tctgggaaac tggagataat actggataga tgatttttcc tgtaattggt 180

attttgttga aatgtttttt cgcctaagga tgggtctgcg gccgattagg tagttggtga 240

ggtaatggct taccaagccg tttatcggta cgggttgtga gagcaagagc ccggagatgg 300

aacctgagac aaggttccag gccctacggg gcgcagcagg cgctaaacct ccgcaatgtg 360

agcaatcgcg acgggggat cccaagtgcc attcttaacg ggatggcttt tcttaagtgt 420

aaagagcttt tggaataaga gctgggcaag accggtgcca gccgccgcgg taacacccgg 480

cagctctagt ggtagctgtt tttattgggc ctaaagcgtt cgtagccggt ttaataagtc 540

tttggtgaaa tcctgttttt taactatggg aattgctgag gatactgtta ggcttgaggt 600

cgggagaggt tagcggtact cccagggtag gggtgaaatc ctgtaatcct gggaggacca 660

cctgtggcga aggcggctaa ctggaacgaa cctgacggtg agggacgaaa gctaggggcg 720

cgaaccggat tagatacccg ggtagtccta gccgtaaacg atgcggactg ggtgttggga 780

tggctttgag ctgtttcggt gccgaaggga agctgttaag tccgccgcct gggaagtacg 840

gtcgcaagac tgaaacttaa aggaattggc gggggagcac cacaacgcgt ggagcctgcg 900

gtttaattgg attcaacgcc ggagatctca ccaggggcga cagcagtatg atggccaggt 960

tgatggcctt gcttgacaag ctgaaganga ggtgcatggc ccgccgtcag ctcgtaccgt 1020

gaggagtcct gttaagtcag gcaacgagcg agaccccacg ctcttagtta ccagcgggat 1080

ccttttttgg atgccgggca cactaagggg accgccagtg ataaactgga ggaaggagtg 1140

gacgacggta ggtccgtatg ccccgaatcc cctgggctac acgcgggcta caatggctga 1200

gacaatgggt tacgacgctg aaaagcggag ttaatcctct aaacttagtc gtagttcgga 1260

ttgagggctg taactcgccc tcatgaagct ggaatgcgta gtaatcgcgt gtcacaatcg 1320

cgcggtgaat acgtccctgc tccttgcaca caccgcccg 1359

<210> 1209
<211> 1268
<212> DNA
<213> Methanobrevibacter arboriphilus

<400> 1209
gctcagtaac acgtggataa cctaccctta ggactgggat aaccctggga aactggggct 60

aatactggat agatggtttt tttcctgtaa tggtatttcg tctaaatgtt ttttttcgcc 120

taaggatggg tctgcggccg attaggttgt tggttaggta atggcttacc aagccgttta 180

tcggtacggg ttgtgagagc aagagcccgg agatggaacc tgagacaagg ttccaggccc 240

tacggggcgc agcaggcgcg aaacctccgc aatgtgagaa atcgcgacgg ggggacccca 300

agtgccattc ttaacgggat ggcttttctt aagtgtaaaa agcttttgga ataagagctg 360

ggcaagaccg gtgccagccg ccgcggtaac accggcagct ctagtggtgg ccagttttat 420

tgggcctaaa gcgttcgtag ccggtttatt aagtctctgg tgaaatcccg tagcttaact 480

atgggaattg ctggagatac tagtagactt gaggtcggga gaggttagag gtactcccag 540

ggtaggggtg aaatcctgta atcctgggag gaccacctgt ggcgaaggcg tctaactgga 600

acgaacctga cggtgaggga cgaaagctag gggcgcgaac cggattagat acccgggtag 660

tcctagccgt aaacgatgcg gacttggtgt tagaatggct ttgagccgct ctagtgccga 720

agggaagctg ttaagtccgt cgcctgggaa gtacggtcgc aagactgaaa cttaaaggaa 780

ttggcggggg agcaccacaa cgcgtggagc ctgcggttta attggattca acgccggaca 840

tctcaccagg ggcgacagca gtatgatggc caggttgatg gccttgcttg acaagctgag 900

aggaggtgca tggccgccgt cagctcgtac cgtgaggcgt cctgttaagt caggcaacga 960

gcgagaccca cgcccttagt taccagcgga tccttttttt tggatgccgg gcacactaag 1020

gggaccgcca gtgataaatt ggaggaagga gtggacgacg gtaggtccgt atgccccgaa 1080

tcccctgggc aacacgcggg ctacaatggc tgagacaatg ggttccgaca ttgaaaagtg 1140

gaggtaatcc tctaaactta gtcgtagttc ggattgaggg ctgtaactcg ccctcatgaa 1200

gctggaatgc gtagtaatcg cgtgtcataa tcgcgcggtg aatacgtccc tgctccttgc 1260

acacaccg 1268

<210> 1210
<211> 1364
<212> DNA
<213> Methanobrevibacter curvatus

<220>
<221> modified_base
<222> (1272)..(1272)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1289)..(1289)
<223> a, c, t, g, unknown or other

<400> 1210
atttatttcg tggcgtacgg ctcagtaaca cgtggataac ctacccttag gactaggata 60

accctgggaa actggggcta atactggata ggtgattttt cctgcaatgg tatttcattt 120

aaatgttctt atgttcgcct aaggatgggt ctgcggccga ttaggttgtt ggtggggtaa 180

tggcttacca agccgattat cggtacgggt tgtgagagca agagcccgga gatggaacct 240

gagacaaggt tccaggccct acggggcgca gcaggcgcga aacctccgca atgtgagcaa 300

tcgcgacggg gggatcccaa gtgccattct taaaagggat ggcttttcat aagtgtaaaa 360

agcttttgga ataagagctg gcaagaccgg tgccagccgc cgcggtaaca ccggcagctc 420

tagtggtagc catttttatt gggcctaaag cgttcgtagc cggtttaata agtctttggt 480

gaaagcctac agcttagctg tgggaattgc tggagatact attagacttg aggtcgggag 540

aggttagagg tactcccagg gtaggggtga aatcctgtaa tcctgggagg accacctgtg 600

gcgaaggcgt ctaactggaa cgaacctgac ggtgagggac gagagctagg ggcgcgagcc 660

ggattagata cccgggcagt cctagccgta aacgatgtgg acttggtgtt gggatggctt 720

tgagctgttt cagtgccgaa gggaagctgt taagtccacc gcctgggaag tacggtcgca 780

agactgaaac ttaaaggaat tggcggggga gcaccacaac gcgtggagcc tgcggtttaa 840

ttggattcta cgccggacat ctcaccaggg gcgacagcag tatgatggcc aggttgatgg 900

tcttgcttga caagctgaga ggaggtgcat ggccgccgtc agctcgtacc gtgaggcgtc 960

ctgttaagtc aggcaacgag cgagacccac gcccttagtt accagcggat ccttcgggat 1020

gccgggcaca ctaaggggac cgccagtgat aaactggagg aaggagtgga cgacggtagg 1080

tccgtatgcc ccgaatcccc tgggcaacac gcgggctaca atggctaaga caatgagttc 1140

cgccactgga aagtgaaggt aatctcctaa acttagtcgt agtacggatt gagggctgta 1200

actcgccctc atgaagctgg aatgcgtagt aatcgcgtgt cataatcgcg cggtgaatac 1260

gtccctgctc cntgcacaca ccgcccgtna caccacccaa aaagggctgg gatgaggctt 1320

tgatcttagg ttaaattcga atctcggttt tttgaggagg gtga 1364

<210> 1211
<211> 1314
<212> DNA
<213> Methanobrevibacter cuticularis

<220>
<221> modified_base
<222> (431)..(431)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (966)..(966)
<223> a, c, t, g, unknown or other

<400> 1211
aggctactgc tattggggtt cgaataagcc atgcaagtcg aacgaattta tattcgtggc 60

atacggctca gtaacacgtg gataacctac ccttaggact agaataaccc tgggaaactg 120

gggctaatac tggatagatg atttttcctg caatggtatt tcgtttaaat gttttttcgc 180

ctaaggatgg gtctgcggcc gaataggtag ttggttaggt aatggcttac caagccgctt 240

atcggtacgg gttgtgagag caagagcccg gagatggaac ctgagacaag gttccaggcc 300

ctacggggcg cagcaggcgc gaaacctccg caatgtgaga aatcgcgacg gggggacccc 360

aagtgccatt cttaacggga tggcatttgt gaggtgtaaa aagcttcaag aataagagct 420

gggcaagacc nggtgccagc cgccgcggta acaccggcag ctctagtggt agccattttt 480

attgggccta aagcgttcgt agccggttta ataagtctct ggtgaaatcc tgtagcttaa 540

ctattggaat tgctggagat actattagac ttgaggtcgg gagaggttag aggtactccc 600

agggtagggg tgaaatcctg taatcctggg aggaccacct gtggcgaagg cgtctaactg 660

gaacgaacct gacggtgagg gacgaaagct aggggcgcga accgggttag atacccgggt 720

agtcctagcc gtaagcgatg cggacttggt gttggaatgg ctttgagccg ctccagtgcc 780

gaagggaagc tgttaagtcc gccgcctggg aagtacggtc gcaagactga aacttaaagg 840

aattggcggg ggagcactca acgcgtggag cctgcggttt aattggattc aacgccggac 900

atctcaccag gggcgacagc agtatgatgg ccaggttgat ggccttgctt gacaagctga 960

gaggangtgc atggccgccg tcagctcgta ccgtgaggcg tcctgttaag tcgggcaacg 1020

agcgagaccc acgcccttag ttaccagcgg atccttttgg atgccgggca cactaagggg 1080

accgccagtg ataaactgga ggaaggagtg gacgacggta ggtccgtatg ccccgaatcc 1140

cctgggcaac acgcgggcta caatggctaa gacaatgggt tccgacactg gaaagtggag 1200

gtaatcctct aaacttagtc gtagttcgga ttgagggctg taacccgccc ccatgaagct 1260

ggaatgcgta gtaatcgcgt gtcataatcg cgcggtgaat acgtccctgc tcct 1314

<210> 1212
<211> 1363
<212> DNA
<213> Methanobrevibacter filiformis

<220>
<221> modified_base
<222> (1017)..(1017)
<223> a, c, t, g, unknown or other

<400> 1212
aatttatatt cgtggcgtac ggctcagtaa cacgtggata acctaccctt aggaccagga 60

taactctgga aactggagct aatactggat aggcgatttt tcctgcaatt ggtatttcgt 120

ttaaatgttt tttcgcctga ggatgggtct gcgttcgatt agattgttgg taaggtaatg 180

gcttaccaag tcgattatcg gtacgggttg tgagagcaag agcctggaga tggaacctga 240

gacaaggttc caggccctac ggggcgcagc aggcgcgaaa cctccgcaat gtgagaaatc 300

gcgacggggg gaccccaagw gccattctta acgggatggc ttttcttaag tgtaaaaagc 360

ttttggaata agagctgggc aagaccgggc cagccgccgc ggtaacaccg gcagctctag 420

tggtagccat ttttattggg cctaaagcgt tcgtagctgg tttaataagt ctttggtgaa 480

atcctatagc ttaactgtgg gaattgctgg ggatactatt agacttgagg tcgggagagg 540

ttagcggtac tctcagggta ggggtgaaat cctgtaatcc tgagaggacc acctgtggcg 600

aaggcggcta actggaacga acctgacggt gagggacgaa agccaggggc gcgaaccgga 660

ttagataccc gggtagtcct ggccgtaaac gatgcggact tggtgttagg atggtcttga 720

gccgttctag tgccgaaggg aagctgttaa gtccgccgcc tgggaagtac ggtcgcaaga 780

ctgaaactta aaggaattgg cgggggagca ccacaacgcg tggagcctgc ggtttaattg 840

gattcaacgc cggacatctc accaggggcg acagccgtat gatagccagg ttgatgatct 900

tgcttgacaa gctgagagga ggtgcatggc cgccgtcagc tcgtaccgtg aggcgtcctg 960

ttaagtcagg caacgagcga gacccacgcc cttagttacc aacagatcct ttattgnatg 1020

ctgggcacac taaggggacc gccagtgata aactggagga aggagtggac gacggtaggt 1080

ccgtatgccc cgaatcccct gggcaacacg cgggctacaa tggctaagac aatgggttcc 1140

gacattgaaa agtggaggta atcccctaaa cttggtcgta gttcggattg agggctgtaa 1200

ctcgccctca tgaagctgga atgcgtagta atcgcgtgtc ataatcgcgc ggtgaatacg 1260

tccctgctcc ttgcgcacac cgcccgtcac accacccaaa aagggcttgg atgaggcttt 1320

aatctttggt taaattcgaa tctaggtttt ttgaggaggg tga 1363

<210> 1213
<211> 1328
<212> DNA
<213> Methanobrevibacter gottschalkii

<400> 1213
tgctactgct attgggattc gattaagcca tgcaagtcga acgagtttag gctcgtggcg 60

tacggctcag taacacgtgg ataacctacc cttaggactg ggataacctt gggaaactga 120

ggataatact ggataggcaa tttttcctgt aatggttttt tgtttaaatg ttttttcgcc 180

taaggatggg tctgcggccg attaggtagt tggttaggta atggcttacc aagcctttga 240

tcggtacggg ttgtgggagc aagagcccgg agatggaacc tgagacaagg ttccaggccc 300

tacggggtgc agcaggcgcg aaacctccgc aatgtgagaa atcgcgacgg ggggatccca 360

agtgctattc ttaacgggat agcttttctt tagtgtaaag agcttttgga ataagagctg 420

ggcaagaccg gtgccagccg ccgcggtaac accggcagct ctagtggtag cagtttttat 480

tgggcctaaa gcgtccgtag ccggtttaat aagtctctgg tgaaatcctg tagcttaact 540

atgggaattg ctggagatac tattggactt gagaccggga gaggttagag gtactcccag 600

ggtagaggtg aaattctgta atcctgggag gaccgcctgt tgcgaaggcg tctgactgga 660

acggttctgc cggtgaggga cgaaagttag gggcgcgaac cggattagat acccgggtag 720

tcctaactgt aaacgatgcg gacttggtgt tggggtggct ttgagctgct tcagtgccga 780

agggaagctg ttaagtccgc cgcctgggaa gtacggtcgc gagactgata cttaraagaa 840

ttggcggggg agcaccacaa cacgtggagc ctgcggttta attggattca acgccggaca 900

tctcaccaga ggcgacagct gtatgatagc caggttgatg actttgcttg actagctgag 960

aggaggtgca tggccgccgt cagctcgtac cgtgaggcgt cctgttaagt caggcaacga 1020

gcgagaccca cgcccttagt taccagcttg tcctttttt ggatgatagg gcacactaag 1080

gggaccgcct atgataaata ggaggaagga gtggacgacg gtaggtccgt atgccccgaa 1140

tcctctgggc aacacgcggg ctacaatggc tgggacaatg ggttccgaca ccgaaaggtg 1200

gaggtaatcc tctaaactta gtcgtagttc ggattgagga ctgtaactcg ttctcatgaa 1260

gctggaatgc gtagtaatcg cgtatcacta ttgcgcggtg aatacgtccc ttggtccttg 1320

cacacacc 1328

<210> 1214
<211> 1262
<212> DNA
<213> Methanobrevibacter millerae

<400> 1214
gctcagtaac acgtggataa cctaccctta ggaccgggat aaccttggga aactgaggat 60

aatactggat aggcaattat tcctggaatg gttttttgtt taaatgtttt ttcgcctaag 120

gatgggtctg cggccgatta ggtagttggt taggtaacgg cttaccaagc cattgatcgg 180

tacgggttgt gagagcaaga gcccggagat ggaacctgag acaaggttcc aggccctacg 240

gggtgcagca ggcgcgaaac ctccgcaatg tgagaaatcg cgacgggggg atcccaagtg 300

ccattcttaa cgggatggct tttcattagt gtaaagagct tttggaataa gggctgggca 360

agaccggtgc cagccgccgc ggtaacaccg gcagctctag tggtagcagt ttttattggg 420

cctaaagcgt ccgtagccgg tttaataagt ctctggtgaa atcctgtagc ttaactgtgg 480

gaattgctgg agatactatt agacttgaga ccgggagagg ttagaggtac tcccagggta 540

gaggtgaaat tctgtaatcc tgggaggacc gcctgttgcg aaggcgtcta actggaacgg 600

ttctgacggt gagggacgaa agttaggggc gcgaaccgga ttagataccc gggtagtcct 660

aaccgtaaac gatgcggact tggtgttggg gtggctttga gctgctccag tgccgaaggg 720

aagctgttaa gtccgccgcc tgggaagtac ggtcgcaaga ctgaaactta aaggaattgg 780

cgggggagca ccacaacgcg tggagcctgc ggtttaattg gattcaacgc cggacatctc 840

accagaggcg acagctgtat gatggccaag ctgatgactt tgcttgacta gctgagagga 900

ggtgcatggc cgccgtcagc tcgtaccgtg aggcgtcctg ttaagtcagg caacgagcga 960

gacccacgcc cttagttacc agcggatcct tttttggatg ccgggcacac taaggggacc 1020

gcctatgata aataggagga aggagtggac gacggtaggt ccgtatgccc cgaatcctct 1080

gggcaacacg cgggctacaa tggctgagac aatgggttcc gacaccgaaa ggtggaggta 1140

atcctctaaa cttagtcgta gttcggattg aggactgtaa ctcgttctca tgaagctgga 1200

atgcgtagta atcgcgtatc actattgcgc ggtgaatacg ttcctgctcc ttgcacacac 1260

cg 1262

<210> 1215
<211> 1266
<212> DNA
<213> Methanobrevibacter olleyae

<400> 1215
tgctcagtaa cacgtggata acctaccctt aggactggga taaccctggg aaactggggc 60

taataccgga tagatgattt ttttcctgta atggtgtttt gtttaaatgt tttttttcg 120

cctaaggatg ggtctgcggc agattaggta gttggttggg taatggctta ccaagcctat 180

gatctgtacg ggttgtgaga gcaagagccc ggagatggaa cctgagacaa ggttccaggc 240

cctacggggc gcagcaggcg cgaaacctcc gcaatgtgag aaatcgcgac gggggggatcc 300

caagtgccat tcttaacggg atggcttttc ttaagtgtaa aaagcttttg gaataagagc 360

tgggcaagac cggtgccagc cgccgcggta acaccggcag ctctagtggt agctgttttt 420

attgggccta aagcgttcgt agccggtttg gtaagtcact ggtgaaatcc tgtagcttaa 480

ctatgggaat tgctggtgat actgttgaac ttgaggtcgg gagaggttag cggtactccc 540

agggtagagg tgaaattctg taatcctggg aggaccacct gtggcgaagg cggctaactg 600

gaacgaacct gacggtgagg gacgaaagct aggggcgcga accggattag atacccgggt 660

agtcctagcc gtaaacgatg cggacttggt gttgggatgg ctttgagccg ctccggtgcc 720

gaagggaagc tgttaagtcc gccgcctggg aagtacggtc gcaagactga aacttaaagg 780

aattggcggg ggagcaccac aacgcgtgga gcctgcggtt taattggatt caacgccgga 840

catctcacca ggagcgacag ctgtatgatt accaggctga tgaccttgtt tgactagctg 900

agaggaggtg catggccgcc gtcagctcgt accgtgaggc gtcctgttaa gtcaggcaac 960

gagcgagacc acgcccttag ttaccatcag attctttgga atgctgggca cactaagggg 1020

accgccagtg ataaattgga ggaaggagtg gacgacggta ggtccgtatg ccccgaatcc 1080

cctgggctac acgcgggcta caatggctgg gacaatgggt tccgacgccg aaaggtggag 1140

gtaatctttt aaacctagtc gtagttcgga ttgagggctg taactcgccc tcatgaagct 1200

ggaatgcgta gtaatcgcgt gtcacaatcg cgcggtgaat acgtccctgc tccttgcaca 1260

caccga 1266

<210> 1216
<211> 1475
<212> DNA
<213> Methanobrevibacter oralis

<400> 1216
ccggttgatc ctgccagatg ctactgcyat tgggattcga ttaagccatg caagtcgaac 60

gagtttagac tcgtggcgta cggctcagta acacgtggat aacctaccct taggactggg 120

ataaccctgg gaaactgggg ataatactgg ataggcaatt agtcctgtaa tggtttttg 180

tttaaatgtt ttttcgccta aggatgggtc tgcggccgat taggtagttg gttaggtaat 240

ggcttaccaa gccgttgatc ggtacgggtt gtgagagcaa gagcccggag atggaacctg 300

agacaaggtt ccaggcccta cggggcgcag caggcgcgaa acctccgcaa tgtgagaaat 360

cgcgacgggg ggatcccaag tgccattctt aacgggatgg cttttcatta gtgtaaagag 420

cttttggaat aagagctggg caagaccggt gccagccgcc gcggtaacac cggcagttct 480

agtggtagca gttattattg ggcctaaagc gtccgtagcc ggtttaataa gtctctggtg 540

aaatcctgta gcttaactat gggaattgct ggagatacta ttagacttga gatcgggaga 600

ggttagaggt actcccaggg tagaggtgaa attctgtaat cctgggagga ccgcctgttg 660

cgaaggcgtc taactggaac gattctgacg gtgagggacg aaagttaggg gcgcgaaccg 720

gattagatac ccgggtagtc ctaactgtaa acgatgcgga cttggtgttg ggatggcttt 780

gagctgtctc agtgccgaag ggaagctgtt aagtccgccg cctgggaagt acggtcgcaa 840

gactgaaact taaaggaatt ggcgggggag caccacaacg cgtggagcct gcggtttaat 900

tggattcaac gccggacatc tcaccagagg cgacagctgt atgatagcca ggttgatgac 960

tttgcttgac tagctgagag gaggtgcatg gccgccgtca gctcgtaccg tgaggcgtcc 1020

tgttaagtca ggcaacgagc gagacccacg cccttagtta ccagcggatt ctttttttg 1080

aagccgggca cactaggggg accgcctatg ataaatagga ggaaggagtg gacgacggta 1140

ggtccgtatg ccccgaatcc acagggyaac acgcgggcta caatggctga gacaatgggt 1200

tccgacaccg aaaggtggag gtaatcctct aaacttagtc gtagtccgga ttgaggactg 1260

taactcgttc tcatgaagct ggaatgcgta gtaatcgcgt gtcacaatcg cgcggtgaat 1320

acgtccctgc tccttgcaca caccgcccgt cacgccaccc aaaaagggat tggatgagga 1380

tgtaatgttt tttgttatat tcgaatctag ttttttaag gagggcgaag tcgtaacaag 1440

gtacggctag gggaacctgc ggctggatca cctcc 1475

<210> 1217
<211> 1260
<212> DNA
<213> Methanobrevibacter ruminantium

<400> 1217

gctcagtaac acgtggataa cctaccctta ggactgggat aaccctggga aactggggct 60

aataccggat agataatttt tcctggaatg gtattttgtt taaatgtttt ttcgcctaag 120

gatgggtctg cggcagatta ggtagttggt taggtaatgg cttaccaagc ctatgatctg 180

tacgggttgt gagagcaaga gcccggagat ggaacctgag acaaggttcc aggccctacg 240

gggcgcagca ggcgcgaaac ctccgcaatg tgagaaatcg cgacgggggg atcccaagtg 300

ccattcttaa cgggatggct tttcttaagt gtaaaaagct tttggaataa gagctgggca 360

agaccggtgc cagccgccgc ggtaacaccg gcagctctag tggtagctac ttttattggg 420

cctaaagcgt tcgtagccgg tttgataagt cactggtgaa atcctatagc ttaactgtgg 480

gaattgctgg tgatactgtt gaacttgagg tcgggagagg ttagcggtac tcccagggta 540

gaggtgaaat tctgtaatcc tgggaggacc acctgtggcg aaggcggcta actggaacga 600

acctgacggt gagggacgaa agccaggggc gcgaaccgga ttagataccc gggtagtcct 660

ggccgtaaac gatgcggact tggtgttggg atggctttga gccgctccgg tgccgaaggg 720

aagctgttaa gtccgccgcc tgggaagtac ggtcgcaaga ctgaaactta aaggaattgg 780

cgggggagca ccacaacgcg tggagcctgc ggtttaattg gattcaacgc cggacatctc 840

accaggagcg acagctgtat gattaccagg ctgatgacct tgtttgacta gctgagagga 900

ggtgcatggc cgccgtcagc tcgtaccgtg aggcgtcctg ttaagtcagg caacgagcga 960

gacccacgcc cttagttacc atcagattct ccggaatgct gggcacacta aggggaccgc 1020

cagtgataaa ctggaggaag gagtggacga cggtaggtcc gtatgccccg aatcccctgg 1080

gctacacgcg ggctacaatg gctgggacaa tgggttccga cgccgaaagg cgaaggcaat 1140

cttttaaacc tagtcgtagt tcggattgag ggctgtaact cgccctcatg aagctggaat 1200

gcgtagtaat cgcgtgtcac aatcgcgcgg tgaatacgtc cctgctcctt gcacacaccg 1260

<210> 1218
<211> 1485
<212> DNA
<213> Methanobrevibacter smithii

<400> 1218
ttcaattctg tttgatcctg gcagatgcta ctgctattgg gattcgatta agccatgcaa 60

gtcgaacgag tttaggctcg tggcgtacgg ctcagtaaca cgtggataac ctacccttag 120

gactgggata accctgggaa actggggata atactggata ggcaattatt cctgtaatgg 180

ttttttgttt aaatgttttt tcgcctaagg atgggtctgc ggccgattag gtagttggtt 240

aggtaatggc ttaccaagcc tttgatcggt acgggttgtg agagcaagag cccggagatg 300

gaacctgaga caaggttcca ggccctacgg ggtgcagcag gcgcgaaacc tccgcaatgt 360

gagaaatcgc gacgggggga tcccaagtgc cattcttaac gggatggctt ttcattagtg 420

taaagagctt ttggaataag agctgggcaa gaccggtgcc agccgccgcg gtaacaccgg 480

cagctctagt ggtagcagtt tttattgggc ctaaagcgtc cgtagccggt ttaataagtc 540

tctggtgaaa tcctgcagct taactgtggg aattgctgga gatactatta gacttgagat 600

cgggagaggt tagaggtact cccagggtag aggtgaaatt ctgtaatcct gggaggaccg 660

cctgttgcga aggcgtctga ctggaacgat tctgacggtg agggacgaaa gctaggggcg 720

cgaaccggat tagatacccg ggtagtccta gctgtaaacg atgcggactt ggtgttgggg 780

tggctttgag ctgtcccagt gccgaaggga agctgttaag tccgccgcct gggaagtacg 840

gtcgcaagac tgaaacttaa aggaattggc gggggagcac cacaacgcgt ggagcctgcg 900

gtttaattgg attcaacgcc ggacatctca ccagaggcga cagctgtatg atagccaggt 960

tgatgacttt gcttgactag ctgagaggag gtgcatggcc gccgtcagct cgtaccgtga 1020

ggcgtcctgt taagtcaggc aacgagcgag acccacgctc ttagttacca gcggatcctt 1080

ttttggatgc cgggcacact aaggggaccg cctatgataa ataggaggaa ggagtggacg 1140

acggtaggtc cgtatgcccc gaatcctctg ggcaacacgc gggctacaat ggctgagaca 1200

atgggttccg acgccgaaag gcggaggtaa tcctctaaac ttagtcgtag ttcggattga 1260

ggactgtaac tcgttctcat gaagctggaa tgcgtagtaa tcgcgtgtca caatcgcgcg 1320

gtgaatacgt ccctgctcct tgcacacacc gcccgtcacg ccacccaaaa agggattgga 1380

tgaggatgta atgttttgtt atattcgaat ctagtttttt taaggagggc gaagtcgtaa 1440

caaggtagcc gtaggggaac ctgcggctgg atcacctcct tacac 1485

<210> 1219
<211> 1268
<212> DNA
<213> Methanobrevibacter thaueri

<220>
<221> modified_base
<222> (6)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (607)..(607)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (610)..(611)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (868)..(868)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1124)..(1124)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1255)..(1255)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1258)..(1258)
<223> a, c, t, g, unknown or other

<400> 1219
aagccnnnca agtcgaacga atttagattc gtggcgtacg gctcagtaac acgtggataa 60

cctaccctta ggaccgggat aaccttggga aactgaggat aatactggat aggcaatttt 120

tcctgtaatg gtttttttgtt taaatgtttt ttcgcctaag gatgggtctg cggccgatta 180

ggtagttggt taggtaatgg cttaccaagc cgttgatcrg aacgggttgt gagagcaaga 240

gcccggagat ggaacctgag acaaggttcc aggccctacg gggcgcagca ggcgcgaaac 300

ctccgcaatg tgagaaatcg cgacgggggg atcccaagtg ccattcttaa cgggatggct 360

tttcattagt gtaaagagct tttggaataa gagctgggca agaccggtgc cagccgccgc 420

ggtaacaccg gcagctctag tggtaacaat ttttattggg cctaaagcgt ccgtagccgg 480

tttaataagt ctctggtgaa atcctgtagc ttaactgtgg gaattgctgg agatactatt 540

agacttgaga ccgggagagg ttagaggtac tcccagggta gaggtgaaat tctgtaatcc 600

tgggagnacn ncctgttgcg aaggcgtcta actggaacgg ttctgacggt gagggacgaa 660

agttaggggc gcgaaccgga ttagataccc gggtagtcct aactgtaaac gatgcggact 720

tggtgttggg gtggctttga gctgctccag tgccgaaggg aagctgttaa gtccgccgcc 780

tgggaagtac ggtcgcaaga ctgaaactta aaggaattgg cgggggagca ccacaacgcg 840

tggagcctgc ggtttaattg gattcaangc cggacatctc accagaggcg acagctgtat 900

gatagccagg ytgatgactt tgcttgacta gctgagagga ggtgcatggc cgccgtcagc 960

tcgtaccgtg aggcgtcccg ttaagtcagg caacgagcga gacccacgcc cttagttacc 1020

agcttatccc ctcggggatg atgggcacac taaggggacc gcctatgata aataggagga 1080

aggagtggac gacggtaggt ccgtatgccc cgaatcctct gggnaacacg cgggctacaa 1140

tggctgagac aatgggttcc gacaccgaaa ggtggaggta atcctctaaa cttagtcgta 1200

gttcggattg aggactgtaa ctcgttctca tgaagctgga atgcgtagta atcgngtntc 1260

accattgc 1268

<210> 1220
<211> 1335
<212> DNA
<213> Methanobrevibacter woesei

<220>
<221> modified_base
<222> (32)..(32)
<223> a, c, t, g, unknown or other

<400> 1220
tgctactgct attgggattc gattaagcca tncaagttga acgaatttag attcgtggcg 60

tacggctcag taacacgtgg ataacctacc cttaggactg ggataactct gggaaactgg 120

ggataatacc ggataggcaa tttttcctgt aatggttttt tgtttaaatg tttttttttcg 180

cctaaggatg ggtctgcggc agattaggta gttggttagg taatggctta ccaagccgtt 240

gatctgtacg ggttgtgaga gcaagagccc ggagatggaa cctgagacaa ggttccaggc 300

cctacggggc gcagcaggcg cgaaacctcc gcaatgtgag aaatcgcgac ggggggatcc 360

caagtgccat tcttaacggg atggcttttc attagtgtaa agagcttttg gaataagagc 420

tgggcaagac cgttgccaac cgccgcggta acaccgtcag ctctagtggt agcagttttt 480

attgggccta aagcgtccgt agccggttta ttaagtctct ggtgaaatcc tgtagcttaa 540

ctgtgggaat tgctggagat actagtagac ttgagatcgg gagaggttag aggtactccc 600

agggtagagg tgaaattctg taatcctggg aggaccgcct gtggcgaagg cgtctagctg 660

gaacgattct gccggtgagg gacgaaagct aggggcgcga accggattag atacccgggt 720

agtcctagct gtaaacgatg cggacttggt gttgggatgg ctttgagctg ctccagtgcc 780

gaagggaagc tgttaagtcc gccgcctggg aagtacggtc gcaagactga aacttaaagg 840

aattggcggg ggagcaccac aacgcgtgga gcctgcggtt taattggatt caacgccgga 900

catctcacca gaggcgacag ctgtatgatg accagtttga tgagcttgtt tgactagctg 960

agaggaggtg catggccgcc gtcagctcgt accgtgaggc gtcctgttaa gtcaggcaac 1020

gagcgagacc cacgccctta gttaccagcg gattctagtg aatgccgggc acactagggg 1080

gaccgcctgt gataaatagg aggaaggagt ggacgacggt aggtccgtat gccccgaatc 1140

ctctgggcaa cacgcgggct acaatggatg agacaatggg ttccgacgcc gaaaggtgga 1200

ggtaatcctc taaacttatt cgtagttcgg attgaggact gtaactcgtt ctcatgaagc 1260

tggaatgcgt agtaatcgcg tgtcataatc gcgcggtgaa tacgtccctg ctccttggac 1320

acaccgcccg tcacg 1335

<210> 1221
<211> 1366
<212> DNA
<213> Methanobrevibacter wolinii

<220>
<221> modified_base
<222> (27)..(27)
<223> a, c, t, g, unknown or other

<400> 1221
agctactgct attgggattc gattaancca tacaagatga acgaactttt tggttcgtgg 60

cgtacggctc agtaacacgt ggataaccta cccttaggac tgggataact ccgggaaact 120

ggggataata ctggataggc aatttttcct gtaatggttt tttgtttaaa tgtttttttcg 180

cctaaggatg ggtctgcggc agattaggtt gttggttggg taatggctta ccaagcctat 240

aatctgtacg ggttgtgaga gcaagagccc ggagatggaa cctgagacaa ggttccaggc 300

cctacggggc gcagcaggcg cgaaacctcc gcaatgtgag aaatcgcgac ggggggatcc 360

caagtgctat tcttaacggg gtagcttttc ttaagtgtaa agagcttttg gaataagagc 420

tgggcaagac cggtgccagc cgccgcggta acaccggcag ctctagtggt agctgttttt 480

attgggcctg aagcgttcgt agccggtttg ataagtctct ggtgaaatct tgtagcttaa 540

ctgtgggaat tgctggagat actattaggc ttgagatcgg gagaggtcag aggtactcct 600

ggggtagggg tgaaatcctg taatcctagg aggaccacct gtggcgaagg cgtctgacta 660

gaacgattct gacggtgagg aacgaaagct aggggcgcga accggattag atacccgggt 720

agtcctagcc gtaaactatg cggacttggt gtgagggtgg ctttgagccg tcctggtgcc 780

gaagggaagc tgttaagtcc gccgcctggg aagtacggtc gcaagactga aacttaaagg 840

aattgtcggg ggagcaccac aacgcgtgga gcctgcggtt taattggatt caacgccgga 900

gatctcacca gcggcgacag cagtatgatt atcaggctga tgaccttatt tgacaagctg 960

agaggaggtg catggccgcc gtcatctcgt gccgtgaggc gtcctgttaa gtcaggcaac 1020

gagcgagacc cacgctctta gttaccagca tgttactttg gtaatgatgg ggacactaag 1080

gggaccgcca gtgataaatt ggaggaagga gtggacgacg gtaggtccgt atgccccgaa 1140

tccgctgggc tacacgcggg ctacaatggc agagacaatg ggttccgacg ctgaaaagcg 1200

gtggtaatct tttaaacttt gtcgtagttc ggattgaggg ctgtaactcg tcctcatgaa 1260

gctggaatgc gtagtaatcg cgtgtcataa tcgcgcggtg aatacgtccc tgctccttgg 1320

acacaccgac cgtcacgcca cccaaaaagg gcttggttga ggcttt 1366

<210> 1222
<211> 1261
<212> DNA
<213> Methanosphaera stadtmanae

<400> 1222
gctcagtaac acgtggataa cttaccctta ggaccgggat aactttggga aactgaagat 60

aatactggat attaggttat gcctggaatg gtttaccttt gaaatgtatt tttcgcctaa 120

ggatagatct gcggctgatt aggtcgttgg tggggtaatg gcccaccaag ccgatgatcg 180

gtacgggttg tgagagcaag agcccggaga tggaacctga gacaaggttc cagaccctac 240

ggggtgcagc aggcgcgaaa cctccgcaat gtacgcaagt gcgacggggg gatcccaagt 300

gttattctta acagaataac ttttcattag tgtaaaaagc ttttagaata agagctgggc 360

aagaccggtg ccagccgccg cggtaacacc ggcagctcaa gtggtagctg tttttattgg 420

gcctaaagcg ttcgtagccg gtttgataag tctttggtga aagcttgtag cttaactata 480

agaattgctg aagatactgt cagacttgaa gtcgggagag gttagaggta ctaccggggt 540

aggggtgaaa tcctataatc ctgggaggac cacctgtggc gaaggcgtct aactggaacg 600

atcttgacgg tgagtaacga aagccagggg cgcgaaccgg attagatacc cgggtagtcc 660

tggccgtaaa cgatgtggac ttggtgttgg aatggcctcg agttgttccg gtgccgaagg 720

gaagctgtta agtccaccgc ctgggaagta cggtcgcaag actgaaactt aaaggaattg 780

gcgggggagc accacaacgc gtggagcctg cggtttaatt ggattcaacg ccggacatct 840

caccaggagc gacagcagaa tgataatcag gttgatgacc ttatttgact agctgagagg 900

aggtgcatgg ccgccgtcag ctcgtactgt gaagcgtcct gttaagtcag gcaacgagcg 960

agacccacgc ccttagttac caacacaatc tctggattgg tgggcacact agggggaccg 1020

ccagtgataa actggaggaa ggagtggacg acggtaggtc cgtatgcccc gaatctcctg 1080

ggctacacgc gggctacaat ggctatggca atgggtttct gcactgaaaa gtgatggtaa 1140

tctcctaaac atagtcttag ttcggattga gggctgtaac tcgccctcat gaagctggaa 1200

tgcgtagtaa tcgcatgtca caaccgtgcg gtgaatacgt ccctgctcct tgcacacacc 1260

g 1261

<210> 1223
<211> 1347
<212> DNA
<213> Methylobacterium extorquens

<400> 1223
ccttagagtt tgatcctggc tcagagcgaa ctcttgcggc aggcttaaca catgcaagtc 60

gaacgggctt cttcggaagt cagtggcaga cgggtgagta acacgtggga acgtgccctt 120

cggttcggaa taactcaggg aaacttgagc taataccgga tacgcccttt tggggaaagg 180

ttgactgccg aaggatcggc ccgcgtctga ttagcttgtt ggtggggtaa cggcctacca 240

aggcgacgat cagtagctgg tctgagagga tgatcagcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtgggga atattggaca atgggcgcaa gcctgatcca 360

gccatgccgc gtgagtgatg aaggccttag ggttgtaaag ctcttttgtc cgggacgata 420

atgacggtac cggaagaata agccccggct aacttcgtgc cagcagccgc ggtaatacga 480

aggggctag cgttgctcgg aatcactggg cgtaaagggc gcgtaggcgg ccgattaagt 540

cgggggtgaa agcctgtggc tcaaccacag aattgccttc gatactggtt ggcttgagac 600

cggaagagga cagcggaact gcgagtgtag aggtgaaatt cgtagatatt cgcaagaaca 660

ccagtggcga aggcggctgt ctggtccggt tctgacgctg aggcgcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gccgtaaacg atgaatgcca gccgttggcc 780

tgcttgcagg tcagtggcgc cgctaacgca ttaagcattc cgcctgggga gtacggtcgc 840

aagattaaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 900

ttcgaagcaa cgcgcagaac cttaccatcc cttgacatgg catgttaccc cgagagatcg 960

gggatcctct tcggaggcgt gcacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1020

agatgttggg ttaagtcccg caacgagcgc aacccacgtc cttagttgcc atcattcagt 1080

tgggcactct agggagactg ccggtgataa gccgcgagga aggtgtggat gacgtcaagt 1140

cctcatggcc cttacgggat gggctacaca cgtgctacaa tggcggtgac agagggacgc 1200

gaaaccgcga ggttgagcaa atccccaaaa gccgtctcag ttcggattgc actctgcaac 1260

tcgggtgcat gaaggcggaa tcgctagtaa tcgtggatca gcacgccacg gtgaatacgt 1320

tcccgggcct tgcaaaaacc gcccgtc 1347

<210> 1224
<211> 1335
<212> DNA
<213> Methylobacterium podarium

<400> 1224
tgagtttgat catggctcag agcgaacgct ggcggcaggc ttaacacatg caagtcgaac 60

gagtggcaga cgggtgagta acacgtggga acgtgccctt cggttcggaa taactcaggg 120

aaacttgagc taataccgga tacggaaagc tgccgaagga tcggcccgcg tctgattagc 180

ttgttggtgg ggtaacggcc taccaaggcg acgatcagta gctggtctga gaggatgatc 240

agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

ggacaatggg cgcaagcctg atccagccat gccgcgtgag tgatgaaggc cttagggttg 360

taaagctctt ttgtccggga cgatgacggt accggaagaa taagccccgg ctaacttcgt 420

gccagcagcc gcggtaatac gaaggggct agcgttgctc ggaatcactg ggcgtaaagg 480

gcgcgtaggc ggccgattaa gtcgggggtg aaagcctgtg gctcaaccac agaattgcct 540

tcgatactgg ttggcttgag accggaagag gacagcggaa ctgcgagtgt agaggtgaaa 600

ttcgtagata ttcgcaagaa caccagtggc gaaggcggct gtctggtccg tctgacgctg 660

aggcgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgaatgcca gccgttggtc ggtcagtggc gccgctaacg cattaagcat tccgcctggg 780

gagtacggtc gcaagattaa aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgcaga accttaccat cccttgccat gcacaggtgc 900

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccacgtcct tagttgccat catgggcact ctagggagac tgccggtgat aagccggagg 1020

aaggtgtgga tgacgtcaag tcctcatggc ccttacggga tgggctacac acgtgctaca 1080

atggcggtca gagggaggcg aaggggcgac ctggagcaaa tcccggccgt ctcagttcgg 1140

atgcactctg caactcgggt gcagaaggcg gaatcgctag taatcgtgga tcagcacgcc 1200

acggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatggg agttggtctt 1260

acccgacggc gctcgccagg caggcgacca cggtagggtc agcgactggg gtgaagtcgt 1320

aacaaggtaa ccgta 1335

<210> 1225
<211> 1516
<212> DNA
<213> Methylobacterium radiotolerans

<400> 1225
agagtttgat cctggctcag gctggaacac ctcctcagag tttgatcatg gctcagagcg 60

aacgctggcg gcaggcttaa cacatgcaag tcgagcgggc ccttcggggt cagcggcgga 120

cgggtgagta acgcgtggga acgtgccttc tggttcggaa taaccctggg aaactagggc 180

taataccgga tacgcccttt ttggggaaag gtttactgcc ggaagatcgg cccgcgtctg 240

attagcttgt tggtggggta acggcctacc aaggcgacga tcagtagctg gtctgagagg 300

atgatcagcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 360

aatattggac aatgggcgca agcctgatcc agccatgccg cgtgagtgat gaaggcctta 420

gggttgtaaa gctcttttat ccgggacgat aatgacggta ccggaggaat aagccccggc 480

taacttcgtg ccagcagccg cggtaatacg aaggggggcta gcgttgctcg gaatcactgg 540

gcgtaaaggg cgcgtaggcg gcgttttaag tcgggggtga aagcctgtgg ctcaaccaca 600

gaatggcctt cgatactggg acgcttgagt atggtagagg ttggtggaac tgcgagtgta 660

gaggtgaaat tcgtagatat tcgcaagaac accggtggcg aaggcggcca actggaccat 720

tactgacgct gaggcgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgccgtaaac gatgaatgcc agctgttggg gtgcttgcac cgcagtagcg cagctaacgc 840

tttgagcatt ccgcctgggg agtacggtcg caagattaaa actcaaagga attgacgggg 900

gcccgcacaa gcggtggagc atgtggttta attcgaagca acgcgcagaa ccttaccatc 960

ctttgacatg gcgtgttacc cagagagatt tggggtccac ttcggtggcg cgcacacagg 1020

tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccacgt ccttagttgc catcattcag ttgggcactc tagggagact gccggtgata 1140

agccgcgagg aaggtgtgga tgacgtcaag tcctcatggc ccttacggga tgggctacac 1200

acgtgctaca atggcggtga cagtgggagg cgaaggagcg atctggagca aatccccaaa 1260

agccgtctca gttcggattg cactctgcaa ctcgagtgca tgaaggcgga atcgctagta 1320

atcgtggatc agcatgccac ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgggag ttggtcttac ccgacggcgc tgcgccaacc gcgaggaggc aggcgaccac 1440

ggtagggtca gcgactgggg tgaagtcgta acaaggtagc cgtaggggaa cctgcggctg 1500

gatcacctcc ttagag 1516

<210> 1226
<211> 1334
<212> DNA
<213> Methylobacterium sp. 1sub

<400> 1226
gagtttgatc ctggctcaga gcgaacgctg gcggcaggct taacacatgc aagtcgaacg 60

agtggcagac gggtgagtaa cacgtgggaa cgtgcccttc ggttcggaat aactcaggga 120

aacttgagct aataccggat acggaaagct gccgaaggat cggcccgcgt ctgattagct 180

tgttggtggg gtaacggcct accaaggcga cgatcagtag ctggtctgag aggatgatca 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg 300

gacaatgggc gcaagcctga tccagccatg ccgcgtgagt gatgaaggcc ttagggttgt 360

aaagctcttt tgtccgggac gatgacggta ccggaagaat aagccccggc taacttcgtg 420

ccagcagccg cggtaatacg aaggggggcta gcgttgctcg gaatcactgg gcgtaaaggg 480

cgcgtaggcg gccgattaag tcgggggtga aagcctgtgg ctcaaccaca gaattgcctt 540

cgatactggt tggcttgaga ccggaagggg acagcggaac tgcgagtgta gaggtgaaat 600

tcgtagatat tcgcaagaac accagtggcg aaggcggctg tctggtccgt ctgacgctga 660

ggcgcgaaag cgtggggagc aaacgggatt agataccctg gtagtccacg ccgtaaacga 720

tgaatgccag ccgctggccg gtcagtggcg ccgctaacgc attaagcatt ccgcctgggg 780

agtacggtcg caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgcagaa ccttaccatc ccttgacatg cacaggtgct 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccacgtcctt agttgccatc atgggcactc tagggagact gccggtgata agccggagga 1020

aggtgtggat gacgtcaagt cctcatggcc cttacgggat gggctacaca cgtgctacaa 1080

tggcggtcag tgggacgcga aaccgcgagg ttgagcaaat ccccgccgtc tcagttcgga 1140

tgcactctgc aactcgggtg cagaaggcgg aatcgctagt aatcgtggat cagcacgcca 1200

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga gttggtctta 1260

cccgacggcg ctcgccaggc aggcgaccac ggtagggtca gcgactgggg tgaagtcgta 1320

acaaggtaac cgta 1334

<210> 1227
<211> 1334
<212> DNA
<213> Methylobacterium sp. MM4

<400> 1227
gagtttgatc atggctcaga gcgaacgctg gcggcaggct taacacatgc aagtcgaacg 60

agtggcagac gggtgagtaa cacgtgggaa cgtgcccttc ggttcggaat aactcaggga 120

aacttgagct aataccggat acggaaagct gccgaaggat cggcccgcgt ctgattagct 180

tgttggtggg gtaacggcct accaaggcga cgatcagtag ctggtctgag aggatgatca 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg 300

gacaatgggc gcaagcctga tccagccatg ccgcgtgagt gatgaaggcc ttagggttgt 360

aaagctcttt tgtccgggac gatgacggta ccggaagaat aagccccggc taacttcgtg 420

ccagcagccg cggtaatacg aaggggggcta gcgttgctcg gaatcactgg gcgtaaaggg 480

cgcgtaggcg gccgattaag tcgggggtga aagcctgtgg ctcaaccaca gaattgcctt 540

cgatactggt tggcttgaga ccggaagagg acagcggaac tgcgagtgta gaggtgaaat 600

tcgtagatat tcgcaagaac accagtggcg aaggcggctg tctggtccgt ctgacgctga 660

ggcgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 720

tgaatgccag ccgttggccg gtcagtggcg ccgctaacgc attaagcatt ccgcctgggg 780

agtacggtcg caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgcagaa ccttaccatc ccttgacatg cacaggtgct 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccacgtcctt agttgccatc atgggcactc tagggagact gccggtgata agccggagga 1020

aggtgtggat gacgtcaagt cctcatggcc cttacgggat gggctacaca cgtgctacaa 1080

tggcggtcag tgggacgcga aaccgcgagg ttgagcgaat ccccgccgtc tcagttcgga 1140

tgcactctgc aactcgggtg cagaaggcgg aatcgctagt aatcgtggat cagcacgcca 1200

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga gttggtctta 1260

cccgacggcg ctcgccaggc aggcgaccac ggtagggtca gcgactgggg tgaagtcgta 1320

acaaggtaac cgta 1334

<210> 1228
<211> 1475
<212> DNA
<213> Methylocella silvestris

<400> 1228
agagtttgat cctggctcag aacgaacgct ggcggcaggc ctaacacatg caagtcgaac 60

gctgtagcaa tacagagtgg cagacgggtg agtaacacgt gggaacatac ccttcggttc 120

ggaacaactc agggaaactt gagctaatac cggatacgcc ctttggggga aagatttatc 180

gccgaaggat tggcccgcgt ctgattagct agttggcggg gtaatggccc accaaggcga 240

cgatcagtag ctggtctgag aggatgatca gccacattgg gactgagaca cggcccaaac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggc gcaagcctga tccagccatg 360

ccgcgtgagt gatgaaggcc ttagggttgt aaagctcttt tacctgggaa gataatgacg 420

gtaccaggag aataagcccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg 480

ctagcgttgt tcggatttac tgggcgtaaa gcgcacgtag gcggatcttt aagtcagggg 540

tgaaatcccg gggctcaacc tcggaactgc ctttgatact ggggatctcg agtccgggag 600

aggtgagcgg aactgcgagt gtagaggtga aattcgtaga tattcgcaag aacaccagtg 660

gcgaaggcgg ctcactggcc cggtactgac gctgaggtgc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatggat gctagccgtt aggcagcttg 780

ctgcttagtg gcgcagttaa cgctttaagc atcccgcctg gggagtacgg tcgcaagatt 840

aaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa 900

gcaacgcgca gaaccttacc agctcttgac atgtccggtt tggtttccag agatggattc 960

cttcagttag gctggccgga acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgca acgagcgcaa ccctcgccct tagttgccat catttagttg 1080

ggcactctag ggggactgcc ggtgataagc cgagaggaag gtggggatga cgtcaagtcc 1140

tcatggccct tacgggctgg gctacacacg tgctacaatg gcggtgacag tgggatgcta 1200

aggggcgacc cctcgcaaat ctcaaaaagc cgtctcagtt cggattgcgc tctgcaactc 1260

gagcgcatga aggtggaatc gctagtaatc gtagatcaga acgctacggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc atgggagttg gttctacccg aaggcgtttt 1380

cttaaccgca aggagagagg cgaccacggt agggtcagcg actggggtga agtcgtaaca 1440

aggtagccgt aggggaacct gcggctggat cacct 1475

<210> 1229
<211> 1351
<212> DNA
<213> Methylophilus sp. ECd5

<220>
<221> modified_base
<222> (77)..(77)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1012)..(1012)
<223> a, c, t, g, unknown or other

<400> 1229
tggcggaatg ctttacacat gcaagtcgaa cggcagcacg ggagcttgct cctggtggcg 60

agtggcgaac gggtgantaa tatatcggaa cgtatccaat aatgggggat aactaatcga 120

aaggttggct aataccgcat acgccctacg ggggaaagct agggaccttc gggcctggcg 180

ttaatggagc ggccgatatc tgattagcta gttggtgagg taaaagctca ccaaggcgac 240

gatcagtagc tggtctgaga ggacgaccag ccacactgga actgagacac ggtccagact 300

cctacgggag gcagcagtgg ggaattttgg acaatgggcg caagcctgat ccagccattc 360

cgcgtgagtg aagaaggcct tcgggttgta aagctctttc gcaagggaag aaagattatc 420

ctctaacata ggatgattat gacggtacct tgataagaag caccggctaa ctacgtgcca 480

gcagccgcgg taatacgtag ggtgcgagcg ttaatcggaa ttactgggcg taaagcgtgc 540

gcaggctgtt ttgtaagtca gatgtgaaat ccctgagctc aacttaggaa ctgcgtttga 600

aactacaaga ctagaatatg tcagaggggg gtagaattcc acgtgtagca gtgaaatgcg 660

tagagatgtg gaggaatacc aatggcgaag gcagcccccc gggataatat tgacgctcat 720

gcacgaaagc gtggggagca accaggatta gatacctggt agtccacgcc ctaaacgatg 780

tttactagtt gttggtggag taaaatccat gagtaacgca gctaacgcgt gaagtagacc 840

gcctggggag tacggtcgca agattaaaac tcaaaggaat tgacgggggc ccgcacaagc 900

ggtggattat gtggattaat tcgatgcaac gcgaaaaacc ttacctggcc ttgacatgcc 960

actaacgaag cagagatgca ttaggtgctc gaaagagaaa gtggacacag gngctgcatg 1020

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 1080

ccaataattg ccatcattta gttgggcact ttattgggac tgccggtgac aaaccggagg 1140

aaggtgggga tgacgtcaag tcctcatggc ccttatggcc agggcttcac acgtaataca 1200

atggtcggta cagagagttg ccaacccgcg agggggagcc aatctcagaa agccgatcgt 1260

agtccggatt gcaggctgca actcgcctgc atgaagtcgg aatcgctagt aatcgcggat 1320

cagcatgtcg cggtgaatac gttcccgggc c 1351

<210> 1230
<211> 1472
<212> DNA
<213> Microbacterium chocolatum

<220>
<221> modified_base
<222> (176)..(179)
<223> a, c, t, g, unknown or other

<400> 1230
tgcttacaac atgcaagtcg aacggtgaag ccaagattgc ttggtggatc agtggcgaac 60

gggtgagtaa cacgtgagca kcctgccctg aactctggga taagcgctgg aaacggcgtc 120

taatactgga tatgagctgc ggaggcatct tcgtggttgg aaagattttt cggttnnnna 180

tgggctcgcg gcctatcagc ttgttggtga ggtaatggct caccaaggcg tcgacgggta 240

gccggcctga gagggtgacc ggccacactg ggactgagac acggcccaga ctctacggga 300

ggcagcagtg gggaatattg cacaatgggc ggaagcttga tgcagcaacg ccgcgtgagg 360

gatgacggct tcgggttgta aacctctttt agcagggaag aagcgaaagt gacggtacct 420

gcagaaaaag cgccggctaa ctacgtgcca gcagccgcgg taatacgtag ggcgcaaccg 480

ttatccggaa ttattgggcg taaagagctc gtaggcggtt tgtcgcgtct gctgtgaaat 540

cccgaggctc aacctcgggt gtgcagtggg tacgggcaga ctagagtgcg gtaggggaga 600

ttggaattcc tggtgtagcg gtggaatgcg cagatatcag gaggaacacc gatggcgaag 660

gcagatctct gggccgtaac tgacgctgag gagcgaaagg gtggggagca aagaggctta 720

gataccctgg tagtccaccc cgtaaacgtt gggaactagt tgtggggtcc attcctcgga 780

ttccgtgacg cagctaacgc attaagttcc ccgcctgggg agtacggccg caaggctaaa 840

actcaaagga attgacgggg acccgcacaa gcggcggagc atgcggatta attcgatgca 900

acgcgaagaa ccttaccaag gcttgacata cacgagaacg ctgcagaaat gtagaactct 960

ttggacactc gtgaacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1020

ttaagtcccg caacgagcgc aaccctcgtt ctatgttgcc agcacgtaat ggtgggaact 1080

catgggatac tgccggggtc aactcggagg aaggtggggt agacgtcaaa tcatcatgcc 1140

ccttatgtct tgggcttcac gcatgctaca atggccggta caaagggctg caataccgcg 1200

aggtggagcg aatcccaaaa agccggtccc agttcggatt gaggtctgca actcgacctc 1260

atgaagtcgg agtcgctagt aatcgcagat cagcaacgct gcggtgaata cgttcccggg 1320

tcttgtacac accgcccgtc aagtcatgaa agtcggtaac acctgaagcc ggtggcccaa 1380

cccttgtgga gggagccgtc gaaggtggga tcggtaatta ggactaagtc gtaacaaggt 1440

agccgtaccg gaaggtgcgc tggatcacct cc 1472

<210> 1231
<211> 1475
<212> DNA
<213> Microbacterium flavescens

<400> 1231
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtgaagcag agcttgctct 60

gtggatcagt ggcgaacggg tgagtaacac gtgagcaacc tgccccggac tctgggataa 120

gcgctggaaa cggcgtctaa tactggatat gaatcgcgac cgcatggtca gtggttggaa 180

agatttttcg gtctgggatg ggctcgcggc ctatcagctt gttggtgagg taatggctca 240

ccaaggcgtc gacgggtagc cggcctgaga gggtgaccgg ccacactggg actgagacac 300

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg gaagcctgat 360

gcagcaacgc cgcgtgaggg acgacggcct tcgggttgta aacctctttt agcaaggaag 420

aagcgaaagt gacggtactt gcagaaaaag cgccggctaa ctacgtgcca gcagccgcgg 480

taatacgtag ggcgcaagcg ttatccggaa ttattgggcg taaagagctc gtaggcggtt 540

tgtcgcgtct gctgtgaaaa cccgaggctc aacctcgggc ctgcagtggg tacgggcaga 600

ctagagtgcg gtaggggaga ttggaattcc tggtgtagcg gtggaatgcg cagatatcag 660

gaggaacacc gatggcgaag gcagatctct gggccgtaac tgacgctgag gagcgaaagg 720

gtggggagca aacaggctta gataccctgg tagtccaccc cgtaaacgtt gggaactagt 780

tgtggggtcc attccacgga ttccgtgacg cagctaacgc attaagttcc ccgcctgggg 840

agtacggccg caaggctaaa actcaaagga attgacgggg acccgcacaa gcggcggagc 900

atgcggatta attcgatgca acgcgaagaa ccttaccaag gcttgacata cacgagaacg 960

ctgcagaaat gtagaactct ttggacactc gtgaacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccctcgtt ctatgttgcc 1080

agcacgtaat ggtgggaact catgggatac tgccggggtc aactcggagg aaggtgggga 1140

tgacgtcaaa tcatcatgcc ccttatgtct tgggcttcac gcatgctaca atggccggta 1200

caaagggctg caataccgta aggtggagcg aatcccaaaa agccggtccc agttcggatt 1260

gaggtctgca actcgacctc atgaagtcgg agtcgctagt aatcgcagat cagcaacgct 1320

gcggtgaata cgttcccggg tcttgtacac accgcccgtc aagtcatgaa agtcggtaac 1380

acctgaagcc ggtggcccaa cccttgtgga gggagccgtc gaaggtggga tcggtaatta 1440

ggactaagtc gtaacaaggt agccgtaccg gaagg 1475

<210> 1232
<211> 1317
<212> DNA
<213> Microbacterium gubbeenense

<220>
<221> modified_base
<222> (71)..(71)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (98)..(98)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (132)..(132)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (188)..(188)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (197)..(197)
<223> a, c, t, g, unknown or other

<400> 1232
acagttggaa acagctgcta ataccggata cgcacgagaa ccgcatggtt actcgtggga 60

aagatttttc ngttcgggag gggctcgcgt cctatcanct tgttggtgag gtagtggctc 120

accaaggcgt cnacgggtag ccggcctgag agggtgaccg gccacactgg gactgagaca 180

cggcccanac tcctacngga ggcagcagtg gggaatattg cacaatgggc gcaagcctga 240

tgcagcaacg ccgcgtgagg gacgacggcc ttcgggttgt aaacctcttt tagttgggaa 300

gaagccttcg ggtgacggta ccttcagaaa aagcaccggc taactacgtg ccagcagccg 360

cggtaatacg tagggtgcaa gcgttatccg gaattattgg gcgtaaagag ctcgtaggcg 420

gtttgtcacg tctgctgtga aaactggagg ctcaacttcc agcttgcagt gggtacgggc 480

agacttgagt gcggtagggg agattggaat tcctggtgta gcggtggaat gcgcagatat 540

caggaggaac accgatggcg aaggcagatc tctgggcccg taactgacgc tgaggagcga 600

aagagtgggg agcaaacagg cttagatacc ctggtagtcc actccgtaaa cgttgggaac 660

tagttgtggg ggcctttcta cggtctccgt gacgcagcta acgcattaag ttccccgcct 720

ggggagtacg gccgcaaggc taaaactcaa aggaattgac ggggacccgc acaagcggcg 780

gagcatgcgg attaattcga tgcaacgcga agaaccttac caaggcttga catataccgg 840

aaacggcttg gaaacagtcg ccccccttgtg gtcggtatac aggtggtgca tggttgtcgt 900

cagctcgtgt cgtgagatgt tgggttaaag tcccgcaacg agcgcaaccc tcgttctatg 960

ttgccagcac gttatggtgg gaactcatgg aatactgccg gggtcaactc ggaggaaggt 1020

ggggatgacg tcaaatcatc atgcccctta tgtcttgggc ttcacgcatg ctacaatggc 1080

cggtacaatg ggctgcgata ccgtgaggtg gagcgaatcc caaaaagccg gtcccagttc 1140

ggattgtagt ctgcaactcg actacatgaa gtcggagtcg ctagtaatcg cagatcagca 1200

acgctgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcaagtc atgaaagtcg 1260

gtaacacctg aagccggtgg cctaacccct tgtgggaggg agctgtcgaa ggtggga 1317

<210> 1233
<211> 1479
<212> DNA
<213> Microbacterium lacticum

<400> 1233
tttgcaaagc gtttgtggcg tgcttaacac atgcatatcg aacggtgaag gcggagcttg 60

ctctgctgga tcagtggcga acgggtgagt aacacgtgag caatctgccc ctgactctgg 120

gataagcgct ggaaacggcg tctaatactg gatacgagct gcgaaggcat cttcagcagc 180

tggaaagaay ttcggtcagg gatgagctcg cggcctatca gcttgttggt gaggtaacgg 240

ctcaccaagg cgtcgacggg tagccggcct gagagggtga ccggccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgaaagcc 360

tgatgcagca acgccgcgtg agggacgacg gccttcgggt tgtaaacctc ttttagcagg 420

gaagaagcga aagtgacggt acctgcagaa aaagcgccgg ctaactacgt gccagcagcc 480

gcggtaatac gtagggcgca agcgttatcc ggaattattg ggcgtaaaga gctcgtaggc 540

ggtttgtcgc gtctgctgtg aaaccccgag gctcaacctc gggcctgcag tgggtacggg 600

cagactagag tgcggtagrg gagattggaa ttcctggtgt agcggtggaa tgcgcagata 660

tcaggaggaa caccgatggc gaaggcagat ctctgggccg taactgacgc tgaggagcga 720

aagggtgggg agcaaacagg cttagatacc ctggtagtcc accccgtaaa cgttgggaac 780

tagttgtggg gtccattcca cggattccgt gacgcagcta acgcattaag ttccccgcct 840

ggggagtacg gccgcaaggc taaaactcaa aggaattgac ggggacccgc acaagcggcg 900

gagcatgcgg attaattcga tgcaacgcga agaaccttac caaggcttga catatacgag 960

aacgggccag aaatggtcaa ctctttggac actcgtaaac aggtggtgca tggttgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct cgttctatgt 1080

tgccagcacg tcatggtggg aactcatgga atactgccgg ggtcaactcg gaggaaggtg 1140

aggatgacgt caaatcatca tgccccttat gtcttgggct tcacgcatgc tacaatggcc 1200

ggtacaatgg gctgcaatac cgcaaggtgg agcgaatccc aaaaagccgg tcccagttcg 1260

gattgaggtc tgcaactcga cctcatgaag tcggagtcgc tagtaatcgc agatcagcaa 1320

cgctgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcaagtca tgaaagtcgg 1380

taacacctga agccggtggc ccaacccttg tggagggagc cgtcgaaggt gggatcggta 1440

attaggacta agtcgtaaca aggtagccgt accggaagg 1479

<210> 1234
<211> 1475
<212> DNA
<213> Microbacterium oleivorans

<400> 1234
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtgaagcag agcttgctct 60

gtggatcagt ggcgaacggg tgagtaacac gtgagcaacc tgcccctgac tctgggataa 120

gcgctggaaa cggcgtctaa tactggatat gagctgcgac cgcatggtca gcagttggaa 180

agatttttcg gtctgggatg ggctcacggc ctatcagctt gttggtgagg taatggctca 240

ccaaggcgtc gacgggtagc cggcctgaga gggtgaccgg ccacactggg actgagacac 300

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg aaagcctgat 360

gcagcaacgc cgcgtgaggg atgacggcct tcgggttgta aacctctttt agcagggaag 420

aagcgaaagt gacggtacct gcagaaaaag cgccggctaa ctacgtgcca gcagccgcgg 480

taatacgtag ggcgcaagcg ttatccggaa ttattgggcg taaagagctc gtaggcggtt 540

tgtcgcgtct gctgtgaaat cccgaggctc aacctcgggt ctgcagtggg tacgggcaga 600

ctagagtgcg gtaggggaga ttggaattcc tggtgtagcg gtggaatgcg cagatatcag 660

gaggaacacc gatggcgaag gcagatctct gggccgttac tgacgctgag gagcgaaagg 720

gtggggagca aacaggctta gataccctgg tagtccaccc cgtaaacgtt gggaactagt 780

tgtggggtcc attccacgga ttccgtgacg cagctaacgc attaagttcc ccgcctgggg 840

agtacggccg caaggctaaa actcaaagga attgacgggg acccgcacaa gcggcggagc 900

atgcggatta attcgatgca acgcgaagaa ccttaccaag gcttgacata tacgagaacg 960

ggccagaaat ggtcaactct ttggacactc gtaaacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccctcgtt ctatgttgcc 1080

agcacgtaat ggtgggaact catgggatac tgccggggtc aactcggagg aaggtgggga 1140

tgacgtcaaa tcatcatgcc ccttatgtct tgggcttcac gcatgctaca atggccggta 1200

caaagggctg caataccgtg aggtggagcg aatcccaaaa agccggtccc agttcggatt 1260

gaggtctgca actcgacctc atgaagtcgg agtcgctagt aatcgcagat cagcaacgct 1320

gcggtgaata cgttcccggg tcttgtacac accgcccgtc aagtcatgaa agtcggtaac 1380

acctgaagcc ggtggcccaa cccttgtgga gggagccgtc gaaggtggga ttggtaatta 1440

ggactaagtc gtaacaaggt agccgtaccg gaagg 1475

<210> 1235
<211> 1467
<212> DNA
<213> Microbacterium oxydans

<400> 1235
tggcggcgtg cttaacacat gcaagtcgaa cggtgaacac ggagcttgct ctgtgggatc 60

agtggcgaac gggtgagtaa cacgtgagca acctgcccct gactctggga taagcgctgg 120

aaacggcgtc taatactgga tatgtgacgt gaccgcatgg tctgcgtctg gaaagaattt 180

cggttgggga tgggctcgcg gcctatcagc ttgttggtga ggtaatggct caccaaggcg 240

tcgacgggta gccggcctga gagggtgacc ggccacactg ggactgagac acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgcaagcctg atgcagcaac 360

gccgcgtgag ggacgacggc cttcgggttg taaacctctt ttagcaggga agaagcgaaa 420

gtgacggtac ctgcagaaaa agcgccggct aactacgtgc cagcagccgc ggtaatacgt 480

agggcgcaag cgttatccgg aattattggg cgtaaagagc tcgtaggcgg tttgtcgcgt 540

ctgctgtgaa atccggaggc tcaacctccg gcctgcagtg ggtacgggca gactagagtg 600

cggtagggga gattggaatt cctggtgtag cggtggaatg cgcagatatc aggaggaaca 660

ccgatggcga aggcagatct ctgggccgta actgacgctg aggagcgaaa gggtggggag 720

caaacaggct tagataccct ggtagtccac cccgtaaacg ttgggaacta gttgtggggt 780

ccattccacg gattccgtga cgcagctaac gcattaagtt ccccgcctgg ggagtacggc 840

cgcaaggcta aaactcaaag gaattgacgg ggacccgcac aagcggcgga gcatgcggat 900

taattcgatg caacgcgaag aaccttacca aggcttgaca tatacgagaa cgggccagaa 960

atggtcaact ctttggacac tcgtaaacag gtggtgcatg gttgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg ttctatgttg ccagcacgta 1080

atggtgggaa ctcatgggat actgccgggg tcaactcgga ggaaggtggg gatgacgtca 1140

aatcatcatg ccccttatgt cttgggcttc acgcatgcta caatggccgg tacaaagggc 1200

tgcaataccg cgaggtggag cgaatcccaa aaagccggtc ccagttcgga ttgaggtctg 1260

caactcgacc tcatgaagtc ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa 1320

tacgttcccg ggtcttgtac acaccgcccg tcaagtcatg aaagtcggta acacctgaag 1380

ccggtggcct aacccttgtg gagggagccg tcgaaggtgg gatcggtaat taggactaag 1440

tcgtaacaag gtagccgtac cggaagg 1467

<210> 1236
<211> 1490
<212> DNA
<213> Microbacterium paraoxydans

<400> 1236
tagagtttga tcctggctca ggatgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cggtgaacac ggagcttgct ctgtgggatc agtggcgaac gggtgagtaa cacgtgagca 120

acctgcccct gactctggga taagcgctgg aaacggcgtc taatactgga tatgtgacgt 180

gaccgcatgg tctgcgtttg gaaagatttt tcggttgggg aggggctcgc ggcctatcag 240

cttgttggtg aggtaatggc tcaccaaggc gtcgacgggt agccggcctg agagggtgac 300

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgaaagcct gatgcagcaa cgccgcgtga gggatgacgg ccttcgggtt 420

gtaaacctct tttagcaggg aagaagcgaa agtgacggta cctgcagaaa aagcgccggc 480

taactacgtg ccagcagccg cggtaatacg tagggcgcaa gcgttatccg gaattattgg 540

gcgtaaagag ctcgtaggcg gtttgtcgcg tctgctgtga aatcccgagg ctcaacctcg 600

ggcctgcagt gggtacgggc agactagagt gcggtagggg agattggaat tcctggtgta 660

gcggtggaat gcgcagatat caggaggaac accgatggcg aaggcagatc tctgggccgt 720

aactgacgct gaggagcgaa agggtgggga gcaaacaggc ttagataccc tggtagtcca 780

ccccgtaaac gttgggaact agttgtgggg tccattccac ggattccgtg acgcagctaa 840

cgcattaagt tccccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg 900

gggacccgca caagcggcgg agcatgcgga ttaattcgat gcaacgcgaa gaaccttacc 960

aaggcttgac atatacgaga acgggccaga aatggtcaac tctttggaca ctcgtaaaca 1020

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctc gttctatgtt gccagcacgt aatggtggga actcatggga tactgccggg 1140

gtcaactcgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg tcttgggctt 1200

cacgcatgct acaatggccg gtacaaaggg ctgcaatacc gtgaggtgga gcgaatccca 1260

aaaagccggt cccagttcgg attgaggtct gcaactcgac ctcatgaagt cggagtcgct 1320

agtaatcgca gatcagcaac gctgcggtga atacgttccc gggtcttgta cacaccgccc 1380

gtcaagtcat gaaagtcggt aacacctgaa gccggtggcc taacccttgt ggagggagct 1440

gtcgaaggtg ggatcggtaa ttaggactaa gtcgtaacaa ggtagccgta 1490

<210> 1237
<211> 1474
<212> DNA
<213> Microbacterium phyllosphaerae

<400> 1237
gctgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtgaagccc agcttgctgg 60

gtggatcagt ggcgaacggg tgagtaacac gtgagcaatc tgcccctgac tctgggataa 120

gcgctggaaa cggcgtctaa tactggatac gaacagcgac cgcatggtca gttgttggaa 180

agaatttcgg tcagggatga gctcgcggcc tatcagcttg ttggtgaggt aatggctcac 240

caaggcgtcg acgggtagcc ggcctgagag ggtgaccggc cacactggga ctgagacacg 300

gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcgc aagcctgatg 360

cagcaacgcc gcgtgaggga cgacggcctt cgggttgtaa acctctttta gcagggaaga 420

agcgaaagtg acggtacctg cagaaaaagc gccggctaac tacgtgccag cagccgcggt 480

aatacgtagg gcgcaagcgt tatccggaat tattgggcgt aaagagctcg taggcggttt 540

gtcgcgtctg ctgtgaaatc ccgaggctca acctcgggtc tgcagtgggt acgggcagac 600

tagagtgcgg taggggagat tggaattcct ggtgtagcgg tggaatgcgc agatatcagg 660

aggaacaccg atggcgaagg cagatctctg ggccgtaact gacgctgagg agcgaaaggg 720

tggggagcaa acaggcttag ataccctggt agtccacccc gtaaacgttg ggaactagtt 780

gtggggtcca ttccacggat tccgtgacgc agctaacgca ttaagttccc cgcctgggga 840

gtacggccgc aaggctaaaa ctcaaaggaa ttgacgggga cccgcacaag cggcggagca 900

tgcggattaa ttcgatgcaa cgcgaagaac cttaccaagg cttgacatat acgagaacgg 960

gccagaaatg gtcaactctt tggacactcg taaacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgttc tatgttgcca 1080

gcacgtaatg gtgggaactc atgggatact gccggggtca actcggagga aggtggggat 1140

gacgtcaaat catcatgccc cttatgtctt gggcttcacg catgctacaa tggccggtac 1200

aaagggctgc aataccgtaa ggtggagcga atcccaaaaa gccggtccca gttcggattg 1260

aggtctgcaa ctcgacctca tgaagtcgga gtcgctagta atcgcagatc agcaacgctg 1320

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca agtcatgaaa gtcggtaaca 1380

cctgaagccg gtggcctaac ccttgtggag ggagccgtcg aaggtgggat cggtaattag 1440

gactaagtcg taacaaggta gccgtaccgg aagg 1474

<210> 1238
<211> 1460
<212> DNA
<213> Microbacterium schleiferi

<400> 1238
tggcggcgtg cttaacacat gcaagtcgaa cggtgaagca gagcttgctc tgtggatcag 60

tggcgaacgg gtgagtaaca cgtgagcaat ctgcccctga ctctgggata agcgctggaa 120

acggcgtcta ataccggata cgagctgcga aggcatcttc agcagctgga aagaatttcg 180

gtcagggatg agctcgcggc ctatcagctt gttggtgagg taacggctca ccaagccgtc 240

gacgggtagc cggcctgaga gggtgaccgg ccacactggg actgagacac ggcccagact 300

cctacgggag gcagcagtgg ggaatattgc acaatgggcg aaagcctgat gcagcaacgc 360

cgcgtgaggg acgacggcct tcgggttgta aacctctttt agcaggaaag aagcgaaagt 420

gacggtacct gcagaaaaag cgccggctaa ctacgtgcca gcagccgcgg taatacgtag 480

ggcgcaagcg ttatccggaa ttattgggcg taaagagctc gtaggcggtc tgtcgcgtct 540

gctgtgaaaa cccgaggctc aacctcgggc ctgcagtggg tacgggcaga ctagagtgcg 600

gtaggggaga ttggaattcc tggtgtagcg gtggaatgcg cagatatcag gaggaacacc 660

gatggcgaag gcagatctct gggccgtaac tgacgctgag gagcgaaagg gtggggagca 720

aacaggctta gataccctgg tagtccaccc cgtaaacgtt gggaactagt tgtggggtcc 780

attccacgga ttccgtgacg cagctaacgc attaagttcc ccgcctgggg agtacggccg 840

caaggctaaa actcaaagga attgacgggg acccgcacaa gcggcggagc atgcggatta 900

attcgatgca acgcgaagaa ccttaccaag gcttgacata tacgagaacg ggccagaaat 960

ggtcaactct ttggacactc gtaaacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1020

agatgttggg ttaagtcccg caacgagcgc aaccctcgtt ctatgttgcc agcacgtaat 1080

ggtgggaact catgggatac tgccggggtc aactcggagg aaggtgggga tgacgtcaaa 1140

tcatcatgcc ccttatgtct tgggcttcac gcatgctaca atggccggta caaagggctg 1200

caataccgcg aggtggagcg aatcccaaaa agccggtccc agttcggatt gaggtctgca 1260

actcgacctc atgaagtcgg agtcgctagt aatcgcagat cagcaacgct gcggtgaata 1320

cgttcccggg tcttgtacac accgcccgtc aagtcatgaa agtcggtaac acctgaagcc 1380

ggtggcccaa cccttgtgga gggagccgtc gaaggtggga tcggtaatta ggactaagtc 1440

gtaacaaggt agccgtaccg 1460

<210> 1239
<211> 1475
<212> DNA
<213> Microbacterium sp. 768

<400> 1239
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtgaagccc agcttgctgg 60

gtggatcagt ggcgaacggg tgagtaacac gtgagcaacc tgcccctgac tctgggataa 120

gcgctggaaa cggcgtctaa tactggatac gaaccacagt cgcatggctc gtggttggaa 180

agatttttg gttggggatg ggctcgcggc ctatcagctt gttggtgagg taatggctca 240

ccaaggcgtc gacgggtagc cggcctgaga gggtgaccgg ccacactggg actgagacac 300

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg caagcctgat 360

gcagcaacgc cgcgtgaggg atgacggcct tcgggttgta aacctctttt agcaaggaag 420

aagcgaaagt gacggtactt gcagaaaaag cgccggctaa ctacgtgcca gcagccgcgg 480

taatacgtag ggcgcaagcg ttatccggaa ttattgggcg taaagagctc gtaggcggtt 540

tgtcgcgtct gctgtgaaat cccgaggctc aacctcgggc ctgcagtggg tacgggcaga 600

ctagagtgcg gtaggggaga ttggaattcc tggtgtagcg gtggaatgcg cagatatcag 660

gaggaacacc gatggcgaag gcagatctct gggccgtaac tgacgctgag gagcgaaagg 720

gtggggagca aacaggctta gataccctgg tagtccaccc cgtaaacgtt gggaactagt 780

tgtggggtcc tttccacgga ttccgtgacg cagctaacgc attaagttcc ccgcctgggg 840

agtacggccg caaggctaaa actcaaagga attgacgggg acccgcacaa gcggcggagc 900

atgcggatta attcgatgca acgcgaagaa ccttaccaag gcttgacata cacgagaaca 960

ccctagaaat aggggactct ttggacactc gtgaacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccctcgtt ctatgttgcc 1080

agcacgtaat ggtgggaact catgggatac tgccggggtc aactcggagg aaggtgggga 1140

tgacgtcaaa tcatcatgcc ccttatgtct tgggcttcac gcatgctaca atggccggta 1200

caaagggctg caataccgtg aggtggagcg aatcccaaaa agccggtccc agttcggatt 1260

gaggtctgca actcgacctc atgaagtcgg agtcgctagt aatcgcagat cagcaacgct 1320

gcggtgaata cgttcccggg tcttgtacac accgcccgtc aagtcatgaa agtcggtaac 1380

acctgaagcc ggtggcccaa cccttgtgga gggagccgtc gaaggtggga tcggtaatta 1440

ggactaagtc gtaacaaggt agccgtaccg gaagg 1475

<210> 1240
<211> 1474
<212> DNA
<213> Microbacterium sp. oral strain C24KA

<400> 1240
aggatgaacg ctggcggcgt gcttaacaca tgcaagtcga acggtgaagg cccagcttgc 60

tgggtggatc agtggcgaac gggtgagtaa cacgtgagca atctgcccct gactctggga 120

taagcgctgg aaacggcgtc taatactgga tatgaaccgt ggaggcatct tcaacggttg 180

gaaagatttt ttggtcaggg atgagctcgc ggcctatcag cttgttggtg aggtaatggc 240

tcaccaaggc gtcgacgggt agccggcctg agagggtgac cggccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcagcaa cgccgcgtga gggacgacgg ccttcgggtt gtaaacctct tttagcaggg 420

aagaagcgaa agtgacggta cctgcagaaa aagcgccggc taactacgtg ccagcagccg 480

cggtaatacg tagggcgcaa gcgttatccg gaattattgg gcgtaaagag ctcgtaggcg 540

gtttgtcgcg tctgctgtga aatcccgagg ctcaacctcg ggtctgcagt gggtacgggc 600

agactagagt gcggtagggg agattggaat tcctggtgta gcggtggaat gcgcagatat 660

caggaggaac accgatggcg aaggcagatc tctgggccgt aactgacgct gaggagcgaa 720

agggtgggga gcaaacaggc ttagataccc tggtagtcca ccccgtaaac gttgggaact 780

agttgtgggg tccattccac ggattccgtg acgcagctaa cgcattaagt tccccgcctg 840

gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg gggacccgca caagcggcgg 900

agcatgcgga ttaattcgat gcaacgcgaa gaaccttacc aaggcttgac atatacgaga 960

acgctgcaga aatgtagaac tctttggaca ctcgtaaaca ggtggtgcat ggttgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gttctatgtt 1080

gccagcacgt aatggtggga actcatggga tactgccggg gtcaactcgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccccttatg tcttgggctt cacgcatgct acaatggccg 1200

gtacaaaggg ctgcaatacc gtaaggtgga gcgaatccca aaaagccggt cccagttcgg 1260

attgaggtct gcaactcgac ctcatgaagt cggagtcgct agtaatcgca gatcagcaac 1320

gctgcggtga atacgttccc gggtcttgta cacaccgccc gtcaagtcat gaaagtcggt 1380

aacacctgaa gccggtggcc caacccttgt ggagggagcc gtcgaaggtg ggatcggtaa 1440

ttaggactaa gtcgtaacaa ggtagccgta ccgg 1474

<210> 1241
<211> 1474
<212> DNA
<213> Microbacterium testaceum

<400> 1241
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtgaagcca agcttgcttg 60

gtggatcagt ggcgaacggg tgagtaacac gtgagcaacc tgccctggac tctgggataa 120

gcgctggaaa cggcgtctaa tactggatat gagctcctat cgcatggtgg gggttggaaa 180

gatttttcgg tctgggatgg gctcgcggcc tatcagcttg ttggtgaggt aatggctcac 240

caaggcgtcg acgggtagcc ggcctgagag ggtgaccggc cacactggga ctgagacacg 300

gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcgg aagcctgatg 360

cagcaacgcc gcgtgaggga tgacggcctt cgggttgtaa acctctttta gcagggaaga 420

agcgagagtg acggtacctg cagaaaaagc gccggctaac tacgtgccag cagccgcggt 480

aatacgtagg gcgcaagcgt tatccggaat tattgggcgt aaagagctcg taggcggttt 540

gtcgcgtctg ctgtgaaatc ccgaggctca acctcgggcc tgcagtgggt acgggcagac 600

tagagtgcgg taggggagat tggaattcct ggtgtagcgg tggaatgcgc agatatcagg 660

aggaacaccg atggcgaagg cagatctctg ggccgtaact gacgctgagg agcgaaaggg 720

tggggagcaa acaggcttag ataccctggt agtccacccc gtaaacgttg ggaactagtt 780

gtggggacca ttccacggtt tccgtgacgc agctaacgca ttaagttccc cgcctgggga 840

gtacggccgc aaggctaaaa ctcaaaggaa ttgacgggga cccgcacaag cggcggagca 900

tgcggattaa ttcgatgcaa cgcgaagaac cttaccaagg cttgacatat acgagaacgg 960

gccagaaatg gtcaactctt tggacactcg taaacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgttc tatgttgcca 1080

gcacgtaatg gtgggaactc atgggatact gccggggtca actcggagga aggtggggat 1140

gacgtcaaat catcatgccc cttatgtctt gggcttcacg catgctacaa tggccggtac 1200

aaagggctgc aataccgtga ggtggagcga atcccaaaaa gccggtccca gttcggattg 1260

aggtctgcaa ctcgacctca tgaagtcgga gtcgctagta atcgcagatc agcaacgctg 1320

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca agtcatgaaa gtcggtaaca 1380

cctgaagccg gtggcccaac ccttgtggag ggagccgtcg aaggtgggat cggtaattag 1440

gactaagtcg taacaaggta gccgtaccgg aagg 1474

<210> 1242
<211> 1497
<212> DNA
<213> Micrococcus antarcticus

<400> 1242
tcagaacgaa cgctggcggc gtgcttaaca catgcaagtc gaacgatgaa gcccagcttg 60

ctgggtggat tagtggcgaa cgggtgagta acacgtgagt aacctgccct tgactctagg 120

ataagcccgg gaaactgggt ctaatactgg ataggaacgt ctaccgcatg gtgggtgttg 180

gaaagaattt cggtcatgga tggactcgcg gcctatcagc ttgttggtga ggtaatggct 240

caccaaggcg acgacgggta gccggcctga gagggtgacc ggccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgaaagcctg 360

atgcagcgac gccgcgtgag ggatgacggc cttcgggttg taaacctctt tcagtaggga 420

agaagcgaaa gtgacggtac ctgcagaaga agcaccggct aactacgtgc cagcagccgc 480

ggtaatacgt agggtgcgag cgttatccgg aattattggg cgtaaagagc tcgtaggcgg 540

tttgtcgcgt ctgtcgtgaa agtccggggc ttaaccccgg atctgcggtg ggtacgggca 600

gactagagtg cagtagggga gactggaatt cctggtgtag cggtggaatg cgcagatatc 660

aggaggaaca ccgatggcga aggcaggtct ctgggctgta actgacgctg aggagcgaaa 720

gcatggggag cgaacaggat tagataccct ggtagtccat gccgtaaacg ttgggcacta 780

ggtgtgggga acattccacg ttttccgcgc cgcagctaac gtattaggtg ccccgcctgg 840

ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga 900

gcatgcggat taattcgatg caacgcgaag aaccttacca aggcttgaca tgttctcgat 960

cgccgtagag atacggtttc ccctttgggg cgggttcaca ggtggtgcat ggttgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gttccatgtt 1080

gccagcactt cgggtgggga ctcatgggag actgccgggg tcgactcgga ggaaggtggg 1140

gacgacgtca aatcatcatg ccccttatgt cttgggcttc acgcatgcta caatggccgg 1200

tacaatgggt tgcgatactg tgaggtggag ctaatcccaa aaagccggtc tcagttcgga 1260

ttggggtctg caactcgacc ccatgaagtc ggagtcgcta gtaatcgcag atcagcaacg 1320

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagtcacg aaagtcggta 1380

acacccgaag ccggtggcct aacccttgtg gaggggccg tcgaaggtgg gaccagcgat 1440

tgggactaag tcgtaacaag gtagccgtac cggaaggtgc ggctggatca cctcctt 1497

<210> 1243
<211> 1632
<212> DNA
<213> Micrococcus luteus

<400> 1243
ttacggagag tttgatcctg gctcaggatg aacgctggcg gcgtgcttaa cacatgcaag 60

tcgaacgatg aagcccagct tgctgggtgg attagtggcg aacgggtgag taacacgtga 120

gtaacctgcc cttaactctg ggataagcct gggaaactgg gtctaatacc ggataggagc 180

gtccaccgca tggtgggtgt tggaaagatt tatcggtttt ggatggactc gcggcctatc 240

agcttgttgg tgaggtaatg gctcaccaag gcgacgacgg gtagccggcc tgagagggtg 300

accggccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

attgcacaat gggcgaaagc ctgatgcagc gacgccgcgt gagggatgac ggccttcggg 420

ttgtaaacct ctttcagtag ggaagaagcg aaagtgacgg tacctgcaga agaagcaccg 480

gctaactacg tgccagcagc cgcggtaata cgtagggtgc gagcgttatc cggaattatt 540

gggcgtaaag agctcgtagg cggtttgtcg cgtctgtcgt gaaagtccgg ggcttaaccc 600

cggatctgcg gtgggtacgg gcagactaga gtgcagtagg ggagactgga attcctggtg 660

tagcggtgga atgcgcagat atcaggagga acaccgatgg cgaaggcagg tctctgggct 720

gtaactgacg ctgaggagcg aaagcatggg gagcgaacag gattagatac cctggtagtc 780

catgccgtaa acgttgggca ctaggtgtgg ggaccattcc acggtttccg cgccgcagct 840

aacgcattaa gtgccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga 900

cgggggcccg cacaagcggc ggagcatgcg gattaattcg atgcaacgcg aagaacctta 960

ccaaggcttg acatgttccc gatcgccgta gagatacgat ttccccttg gggcgggttc 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc ctcgttccat gttgccagca cgtaatggtg gggactcatg ggagactgcc 1140

ggggtcaact cggaggaagg tgaggacgac gtcaaatcat catgcccctt atgtcttggg 1200

cttcacgcat gctacaatgg ccggtacaat gggttgcgat actgtgaggt ggagctaatc 1260

ccaaaaagcc ggtctcagtt cggattgggg tctgcaactc gaccccatga agtcggagtc 1320

gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcaagt cacgaaagtc ggtaacaccc gaagccggtg gcctaaccct tgtgggaggg 1440

agccgtcgaa ggtgggacca gcgattggga ctaagtcgta acaaggtagc cgtaccggaa 1500

ggtgcggctg gatcacctcc tttctaagga gcatcagtgc ccgttgcatc accgcgtgtg 1560

tgatggcggg ttgctcatgg gtggaacatc aatgaatggt gccagtggtg gtgccggcag 1620

tgctcgagta cg 1632

<210> 1244
<211> 1472
<212> DNA
<213> Micrococcus lylae

<400> 1244
gatcctggct caggatgaac gctggcggcg tgcttaacac atgcaagtcg aacgatgaag 60

ctccagcttg ctggggtgga ttagtggcga acgggtgagt aacacgtgag taacctgccc 120

ttgactctgg gataagcctt ggaaacgggg tctaataccg gataggagca ttcaccgcat 180

ggtgggtgtt ggaaagaatt tcggtcttgg atggactcgc ggcccatcag cttgttggtg 240

aggtaatggc tcaccaaggc gacgacgggt agccggcctg agagggtgac cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg 360

gcgcaagcct gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt gtaaacctct 420

ttcagtaggg aagaagcgaa agtgacggta cctgcagaag aagcaccggc taactacgtg 480

ccagcagccg cggtaatacg tagggtgcga gcgttatccg gaattattgg gcgtaaagag 540

ctcgtaggcg gtttgtcgcg tctgccgtga aagtccgggg cttaactccg gatctgcggt 600

gggtacgggc agactagagt gcagtagggg agactggaat tcctggtgta gcggtggaat 660

gcgcagatat caggaggaac accgatggcg aaggcaggtc tctgggctgt aactgacgct 720

gaggagcgaa agcatgggga gcgaacagga ttagataccc tggtagtcca tgccgtaaac 780

gtttggcact aggtgtgggg gccattccac ggtttccgcg ccgcagctaa cgcattaagt 840

gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca 900

caagcggcgg agcatgcgga ttaattcgat gcaacgcgaa gaaccttacc aaggcttgac 960

atgttctcgt tcgccgtaga gatacggttt ccccttgggg gcgggttcac aggtggtgca 1020

tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 1080

tgttctatgt tgccagcacg tgatggtggg gactcatggg agactgccgg ggtcaactcg 1140

gaggaaggtg gggacgacgt caaatcatca tgccccttat gtcttgggct tcacgcatgc 1200

tacaatggcc ggtacaatgg gttgcgatac tgtgaggtgg agctaatccc aaaaagccgg 1260

tctcagttcg gattggggtc tgcaactcga ccccatgaag ttggagtcgc tagtaatcgc 1320

agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagtca 1380

cgaaagtcgg taacacccga agccggtggc ctaacccttg tggaaggagc cgtcgaaggt 1440

gggactggcg attgggacta agtcgtaaca ag 1472

<210> 1245
<211> 1469
<212> DNA
<213> Micrococcus sp. 185

<220>
<221> modified_base
<222> (977)..(977)
<223> a, c, t, g, unknown or other

<400> 1245
cgctggcggc gtgcttaaca catgcaagtc gaacgatgaa gcccagcttg ctgggtggat 60

tagtggcgaa cgggtgagta acacgtgagt aacctgccct taactctggg ataagcctgg 120

gaaactaggt ctaataccgg ataggagcgc ctaccgcatg gtgggtgttg gaaagattta 180

tcggttttgg atggactcgc ggcctatcag cttgttggtg aggtaatggc tcaccaaggc 240

gacgacgggt agccggcctg agagggtgac cggccacact gggactgaga cacggcccag 300

actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgaaagcct gatgcagcga 360

cgccgcgtga gggatgacgg ccttcgggtt gtaaacctct ttcagtaggg aagaagcgaa 420

agtgacggta cctgcagaag aagcaccggc taactacgtg ccagcagccg cggtaatacg 480

tagggtgcga gcgttatccg gaattattgg gcgtaaagag ctcgtaggcg gtttgtcgcg 540

tctgtcgtga aagtccgggg cttaaccccg gatctgcggt gggtacgggc agactagagt 600

gcagtagggg agactggaat tcctggtgta gcggtggaat gcgcagatat caggaggaac 660

accgatggcg aaggcaggtc tctgggctgt aactgacgct gaggagcgaa agcatgggga 720

gcgaacagga ttagataccc tggtagtcca tgccgtaaac gttgggcact aggtgtgggg 780

accattccac ggtttccgcg ccgcagctaa cgcattaagt gccccgcctg gggagtacgg 840

ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcggcgg agcatgcgga 900

ttaattcgat gcaacgcgaa gaaccttacc aaggcttgac atgttctcga tcgccgtaga 960

gatacggttt ccccttnggg gcgggttcac aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct cgttccatgt tgccagcacg 1080

taatggtggg gactcatggg agactgccgg ggtcaactcg gaggaaggtg aggacgacgt 1140

caaatcatca tgcccccttat gtcttgggct tcacgcatgc tacaatggcc ggtacaatgg 1200

gttgcgatac tgtgaggtgg agctaatccc aaaaagccgg tctcagttcg gattggggtc 1260

tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcaagtca cgaaagttgg taacacccga 1380

agccggtggc ctaacccttg tgggggggagc cgtcgaaggt gggaccagcg attgggacta 1440

agtcgtaaca aggtagccgt accggaagg 1469

<210> 1246
<211> 1502

<212> DNA
<213> Microcystis aeruginosa

<400> 1246
ttcatcatgg agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg 60

caagtcgaac gggaatcttc ggattctagt ggcggacggg tgagtaacgc gtaagaatct 120

aacttcagga cggggacaac agttggaaac gactgctaat acccgatatg ccgcgaggtg 180

aaacctaatt ggcctgaaga agagcttgcg tctgattagc tagttggtgg ggtaagagcc 240

taccaaggcg acgatcagta gctggtctga gaggatgagc agccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatttt ccgcaatggg cgaaagcctg 360

acggagcaac gccgcgtgag ggaggaaggt ctttggattg taaacctctt ttctcaagga 420

agaagttctg acggtacttg aggaatcagc ctcggctaac tccgtgccag cagccgcggt 480

aatacggggg aggcaagcgt tatccggaat tattgggcgt aaagcgtccg caggtggtca 540

gccaagtctg ctgtcaaatc aggttgctta acgacctaaa ggcggtggaa actggcagac 600

tagagagcag taggggtagc aggaattccc agtgtagcgg tgaaatgcgt agagattggg 660

aagaacatcg gtggcgaaag cgtgctactg ggctgtatct gacactcagg gacgaaagct 720

aggggagcga aagggattag ataccccctgt agtcctagcc gtaaacgatg gatactaggc 780

gtggcttgta tcgacccgag ccgtgccgaa gctaacgcgt taagtatccc gcctggggag 840

tacgcacgca agtgtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagtat 900

gtggtttaat tcgatgcaac gcgaagaacc ttaccaagac ttgacatgtc gcgaaccctg 960

gtgaaagctg ggggtgcctt cgggagcgcg aacacaggtg gtgcatggct gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgttc ttagttgcca 1080

gcattaagtt ggggactcta aggagactgc cggtgacaaa ccggaggaag gtggggatga 1140

cgtcaagtca gcatgcccct tacgtcttgg gcgacacacg tactacaatg gtcgggacaa 1200

agggcagcga actcgcgaga gccagcgaat cccagcaaac ccggcctcag ttcagattgc 1260

aggctgcaac tcgcctgcat gaaggaggaa tcgctagtaa tcgccggtca gcatacggcg 1320

gtgaattcgt tcccgggcct tgtacacacc gcccgtcaca ccatggaagc tggtcacgcc 1380

cgaagtcatt acctcaaccg caaggagggg gatgcctaag gcagggctag tgactggggt 1440

gaagtcgtaa caaggtagcc gtaccggaag gtgtggctgg atcacctcct taaagggaga 1500

cc 1502

<210> 1247
<211> 1543
<212> DNA
<213> Mitsuokella jalaludinii

<400> 1247
tgatcctggc tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc gtacgagacg 60

attgaaagct tgcttttgaa agtcgagtgg caaacgggtg agtaacgcgt agacaacctg 120

ccgtaaagat ggggacaaca gttcgaaagg actgctaata ccgaatgttg tagagtttcc 180

gcatgggaat cctactaaag gtggcctcta cttgtaagct atcgctttac gatgggtctg 240

cgtctgatta gctagttggt ggggtaacgg cctaccaagg cgacgatcag tagccggtct 300

gagaggatga acggccacat tggaactgag acacggtcca gactcctacg ggaggcagca 360

gtggggaatc ttccgcaatg ggcgcaagcc tgacggagca acgccgcgtg agtgaagaag 420

ggtttcgact cgtaaagctc tgttgtcggg gacgaatgtg gagatggtga ataaccattt 480

ccaatgacgg tacctgacga ggaagccacg gctaactacg tgccagcagc cgcggtaata 540

cgtaggtggc gagcgttgtc cggaattatt gggcgtaaag ggagcgcagg cgggaaggta 600

agtctatctt aaaagtgcgg ggctcaaccc cgtgagggga tggaaactat ctttcttgag 660

tgcaggagag gaaagcggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaggaa 720

caccagtggc gaaggcggct ttctggactg taactgacgc tgaggctcga aagcgtgggg 780

agcgaacagg attagatacc ctggtagtcc acgccgtaaa cgatgaatgc taggtgtagg 840

aggtatcgac ccctcctgtg ccggagttaa cgcaataagc attccgcctg gggagtacgg 900

ccgcaaggct gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agtatgtggt 960

ttaattcgac gcaacgcgaa gaaccttacc agggcttgac attgagtgaa agggctagag 1020

atagttccct ctcttcggag acacgaaaac aggtggtgca tggctgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc tatcctttgt tgccagcacg 1140

caatggtggg aactcaaagg agactgccgc ggacaacgcg gaggaaggcg gggatgacgt 1200

caagtcatca tgcccccttat gtcctgggct acacacgtac tacaatggga tggacagaga 1260

gcagcgaagc cgcgaggcca agcgaacccc ataaaccatc tcccagttcg gattgcaggc 1320

tgcaacccgc ctgcatgaag ttggaatcgc tagtaatcgc aggtcagcat actgcggtga 1380

atacgttccc gggccttgta cacaccgccc gtcacaccac ggaagtcatt cacacccgaa 1440

gccggcaggc taaccgcaag gaggcagccg tctaaggtgg gggcgatgac tggggtgaag 1500

tcgtaacaag gtagccgtat cggaaggtgc ggctggatca ctc 1543

<210> 1248
<211> 1559
<212> DNA
<213> Mitsuokella multacida

<400> 1248
tggagagttt gatcctggct caggacgaac gctggcggcg tgcttaacac atgcaagtcg 60

aacgagacga ttgaaagctt gcttttgaaa gtcgagtggc aaacgggtga gtaacgcgta 120

gacaacctgc cgtaaagatg gggacaacag tccgaaagga ctgctaatac cgaatgttgt 180

ggaacttccg catgggagct ctactaaaga tggcctctac ttgtaagcta tcgctttacg 240

atgggtctgc gtctgattag ctagttggtg gggtaatggc ttaccaaggc gacgatcagt 300

agccggtctg agaggatgaa cggccacatt ggaactgaga cacggtccag actcctacgg 360

gaggcagcag tggggaatct tccgcaatgg gcgcaagcct gacggagcaa cgccgcgtga 420

gtgaagaagg gtttcgactc gtaaagctct gttgtcgggg acgaatgtgg agatggtgaa 480

taaccatttc caatgacggt acctgacgag gaagccacgg ctaactacgt gccagcagcc 540

gcggtaatac gtaggtggcg agcgttgtcc ggaattattg ggcgtaaagg gagcgcaggc 600

gggagatcaa gtctatctta aaagtgcggg gctcaacccc gtgaggggat ggaaactggt 660

cttcttgagt gcaggagagg aaagcggaat tcctagtgta gcggtgaaat gcgtagatat 720

taggaggaac accagtggcg aaggcggctt tctggactgt aactgacgct gaggctcgaa 780

agcgtgggga gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatgct 840

aggtgtagga ggtatcgacc cctcctgtgc cggagttaac gcaataagca ttccgcctgg 900

ggagtacggc cgcaaggctg aaactcaaag gaattgacgg gggcccgcac aagcggtgga 960

gtatgtggtt taattcgacg caacgcgaag aaccttacca gggcttgaca ttgagtgaaa 1020

gagctagaga tagctccctc tcttcggaga cacgaaaaca ggtggtgcat ggctgtcgtc 1080

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct atcctttgtt 1140

gccagcacgt aatggtggga actcaaagga gactgccgcg gacaacgcgg aggaaggcgg 1200

ggatgacgtc aagtcatcat gccccttatg tcctgggcta cacacgtact acaatgggat 1260

ggacagagag cagcgaagcc gcgaggccaa gcgaacccca taaaccatct cccagttcgg 1320

attgcaggct gcaacccgcc tgcatgaagt tggaatcgct agtaatcgca ggtcagcata 1380

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg gaagtcattc 1440

acacccgaag ccggcaggct aaccgcaagg aggcagccgt ctaaggtggg ggcgatgact 1500

ggggtgaagt cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1559

<210> 1249
<211> 1224
<212> DNA
<213> Mitsuokella sp. oral taxon 521

<400> 1249
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagacaatta aaagcttgct 60

tttaaacgtc gagtggcaaa cgggtgagta acgcgtagac aacctgccgc aaagatgggg 120

acaacagttc gaaaggactg ctaataccga atgttctgga agttccgcat ggaaactcca 180

gcaaagatgg cctctacttg taagcgatcg ctttgcgatg ggtctgcgtc tgattagcta 240

gttggcaggg caacggccta ccaaggcgac gatcagtagc cggtctgaga ggatgaacgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatcttcc 360

gcaatgggcg aaagcctgac ggagcaacgc cgcgtgagtg aagaaggtct tcggatcgta 420

aagctctgtt gccggggacg acatgtaggc agtgcgaaca gcattgtgta atgacggtac 480

ccggcgagga agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcgag 540

cgttgtccgg aattattggg cgtaaaggga gcgcaggcgg gcgagtaagt ctttcttaaa 600

agtgcggggc tcaaccccgt gaggggagag aaactactca tcttgagtgc aggagaggaa 660

agcggaattc ctagtgtagc ggtgaaatgc gtagatatta ggaagaacac cagtggcgaa 720

ggcggctttc tggactgtaa ctgacgctga ggctcgaaag ccaggggagc gaacgggatt 780

agataccccg gtagtcctgg ccgtaaacga tgaatgctag gtgtaggggg tatcgacccc 840

tcctgtgccg gagttaacgc aataagcatt ccgcctgggg agtacggtcg caagactgaa 900

actcaaagga attgacgggg gcccgcacaa gcggtggagt atgtggttta attcgacgcc 960

acgcgatgaa ccttaccagg gcttgacatt gagtgacaga cttagagaca agtcattctc 1020

ttcggagaca cgaaaactgg tggtgcatgg ctgtcgtcag ctcgtgtcgt gagatgtagg 1080

gttagttccg cacgagcgca ccccctattc tctgttgcca gcacgcgaag gtgggaactc 1140

aaaggaaact gccgccgaac cagccggaga aaggcgggga atacgtcagt tatcatgccc 1200

cctagttcgt ggctacaccg ttca 1224

<210> 1250
<211> 1210
<212> DNA
<213> Mitsuokella sp. oral taxon G68

<400> 1250
gacgaacgct ggcggcgtgc ttcaacacat gcaagtcgaa cgagacaatt aaaagcttgc 60

ttttcaaacg tccgagtggc aaacgggtga gtcaacgcgt agacaacctg ccgcaaagat 120

ggggacaaca gttccgaaag gactgctaat accgaatgtt cctggaagtt cccgcatgga 180

aactcccagc aaagatggcc tcctacttgt aagcgatccg ctttgcgatg ggtcctgcgt 240

cctgattagc tagttggtga ggtaacggcc taccaaggcg acgatcagta gccggtcctg 300

agaggatgaa cggccacatt gggactgaga cacggcccag actccctacg ggaggcagca 360

gtggggaatc cttccgcaat gggcgaaagc ctgacggagc aacgccgcgt gagtgaagaa 420

ggtccttcgg atccgtaaag ctctgttgcc ggggacgagt gtaggcaatg caaacagcat 480

tgtgtaatga cggtacccgg cgaggaagcc acggctaact acgtgccagc agccgcggta 540

atacgtaggt ggcgagcgtt gtccggaatt attgggcgta aagggagcgc aggcgggcga 600

gtaagtcttt cttaaaagtg cggggctcaa ccccgtgagg ggagagaaac tactcatctt 660

gagtgcagga gaggaaggcg gaattcctag tgtagcggtg aaatgcgtag atattaggaa 720

gaacaccagt ggcgaaggcg gctttctgga ctgtaactga cgctgaggct cgaaagccag 780

gggagcgaac gggattagat accccggtag tcctggccgt aaacgatgaa tgctaggtgt 840

aggggtatc gacccctcct gtgccggagt taacgcaata agcattccgc ctggggagta 900

cggtagcaag actgaaactc aaaggaattg acgggggccc gcacaagcgg tggagtatgt 960

ggtttaattc gacgcaacgc gaagaactta ccaggtcttg acatagagtg acagacttag 1020

agacaagtca ttctcttcgg agacacgaga acagggtggt gcatggctgt cgtcagctcg 1080

tgtcgtgaga tgtttgggtt agttccgcca cgagcgcacg cctattctct gttgccagca 1140

ctgcgatggt gggaactcga ggagacgcgc cgacacgccg aggaggcggg atagttagta 1200

gcatccctag 1210

<210> 1251
<211> 1544
<212> DNA
<213> Mobiluncus curtisii

<400> 1251
tttttttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg atgaagccgc agcttgctgt ggtggattag tggcgaacgg gcgagtaaca 120

cgtgagtaac ctgtcctttt ctttgggata acggctggaa acggctgcta atactggata 180

ttcaggcgtc accgcatggt ggtgtttgga aaggtttttt ctgggattgg gtgggctcgc 240

ggcctatcag cttgttggtg gggtgatggc ttaccaaggc tttgacgggt agccggcctg 300

agagggtggt cggtcgcact gggactgaga tacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg acgaaagttt gatgcagcga cgccgcgtgg agggtgtagg 420

ccttcgggtt gtgaactcct ttttctcgcg aaaaaggcac agttttggct gtgttgatgg 480

tagtggggga agaagcgccg gctaactacg tgccagcagc cgcggtaata cgtagggcgc 540

gagcgttgtc cggatttatt gggcgtaaag agctcgtagg tggttcgtcg cgtctgtcgt 600

gaaagccagc agcttaactg ttggtctgcg gtgggtacgg gcgggcttga gtgcggtagg 660

ggtgactgga attcctggtg tagcggtgga atgcgcagat atcaggagga acaccgatgg 720

cgaaggcagg tcactgggcc gttactgaca ctgaggagcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgctgtaa acgttgggaa ctaggtgtgg ggatgctatc 840

ctgtgtttct gcgccgtagc taacgcatta agttccccgc ctggggagta cggtcgcaag 900

gctaaaactc aaaggaattg acgggggccc gcacaagcgg cggagcatgc ggattaattc 960

gatgcaacgc gaagaacctt accaaggctt gacatacact gcgatggttc cagagatggg 1020

ccagccttcg gggtggtgta caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgcctcatg ttgccagcgg ttcggccggg 1140

gactcgtgag ggactgccgg ggttaactcg gaggagggtg gggatgacgt caaatcatca 1200

tgcccccttat gtcttgggct tcacgcatgc tacaatggcc agtacagagg gttgcgatac 1260

cgtgaggtgg ggctaatctc ttaaagctgg tctcggttcg gattggggtc tgcaactcga 1320

ccccatgaag ttggagtcgc tagtaatcgc agatcagcat tgctgcggtg aatacgttct 1380

cgggccttgt acacaccgcc cgtcacgtca cgaaagttgg taacacccga agcccgtggc 1440

ttaactcttt ttgaggggga gcggtcgaag gtgggattgg cgattgggac gaagtcgtaa 1500

caaggtagcc gtaccggaag gtgcggctgg atcacctcct ttct 1544

<210> 1252
<211> 1542
<212> DNA
<213> Mobiluncus mulieris

<400> 1252
ttttgttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg atgaagccgc agcttgctgt ggtggattag tggcgaacgg gcgagtaaca 120

cgtgagtaac ctgtcctttt ctttgggata acggctggaa acggctgcta atactggata 180

ttcaggctgc atcgcatggt gtggtttgga aaggtttttt ctggaatggg gtgggctcgc 240

ggcctatcag cttgttggtg gggtgatggc ttaccaaggc tttgacgggt agccggcctg 300

agagggtggt cggtcgcact gggactgaga tacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg acggaagttt gatgcagcga cgccgcgtgg agggtgtagg 420

ccttcgggtt gtgaactcct ttttctcgtg aaaaaggcat gcttttgggt gtgttgatgg 480

tagcggggga agaagcgccg gctaactacg tgccagcagc cgcggtaata cgtagggcgc 540

gagcgttgtc cggatttatt gggcgtaaag agctcgtagg tggttcgtcg cgtctgtcgt 600

gaaagccagc agcttaactg ttggtctgcg gtgggtacgg gcgggcttga gtgcggtagg 660

ggtgactgga attcctggtg tagcggtgga atgcgcagat atcaggagga acaccgatgg 720

cgaaggcagg tcactgggcc gttactgacg ctgaggagcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgctgtaa acgttgggaa ctaggtgtgg ggatgctatc 840

ctgtgtttct gcgccgtagc taacgcatta agttccccgc ctggggagta cggccgcaag 900

gctaaaactc aaaggaattg acgggggccc gcacaagcgg cggagcatgc ggattaattc 960

gatgcaacgc gaagaacctt accaaggctt gacatacact gcgacatgcc agagatggtg 1020

tggccttcgg ggtggtgtac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaacga gcgcaaccct tgcctcatgt tgccagcacg ttatggtggg 1140

gactcgtgag ggactgccgg ggttaactcg gaggagggtg gggatgacgt caaatcatca 1200

tgccccttat gtcttgggct tcacgcatgc tacaatggcc agtacagagg gttgcgatac 1260

cgtgaggtgg ggctaatctc ttaaagctgg tctcggttcg gattggggtc tgcaactcga 1320

ccccatgaag ttggagtcgc tagtaatcgc agatcagcat tgctgcggtg aatacgttct 1380

cgggccttgt acacaccgcc cgtcacgtca cgaaagttgg taacacccga agcccgtggc 1440

ctagcctttt tgggggggagc ggtcgaaggt gggattggcg attgggacga agtcgtaaca 1500

aggtagccgt accggaaggt gcggctggat cacctccttt ct 1542

<210> 1253
<211> 1532
<212> DNA
<213> Moellerella wisconsensis

<400> 1253
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggtaacagga agaagcttgc ttctttgctg acgagcggcg gacgggtgag taatgtatgg 120

ggatctgcct gacagagggg gataactact ggaaacggta gctaataccg cataatctct 180

aaggagcaaa gcaggggacc ttcgggcctt gcgctgtcgg atgaacccat atgggattag 240

ctagtaggtg gggtaacggc tcacctaggc gacgatctct agctggtctg agaggatgat 300

cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt atgaagaagg ccttagggtt 420

gtaaagtact ttcagtcggg aggaaggcgt tgatattaat actatcagcg attgacgtta 480

ccgacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gggggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gttgattaag ttagatgtga 600

aatccccggg cttaacctgg gaatggcatc taaaactggt cagctagagt cttgtagagg 660

ggggtagaat tccatgtgta gcggtgaaat gcgtagagat gtggaggaat accggtggcg 720

aaggcggccc cctggacaaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgctgtaaac gatgtcgatt tggaggttgt tcccttgagg 840

agtggcttcc ggagctaacg cgttaaatcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat ccagagaatt tagcagagat gctttagtgc 1020

cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcacgta atggtgggaa 1140

ctcaagggag actgccggtg ataaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcgca tacaaagaga agcgaactcg 1260

cgagagccag cggaactcat aaagtgcgtc gtagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgtag atcagaatgc tacggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt aggtagctta 1440

accttcgggg gggcgcttac actttgtga ttcatgactg gggtgaagtc gtaacaaggt 1500

aaccgtaggg gaacctgcgg ttggatcacc tt 1532

<210> 1254
<211> 1455
<212> DNA
<213> Mogibacterium diversum

<220>
<221> modified_base
<222> (792)..(793)
<223> a, c, t, g, unknown or other

<400> 1254
acgctggcgg cgtgcctaat acatgcaagt cgagcgagat gttagcgcat gaaccttcgg 60

gggattatgc taacggacag cggcggacgg tgtgagtaac gcgtaggcaa cctgcccctg 120

acagagggat agccattgga aacgatgatt aaaaccatca tgacaccgta gaagcacatg 180

cttcatcggt caaagattta tcggtcaggg atgggcctgc gtctgattaa ctagttggtg 240

aggtaacggc tcaccaaggt gacgatcagt agccgacctg agagggtgat cggccacatt 300

ggaactgaga cacggtccaa acttctacgg aaggcagcag tagggaatct tgcacaatgg 360

gcgaaagcct gatgcagcaa cgccgcgtga aggatgaagg ccttcgggtt gtaaacttct 420

gttctaaggg aagaaacaaa tgacggtacc ttaggagcaa gccccggcta actacgtgcc 480

agcagccgcg gtaatacgta gggggcaagc gttatccgga attattgggc gtaaagagtg 540

cgtaggtggt tacctaagcg caaggtttaa tttagaggct caacctctac ttgccttgcg 600

aactgggcta ctttagtgca ggaggggaaa gcggaattcc tagtgtagcg gtgaaatgcg 660

tagatattag gaggaacacc agcggctgaa ggtcggtctt tctggactgt aactgacact 720

gaggcacgaa agcgtgggta gcaaacagga ttagataccc tggtagtcca cgccgtaaac 780

gatgagcact anntgttggg cccgttaggg ctcagtgccg cagttaacgc aataagtgct 840

ccgcctgggg agtacgctcg caagagtaaa actcaaagga attgacgggg acccgcacaa 900

gcagcggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg gcttgacatc 960

ctgctgacag gaccttaacc ggtcccttct tcggacagca gagacaggtg gtgcatggtt 1020

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtcg 1080

ctagttacta acattcagtt gaggactcta gcgagactgc cgaggtcaac tcggaggaag 1140

gtggggatga cgtcaaatca tcatgcccct tatgttctgg gctacacacg tgctacaatg 1200

gtcggtacaa tgagaggcaa tactgtgaag tggagcaaat caccaaaacc gatcccagtt 1260

cggattgtag gctgcaactc gcctacatga agttggagtt gctagtaatc gcagatcaga 1320

atgctgcggt gaatgcgttc ccgggtcttg tacacaccgc ccgtcacacc atggaagttg 1380

ggggtgccca aagtcgttta attaatctat cgcctaaggc aaaaccaatg actggggtga 1440

agtcgtaaca aggta 1455

<210> 1255
<211> 1478
<212> DNA
<213> Mogibacterium neglectum

<400> 1255
agtttgatca tggctcagga tgaacgctgg cggcgtgcct aatacatgca agtcgagcga 60

gatgttagcg catgaacctt cgggggatta tgctaacgga aagcggcgga cgggtgagta 120

acgcgtaggc aacctgcccc tgacagaggg atagccattg gaaacgatga ttaaaacctc 180

atgacaccga tgaagcacat gcttcatcgg tcaaagattt atcggtcagg gatgggcctg 240

cgtctgatta actagttggt gaggtaacgg ctcaccaagg tgacgatcag tagccgacct 300

gagagggtga tcggccacat tggaactgag acacggtcca aacttctacg gaaggcagca 360

gtagggaatc ttgcacaatg ggcgaaagcc tgatgcagca acgccgcgtg aaggatgaag 420

gccttcgggt tgtaaacttc tgttctaagg gaagaaacaa atgacggtac cttaggagca 480

agccccggct aactacgtgc cagcagccgc ggtaatacgt agggggcaag cgttatccgg 540

aattattggg cgtaaagagt gcgtaggtgg ttacctaagc gcaaggttta atttagaggc 600

tcaacctcta cttgccttgc gaactgggct acttgagtgc aggaggggaa agcggaattc 660

ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cagcggcgaa ggcggctttc 720

tggactgtaa ctgacactga ggcacgaaag cgtgggtagc aaacaggatt agataccctg 780

gtagtccacg ccgtaaacga tgagcactag gtgttgggcc cgttaggctc agtgccgcag 840

ttaacgcaat aagtgctccg cctggggagt acgctcgcaa gagtaaaact caaaggaatt 900

gacggggacc cgcacaagca gcggagcatg tggtttaatt cgaagcaacg cgaagaacct 960

taccagggct tgacatcctg ctgacaggac cttaaccggt cccttcttcg gacagcagag 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttgtcgcta gttactaaca ttcagttgag gactctagcg agactgccga 1140

ggtcaactcg gaggaaggtg gggatgacgt caaatcatca tgccccttat gttctgggct 1200

acacacgtgc tacaatggtc ggtacaatgg gatgcaatac tgtgaagtgg agcaaatcac 1260

caaaaccgat cccagttcgg attgtaggct gcaactcgcc tacatgaagt tggagttgct 1320

agtaatcgca gatcagaatg ctgcggtgaa tgcgttcccg ggtcttgtac acaccgcccg 1380

tcacaccatg ggaagttggg ggtgcccaaa gtcggttaat taatctatcg cctaaggcaa 1440

aaccaatgac tggggtgaag tcgtaacaag gtaaccgt 1478

<210> 1256
<211> 1466
<212> DNA
<213> Mogibacterium pumilum

<220>
<221> modified_base
<222> (946)..(947)
<223> a, c, t, g, unknown or other

<400> 1256
ttgatcctgg ctcaggatga acgctggcgg cgtgcctaat acatgcaagt cgagcgagat 60

gttagtgcat gaacttcggg ggattatatt aacggacagc ggcggacggg tgagtaacgc 120

gtaggcaacc tgcccttgac agagggatag ccattggaaa cgatgattaa aacctcataa 180

caccgtagaa gcacatgctt caacggtcaa agatttatcg gtcagggatg ggcctgcgtc 240

tgattaacta gttggtgagg taacggctca ccaaggtgac gatcagtagc cgacctgaga 300

gggtgatcgg ccacattgga actgagacac ggtccaaact tctacggaag gcagcagtag 360

ggaatcttgc acaatggcga aagcctgatg cagcaacgcc gcgtgaagga tgaaggcttc 420

gggttgtaaa cttctgttct aagggaagaa acaaatgacg gtaccttagg agcaagcccc 480

ggctaactac gtgccagcag ccgcggtaat acgtaggggg caagcgttat ccggaattat 540

tgggcgtaaa gagtgcgtag gtggttacct aagcgcaagg tttaatttag aggctcaacc 600

tctacttgcc ttgcgaactg ggctacttga gtgcaggagg ggaaagcgga attcctagtg 660

tagcggtgaa atgcgtagat attaggagga acaccagcgg cgaaggcggc tttctggact 720

gtaactgaca ctgaggcacg aaagcgtggg tagcaaacag gattagatac cctggtagtc 780

cacgccgtaa acgatgagca ctaggtgttg ggtccgttag gctcagtgcc gcagttaacg 840

caataagtgc tccgcctggg gagtacgctc gcaagagtaa aactcaaagg aattgacggg 900

gacccgcaca agcagcggac atgtggttta attcgaagca acgcgnnaga accttaccag 960

ggcttgacat cctgctgaca ggatcttaac cgatcccttc ttcggacagc agagacaggt 1020

ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1080

aacccttgtc gctagttact aacattcagt tgaggactct agcgagactg ccgaggtcaa 1140

ctcggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgttctg ggctacacac 1200

gtgctacaat ggtcggtaca atgagaggca atactgcgaa gtggagcgaa tcaccaaaac 1260

cgatcccagt tcggattgta ggctgcaact cgcctacatg aagttggagt tgctagtaat 1320

cgcagatcag aatgctgcgg tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac 1380

catggaagtt gggggtgccc gaagtcggct aattaatctg tcgcctaagg caaaaccaat 1440

gactggggtg aagtcgtaac aaggta 1466

<210> 1257
<211> 1480
<212> DNA
<213> Mogibacterium timidum

<400> 1257
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gagaagcttg gaaatgacgc ttcggttgaa tttccaagcg gacagcggcg gacgggtgag 120

taacgcgtag gcaacctgcc cctgtacaga gggatagcca ttggaaacga tgattaaaac 180

ctcatgacac cgtagtagca catgctacat cggtcaaaga tttatcggtc agggatgggc 240

ctccgtctga ttaactggtt ggtgaggtaa cggctcacca aggtgacgat cagtagccga 300

cctgagaggg tgatcggcca cattggaact gagacacggt ccaaacttct acggaaggca 360

gcagtaggga atcttgcaca atgggcgtaa gcctgatgca gcaacgccgc gtgaaggatg 420

aaggcttcgg gttgtaaact tctgttctaa gggaagaaag aaatgacggt accttaggag 480

caagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggca agcgttatcc 540

ggaattattg ggcgtaaaga gtgcgtaggt ggttacctaa gcgcaaggtt taaattagag 600

gctcaacctc tacatgcctt gcgaactggg ctacttgagt gcaggagggg aaagcggaat 660

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accggcggcg aaggcggctt 720

tctggactgt aactgacact gaggcacgaa agcgtgggta gcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatgagcact aggtgttggg tccgttagga ctcagtgccg 840

cagttaacgc aataagtgtc cgcctgggag tacgctcgca agagtaaact caaggaattg 900

acgggcaccc gcacaagcag gggagcttgt ggtttaattc gaagcaacgc gaagaacctt 960

accagggctt gacatcctgc tgacagaacc ttaatcggtt ttttcttcgg acagcagaga 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtcgctag ttactaacat tcagttgagg actctagcga gactgccgag 1140

gtcaactcgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg ttctgggcta 1200

cacacgtgct acaatggtcg gtacaatgag atgcaatact gcgaagtgga gcgaaacacc 1260

aaaaccgatc ccagttcgga ttgtaggctg caactcgcct acatgaagtc ggagttgcta 1320

gtaatcgcag atcagaatgc tgcggtgaat gcgttcccgg gtcttgtaca caccgcccgt 1380

cacaccatgg aagttggggg tgcccaaagt cggttaatta atctatcgcc taaggcaaaa 1440

ccaatgactg gggtgaagtc gtaacaaggt acccgtagga 1480

<210> 1258
<211> 1400
<212> DNA
<213> Mollicutes bacterium pACH93

<400> 1258
gcaagtcgaa cgaagaacta gcttgctagt tcttagtggc gaacgggtga gtaatacata 60

aataatctgt ccatatgact gggataacta ttggaaacga tagctaatac cggataggtt 120

aattgaaggc atcttcgatt aattaaagta ggttttctac acaaatggat gagtttatgg 180

cgcattagtt agttggtggg gtaacggcct accaagacga tgatgcgtag ccgacctgag 240

agggtgaccg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 300

gggaattttc ggcaatgggc gcaagcctga ccgagcaacg ccgcgtgagt gattaaggcc 360

ttcgggttgt aaagctctgt tgtaagggaa gaaaaatcag tagaggaaat gatactgatc 420

agacggtacc ttaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 480

ggtggcaagc gttatccgga attattgggc gtaaagggtg cgtaggcggt ttattaagtc 540

tatggtgaaa gtgcggggct caaccccgta tggccataga aactgataga ctagagtgca 600

ggagagggca atggaattcc atgtgtagcg gtaaaatgcg tagatatatg gaggaacacc 660

agtggcgaag gcggttgcct ggcctgtaac tgacgctgaa gcacgaaagc gtggggagca 720

aataggatta gataccctag tagtccacgc cgtaaacgat gaatactaag tgttggagaa 780

attcagtgct gcagttaacg caataagtat tccgcctggg gagtatgcac gcaagtgtga 840

aactcaaagg aattgacggg accccgcaca agcggtggat tatgttgttt aattcgacgc 900

aacgcgaaga accttaccag gccttgacat actcagcaaa accctagaga tagggtggag 960

gttatctggg atacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag acgttgggtt 1020

aagtcccgca acgagcgcaa cccttgtctt tagttaccat cattcagttg gggactctag 1080

agagactgcc ggtgataaac cggaggaagg tggggatgac gtcaaatcat catgcccctt 1140

atggcctggg ctacaaacgt aatacaatgg cgtatacaaa gggatgcgaa agggtgacct 1200

ggagcaaaac tcacaaagta cgtctcagtt cagattggag tctgcaactc gactccatga 1260

aggcggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc tcggggtttg 1320

tacacaccgc ccgtcaaacc atgagagttg gtaatacccg aagccggtgg cctaacctag 1380

taataggagg gagccgtcga 1400

<210> 1259
<211> 1555
<212> DNA

<213> Moorella thermoacetica

<400> 1259
gtttgatcct ggctcaggac aaacgctggc ggcgtgccta acacatgcaa gtcgagcggt 60

ctttaattgg ggaaatcttc ggatggaacc gattaaagat agcggcggac gggtgagtaa 120

cgcgtgggta atctaccctt cagactggga taacaccggg aaactggtgc taataccgga 180

tacggtctac gggaggcatc ttctgtagaa gaaaggtggc gcaagctacc gctgaaggat 240

gagcccgcgt cccattagct agttggtgag gtaacggctc accaaggcga cgatgggtag 300

ccggcctgag agggtggtcg gccacactgg gactgagaca cggcccagac tcctacggga 360

ggcagcagtg gggaatcttg cgcaatgggc gaaagcctga cgcagcaacg ccgcgtgagc 420

gatgaaggcc ttcgggttgt aaagctctgt catcagggac gaagtcttaa aggcgaatag 480

cctttaaggt gacggtacct gaggaggaag ccccggctaa ctacgtgcca gcagccgcgg 540

taaaacgtag ggggcgagcg ttgtccggaa ttactgggcg taaagggcgt gtaggcggcc 600

tggcaagtca gatgtgaaaa accccggctt aaccgggggc atgcatttga aactgccggg 660

cttgagggca ggagaggaga gtggaattcc cggtgtagcg gtgaaatgcg tagatatcgg 720

gaggaacacc agtggcgaag gcgactctct ggcctggccc tgacgctgag gcgcgaaagc 780

gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gggtactagg 840

tgtaggaggt atcgacccct tctgtgccgc agtaaacaca ataagtaccc cgcctgggga 900

gtacggccgc aaggctgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 960

tgtggtttaa ttcgacgcaa cgcgaagaac cttaccgggg tttgacatcc tgcgaacctg 1020

gtggaaacac tggggtgccc ttcggggaac gcagagacag gtggtgcatg gttgtcgtca 1080

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta cctttagttg 1140

ccagcgggta aagccgggca ctctaaaggg actgccggtg acaaaccgga ggaaggtggg 1200

gatgacgtca aatcatcatg ccccttatat cccgggctac acacgtgcta caatggcctg 1260

tacaaagggg tgcgaaggag cgatccggag cgaatcccaa aaagcaggtc tcagttcgga 1320

ttgcaggctg caactcgcct gcatgaagtc ggaatcgcta gtaatcgcgg atcagcatgc 1380

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga aagctggcaa 1440

cacccgaagc cggtgaccta acccgcgagg gaaggagccg tctaaggtgg ggctggtgat 1500

tggggtgaag tcgtaacaag gtagccgtat cggaaggtgc ggctggatca cctcc 1555

<210> 1260
<211> 1532
<212> DNA
<213> Moraxella catarrhalis

<400> 1260
ttaaactgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg aagttaggaa gcttgcttct gatacttagt ggcggacggg tgagtaatgc 120

ttaggaatct gcctagtagt gggggataac ttggggaaac ccaagctaat accgcatacg 180

acctacgggt gaaaggggc ttttagctct cgctattaga tgagcctaag tcggattagc 240

tggttggtgg ggtaaaggcc taccaaggcg acgatctgta gctggtctga gaggatgatc 300

agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

ggacaatggg cgaaagcctg atccagccat gccgcgtgtg tgaagaaggc cttttggttg 420

taaagcactt taagtgggga ggaaaagctt atggttaata cccataagcc ctgacgttac 480

ccacagaata agcaccggct aactctgtgc cagcagccgc ggtaatacag agggtgcaag 540

cgttaatcgg aattactggg cgtaaagcgc gcgtaggtgg ttatttaagt cagatgtgaa 600

agccccgggc ttaacctggg aactgcatct gatactggat aactagagta ggtgagaggg 660

gagtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata ccgatggcga 720

aggcagctcc ctggcatcat actgacactg aggtgcgaaa gcgtgggtag caaacaggat 780

tagataccct ggtagtccac gccgtaaacg atgtctacca gtcgttgggt cttttaaaga 840

cttagtgacg cagttaacgc aataagtaga ccgcctgggg agtacggccg caaggttaaa 900

actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgatgca 960

acgcgaagaa ccttacctgg tcttgacata gtgagaatct tgcagagatg cgagagtgcc 1020

ttcgggaatt cacatacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccttt ccttagttac cagcgactcg gtcgggaact 1140

ctaaggatac tgccagtgac aaactggagg aaggcgggga cgacgtcaag tcatcatggc 1200

ccttacgacc agggctacac acgtgctaca atggttggta caaagggttg ctacacagcg 1260

atgtgatgct aatctcaaaa agccaatcgt agtccggatt ggagtctgca actcgactcc 1320

atgaagtcgg aatcgctagt aatcgcagat cagaatgctg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca caccatggga gttgatctca ccagaagtgg ttagcctaac 1440

gcaagagggc gatcaccacg gtggggtcga tgactggggt gaagtcgtaa caaggtagcc 1500

gtaggggaac ctgcggctgg atcacctcct ta 1532

<210> 1261
<211> 1501
<212> DNA
<213> Moraxella lincolnii

<400> 1261
attgaacgct ggcggcaggc ttaacacatg caagtcgaac gaagaggtct agcttgctag 60

actgattagt ggcgaacggg tgagtaacat ttaggaatct accttataga gggggatagc 120

tcggggaaac tcgaattaat accgcatacg acctacgggt gaaaggggc gcaagctctt 180

gctataagat gagcctaaac cagattagct agttggtggg gtaaaggcct accaaggcga 240

cgatctgtag ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggc gaaagcctga tccagccatg 360

ccgcgtgtgt gaagaaggcc ttatggttgt aaagcacttt taagtgggga gaaaagctta 420

tggataacac ccataggttc tgacgttacc cacagaataa gcaccggcta actctgtgcc 480

agcagccgcg gtaatacaga gggtgcaagc gttaatcgga attactgggc gtaaagcgag 540

cgtaggtggt ttattaagtc agatgtgaaa tccctgggct taacctagga actgcatctg 600

atactgataa actagagtag gtgagaggaa agtagaattc caggtgtagc ggtgaaatgc 660

gtagagatct ggaggaatac cgatggcgaa ggcagctttc tggcatcata ctgacactga 720

ggttcgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 780

tgtctaccag tcgttgggtc ttttaaaggc ttagtgacgc agttaacgcg ataagtagac 840

cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag 900

cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctggt cttgacatag 960

tgagaatctt gcagagatgc gagagtgcct ttgggaattc acatacaggt gctgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttttc 1080

cttagttacc agcgacttgg tcggggactt taaggacact gccagtgaca aactggagga 1140

aggcggggac gacgtcaagt catcatggcc cttacgacca gggctacaca cgtgctacaa 1200

tggtaggtac agagggcagc tacacggcga cgtgatgcca atctcaaaaa gcctatctta 1260

gtccagattg gagtctgcaa ctcgactcca tgaagtcgga atcgctagta atcgcggatc 1320

agaatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag 1380

ttgattgcac cagaagtggt tagcctaact taggagggcg atcaccacgg tgtggttaat 1440

gactggggtg aagtcgtaac aaggtagccg taggggaacc tgcggctgga tcacctcctt 1500

a 1501

<210> 1262
<211> 1522
<212> DNA
<213> Moraxella osloensis

<400> 1262
tagagtttga tcatggctca gattgaacgc tggcggcagg cttaacacat gcaagtcgaa 60

cgatgactct ctagcttgct agagatgatt agtggcggac gggtgagtaa catttaggaa 120

tctacctagt agtgggggat agctcgggga aactcgaatt aataccgcat acgacctacg 180

ggtgaaaggg ggcgcaagct cttgctatta gatgagccta aatcagatta gctagttggt 240

ggggtaaagg cccaccaagg cgacgatctg taactggtct gagaggatga tcagtcacac 300

cggaactgag acacggtccg gactcctacg ggaggcagca gtggggaata ttggacaatg 360

ggggcaaccc tgatccagcc atgccgcgtg tgtgaagaag gcctttttggt tgtaaagcac 420

tttaagcagg gaggagaggc taatggttaa tacccattag attagacgtt acctgcagaa 480

taagcaccgg ctaactctgt gccagcagcc gcggtaatac agagggtgcg agcgttaatc 540

ggaattactg ggcgtaaagc gagtgtaggt ggctcattaa gtcacatgtg aaatccccgg 600

gcttaacctg ggaactgcat gtgatactgg tggtgctaga atatgtgaga gggaagtaga 660

attccaggtg tagcggtgaa atgcgtagag atctggagga ataccgatgg cgaaggcagc 720

ttcctggcat aatattgaca ctgagattcg aaagcgtggg tagcaaacag gattagatac 780

cctggtagtc cacgccgtaa acgatgtcta ctagccgttg gggtccttga gactttagtg 840

gcgcagttaa cgcgataagt agaccgcctg gggagtacgg ccgcaaggtt aaaactcaaa 900

tgaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa 960

gaaccttacc tggtcttgac atagtgagaa tctttcagag atgagagagt gccttcggga 1020

actcacatac aggtgctgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tttccttatt tgccagcggg ttaagccggg aactttaagg 1140

atactgccag tgacaaactg gaggaaggcg gggacgacgt caagtcatca tggcccttac 1200

gaccagggct acacacgtgc tacaatggta ggtacagagg gttgctacac agcgatgtga 1260

tgctaatctc aaaaagccta tcgtagtccg gattggagtc tgcaactcga ctccatgaag 1320

tcggaatcgc tagtaatcgc ggatcagaat gccgcggtga atacgttccc gggccttgta 1380

cacaccgccc gtcacaccat gggagtctat tgcaccagaa gtaggtagcc taacgaaaga 1440

gggcgcttac cacggtgtgg tcgatgactg gggtgaagtc gtaacaaggt agccgtaggg 1500

gaacctgcgg ttggatcacc tc 1522

<210> 1263
<211> 1450
<212> DNA
<213> Moraxella sp. 16285

<400> 1263
attgaacgct ggcggcaggc ttaacacatg caagtcgaac gatrgaacct agcttgctag 60

gggaaatagt ggcgaacggg tgagtaacat ttaggaaact gccttataga gggggatagc 120

tcggggaaac tcgaattaat accgcatacg tcctacggga gaaaggagct ttagggttct 180

gctataagat gtgcctaaat tagattagct agatggtgag gtaaaggctc accatggcga 240

cgatctataa ctggtcttag aggatgatca gtcacaccgg aactgagaca cggtccggac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggg gcaaccctga tccagccatg 360

ccgcgtgtgt gaagaaggtc ataagattgt aaagcacttt aagcagggag gaagagccag 420

tggagaaaca cactggtggt gacgttacct gcagaataag caccggctaa ctctgtgcca 480

gcagccgcgg taatacagag ggtgcgagcg ttaatcggaa ttactgggcg taaagcgggt 540

gcaggtggtg cactaagtca tatgtgaaag ccctgggctt aacctaggaa cagcatatga 600

tactggtgaa ctagagtata tgagaggraa gtagaattcc aggtgtagcg gtgaaatgcg 660

tagagatctg gaggaatacc gatggcgaag gcagctttct ggcacaatac tgacactcag 720

acccgaaagc gtgggtagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 780

gtctactagc cgttggrgct catgaagcyt tagtggcgca gctaacgcga taagtagacc 840

gcctggggag tacggccgca aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc 900

ggtggagcat gtggtttaat tcgatgcaac gcgaagaacc ttacctggtc ttgacatagt 960

gagratccta cagagatgtg ggagtgccyt hgggaaytca catacaggtg ctgcatggct 1020

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttatcc 1080

ttacttgcta gcrggtarag cygagaactg taaggagact gccagtgaca aactggagga 1140

aggcggggac gacgtcaagt catcatggcc cttacgacca gggctacaca cgtgctacaa 1200

tggtaggtac agagggcagc tacacagcga tgtgatgcga atctcaaaaa gcctatcgta 1260

gtccggattg gagtctgcaa ctcgactyca tgaagtcgga atcgctagta atcgcagatc 1320

agaatgctgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag 1380

tctattgcac cagaagtagg tagcctaacg caagagggcg cttaccacgg tgtggtcgat 1440

gactggggtg 1450

<210> 1264
<211> 1226
<212> DNA
<213> Moraxella sp. GM2

<400> 1264
ctggctcaga ttgaacgctg gcggcaggct taacacatgc aagtcgaacg agtggcggac 60

gggtgagtaa catttaggaa tctgcctagt agtgggggat agctcgggga aactcgaatt 120

aataccgcat acggaaagtt gctattagat gagcctaaat cagattagct agttggtggg 180

gtaaaggccc accaaggcga cgatctgtaa ctggtctgag aggatgatca gtcacaccgg 240

aactgagaca cggtccggac tcctacggga ggcagcagtg gggaatattg gacaatgggg 300

gcaaccctga tccagccatg ccgcgtgtgt gaagaaggcc ttttggttgt aaagcacttt 360

aagcagggag gaagacgtta cctgcagaat aagcaccggc taactctgtg ccagcagccg 420

cggtaataca gagggtgcga gcgttaatcg gaattactgg gcgtaaagcg agtgtaggtg 480

gctcattaag tcacatgtga aatccccggg cttaacctgg gaactgcatg tgatactggt 540

gggctagaat atgtgagagg gaagtagaat tccaggtgta gcggtgaaat gcgtagagat 600

ctggaggaat accgatggcg aaggcagctt cctggcataa ttgacactga gattcgaaag 660

cgtgggtagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgtctactag 720

ccgttggggc tttagtggcg cagttaacgc gataagtaga ccgcctgggg agtacggccg 780

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 840

attcgatgca acgcgaagaa ccttacctgg tcttgacata tacaggtgct gcatggctgt 900

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctttcctt 960

atttgccagc ggccgggaac tttaaggata ctgccagtga caaactggag gaaggcgggg 1020

acgacgtcaa gtcatcatgg cccttacgac cagggctaca cacgtgctac aatggtaggc 1080

agagggttgc tacacagcga tgtgatgcta atctcaacct atcgtagtcc ggatggagtc 1140

tgcaactcga ctccagaagt cggaatcgct agtaatcgca gatcagaatg ctgcggtgaa 1200

tacgttcccg ggccttgtac acaccg 1226

<210> 1265

<211> 1402
<212> DNA
<213> Morganella morganii

<400> 1265
tcgggcggta acagggagaa gcttgcttct ctgctgacga gcggcggacg ggtgagtaat 60

gtatggggat ctgcctgatg gcgggggata actactggaa acggtagcta ataccgcata 120

atgtcttcgg accaaagcgg gggacctccg ggcctcgcgc catcagatga acccatatgg 180

gattagctag taggtgaggt aacggcttac ctaggcgacg atccctagct ggtctgagag 240

gatgatcagc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 360

cgggttgtaa agtactttca gtcgggagga aggtggtaag gttaataacc ttggcaattg 420

acgttaccga cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggttg attgagtcag 540

atgtgaaatc cccgggctta acccgggaat tgcatctgat actggtcagc tagagtcttg 600

tagaggggg tagaattcca tgtgtagcgg tgaaatgcgt agagatgtgg aggaataccg 660

gtggcgaagg cggccccctg gacaaagact gacgctcagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgct gtaaacgatg tcgacttgga ggttgtgccc 780

ttgaggcgtg gcttccggag ctaacgcgtt aagtcgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgcaacg cgaagaacct tacctactct tgacatccag agaactttcc agacatggat 960

tggagccttc gggaactctg agacggttaa cccgggaatt gcatctgata gtgttgtgaa 1020

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cgcgtgatgg 1080

cgggaactca aaggagactg ccggtgataa accggaggaa ggtggggatg acgtcaagtc 1140

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgtataca aagggaagcg 1200

accccgcgag ggcaagcgga actcataaag tacgtcgtag tccggattgg agtctgcaac 1260

tcgactccat gaagtcggaa tcgctagtaa tcgtagatca gaatgctacg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtaggt 1380

agcttaacct ccgggagggc gc 1402

<210> 1266
<211> 1495
<212> DNA
<213> Morganella sp. JB-T16

<400> 1266
attgaacgct ggcggcaggc ctaacacatg caagtcgggc ggtaacaggg agaagcttgc 60

ttctctgctg acgagcggcg gacgggtgag taatgtatgg ggatctgcct gatggagggg 120

gataactact ggaaacggta gctaataccg cataatgtct ccggaccaaa gcgggggacc 180

ttcgggcctc gcaccatcag atgaacccat atgggattag ctagtaggtg aggtaatggc 240

tcacctaggc gacgatctct agctggtctg agaggatgat cagccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcagcca tgccgcgtgt atgaagaagg ccttagggtt gtaaagtact ttcagtcggg 420

aggaaggtgt tgagtttaat atgctcagca attgacgtta ccgacagaag aagcaccggc 480

taactccgtg ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg 540

gcgtaaagcg cacgcaggcg gttgattaag tcagatgtga aatccccggg ctcaacccgg 600

gaattgcatc tgagactggt cagctagagt cttgtagagg ggggtagaat tccatgtgta 660

gcggtgaaat gcgtagagat gtggaggaat accggtggcg aaggcggccc cctggacaaa 720

gactgacgct caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgctgtaaac gatgtcgact tggaggttgt gcccttgagg cgtggcttcc ggagctaacg 840

cgttaagtcg accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg 900

ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta 960

ctcttgacat ccagagaact tagcagagat gctttggtgc cttcgggaac tctgagacag 1020

gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctta tcctttgttg ccagcrcgta atggygggaa ctcaaaggag actgccggtg 1140

ataaaccgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1200

acacgtgcta caatggcgta tacaaaggga agcgacctcg cgagagcaag cggaactcac 1260

aaagtacgtc gtagtccgga ttggagtctg caactcgact ccatgaagtc ggaatcgcta 1320

gtaatcgtag atcagaatgc tacggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtgggttg caaaagaagt aggtagctta accttcggga gggcgcttac 1440

cactttgtga ttcatgactg gggtgaagtc gtaacaaggt aaccgtaggg gaacc 1495

<210> 1267
<211> 1427
<212> DNA
<213> Morococcus cerebrosus

<400> 1267
atgcaagtcg gacggcagca cagagaagct tgcttcttgg gtggcgagtg gcgaacgggt 60

gagtaacata tcggaacgta ccgagcagtg ggggataact aatcgaaaga ttagctaata 120

ccgcatatat tctgaggaag aaagcagggg accatttggc cttgcgctgt ttgagcggcc 180

gatatctgat tagctagttg gtggggtaaa ggcctaccaa ggcgacgatc agtagcgggt 240

ctgagaggat gatccgccac actgggactg agacacggcc cagactccta cgggaggcag 300

cagtggggaa ttttggacaa tgggcgaaag cctgatccag ccatgccgcg tgtctgaaga 360

aggccttcgg gttgtaaagg acttttgtca gggaagaaaa gggcggggtt aataccccctg 420

tctgatgacg gtacctgaag aataagcacc ggctaactac gtgccagcag ccgcggtaat 480

acgtagggtg cgagcgttaa tcggaattac tgggcgtaaa gcgggcgcag acggttactt 540

aagcaggatg tgaaatcccc gggctcaacc tgggaactgc gttctgaact gggtgactag 600

agtgtgtcag agggaggtag aattccacgt gtagcagtga aatgcgtaga gatgtggagg 660

aataccgatg gcgaaggcag cctcctggga taacactgac gttcatgccc gaaagcgtgg 720

gtagcaaaca ggattagata ccctggtagt ccacgcccta aacgatgtcg attagctgtt 780

gggcagcatg actgcttagt agcgaagcta acgcgtgaaa tcgaccgcct ggggagtacg 840

gtcgcaagat taaaactcaa aggaattgac ggggacccgc acaagcggtg gatgatgtgg 900

attaattcga tgcaacgcga agaaccttac ctggtcttga catgtacgga atcctccaga 960

gacggaggag tgccttcggg agccgtaaca caggtgctgc atggctgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgtcattag ttgccatcat 1080

taagttgggc actctaatga gactgccggt gacaagccgg aggaaggtgg ggatgacgtc 1140

aagtcctcat ggcccttatg accagggctt cacacgtcat acaatggtcg gtacagaggg 1200

tagccaagcc gcgaggtgga gccaatctca caaaaccgat cgtagtccgg attgcactct 1260

gcaactcgag tgcatgaagt cggaatcgct agtaatcgca ggtcagcata ctgcggtgaa 1320

tacgttcccg ggtcttgtac acaccgcccg tcacaccatg ggagtggggg ataccagaag 1380

taggtagggt aaccgcaagg agcccgctta ccacggtatg cttcatg 1427

<210> 1268
<211> 1331
<212> DNA
<213> Moryella indoligenes

<400> 1268
gcgtgcttaa cacatgcaag tcgaacgagt ggcggacggg tgagtaacgc gtggggaacc 60

tgcctcatac agggggataa cagttggaaa cgactgttaa taccgcataa gaaaaagtgg 120

tatgagatgg acccgcgttc gattagccag ttggcggggt aacggcccac caaagcgacg 180

atcgatagcc gatttgagag aatgaccggc cacattggga ctgagacacg gcccaaactc 240

ctacgggagg cagcagtggg gaatattgca caatgggggg aaccctgatg cagcgacgcc 300

gcgtgagtga agaagtattt cggtatgtaa agctctatca gcagggaaga tgacggtacc 360

tgagtaagaa gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc 420

gttatccgga tttactgggt gtaaagggag cgcagacggc tatgcaagtc tgaagtgaaa 480

gcccggggct caaccccggg actgctttgg aaactgtgta gctagagtgt cggagaggta 540

agcagaattc ccagtgtagc ggtgaaatgc gtagatattg ggaagaatac cggtggcgaa 600

ggcggcttac tggacgaact gacgttcagg ctcgaaggcg tggggagcaa acaggattag 660

ataccctggt agtccacgcg gtaaacgatg aatactaggt gttggcatgt cggtgccgtc 720

gcaaacgcaa taagtattcc acctggggag tacgttcgca agaatgaaac tcaaaggaat 780

tgacggggac ccgcacaagc agtggagcat gtggtttaat tcgaagcaac gcgaagaacc 840

ttaccaagtc ttgacatcga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 900

ttgggttaag tcccgcaacg agcgcaaccc ctattgccag tagccagcag ctgggcactc 960

tggcgagact gcctgggata accaggagga aggtggggat gacgtcaaat catcatgccc 1020

cttatgattt gggcaacaca cgtgctacaa tggcgtacag agagaagcga aggagcgatc 1080

cggagcgaat ctaaaacgtc tcagttcgga tgcagtctgc aactcgactg cagaagctgg 1140

aattgctagt aatcgcgaat cagcatgtcg cggtgaatac gttcccgggt cttgtacaca 1200

ccgcccgtca caccatggga gtcagcaacg cccgaagtca gtacccaggg agctgccgaa 1260

ggcggggcgg ataactgggg tgaagtcgta acaaggtagc cgtatcggaa ggtgcggttg 1320

gatcacctcc t 1331

<210> 1269
<211> 1526
<212> DNA
<213> Mycobacterium abscessus

<400> 1269
ttttgtttgg agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg 60

caagtcgaac ggaaaggccc ttcggggtac tcgagtggcg aacgggtgag taacacgtgg 120

gtgatctgcc ctgcactctg ggataagcct gggaaactgg gtctaatacc ggataggacc 180

acacacttca tggtgagtgg tgcaaagctt ttgcggtgtg ggatgagccc gcggcctatc 240

agcttgttgg tggggtaatg gcccaccaag gcgacgacgg gtagccggcc tgagagggtg 300

accggccaca ctgggactga gatacggccc agactcctac gggaggcagc agtggggaat 360

attgcacaat gggcgcaagc ctgatgcagc gacgccgcgt gagggatgac ggccttcggg 420

ttgtaaacct ctttcagtag ggacgaagcg aaagtgacgg tacctacaga agaaggaccg 480

gccaactacg tgccagcagc cgcggtaata cgtagggtcc gagcgttgtc cggaattact 540

gggcgtaaag agctcgtagg tggtttgtcg cgttgttcgt gaaaactcac agcttaactg 600

tgggcgtgcg ggcgatacgg gcagactaga gtactgcagg ggagactgga attcctggtg 660

tagcggtgga atgcgcagat atcaggagga acaccggtgg cgaaggcggg tctctgggca 720

gtaactgacg ctgaggagcg aaagcgtggg tagcgaacag gattagatac cctggtagtc 780

cacgccgtaa acggtgggta ctaggtgtgg gtttccttcc ttgggatccg tgccgtagct 840

aacgcattaa gtaccccgcc tggggagtac ggtcgcaaga ctaaaactca aaggaattga 900

cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg aagaacctta 960

cctgggtttg acatgcacag gacgtatcta gagataggta ttcccttgtg gcctgtgtgc 1020

aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct tgtcctatgt tgccagcggg taatgccggg gactcgtagg agactgccgg 1140

ggtcaactcg gaggaaggtg gggatgacgt caagtcatca tgcccttat gtccagggct 1200

tcacacatgc tacaatggcc agtacagagg gctgcgaagc cgtaaggtgg agcgaatccc 1260

ttaaagctgg tctcagttcg gattggggtc tgcaactcga ccccatgaag tcggagtcgc 1320

tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcacgtca tgaaagtcgg taacacccga agccagtggc ctaacctttt ggagggagct 1440

gtcgaaggtg ggatcggcga ttgggacgaa gtcgtaacaa ggtagccgta ccggaaggtg 1500

cggctggatc acctcctttc taagga 1526

<210> 1270
<211> 1433
<212> DNA
<213> Mycobacterium africanum

<400> 1270
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggtct cttcggagat 60

actcgagtgg cgaacgggtg agtaacacgt gggtgatctg ccctgcactt cgggataagc 120

ctgggaaact gggtctaata ccggatagga ccacgggatg catgtcttgt ggtggaaagc 180

gctttagcgg tgtgggatga gcccgcggcc tatcagcttg ttggtggggt gacggcctac 240

caaggcgacg acgggtagcc ggcctgagag ggtgtccggc cacactggga ctgagatacg 300

gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcgc aagcctgatg 360

cagcgacgcc gcgtggggga tgacggcctt cgggttgtaa acctctttca ccatcgacga 420

aggtccgggt tctctcggat tgacggtagg tggagaagaa gcaccggcca actacgtgcc 480

agcagccgcg gtaatacgta gggtgcgagc gttgtccgga attactgggc gtaaagagct 540

cgtaggtggt ttgtcgcgtt gttcgtgaaa tctcacggct taactgtgag cgtgcgggcg 600

atacgggcag actagagtac tgcaggggag actggaattc ctggtgtagc ggtggaatgc 660

gcagatatca ggaggaacac cggtggcgaa ggcgggtctc tgggcagtaa ctgacgctga 720

ggagcgaaag cgtggggagc gaacaggatt agataccctg gtagtccacg ccgtaaacgg 780

tgggtactag gtgtgggttt ccttccttgg gatccgtgcc gtagctaacg cattaagtac 840

cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca 900

agcggcggag catgtggatt aattcgatgc aacgcgaaga accttacctg ggtttgacat 960

gcacaggacg cgtctagaga taggcgttcc cttgtggcct gtgtgcaggt ggtgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgtc 1080

tcatgttgcc agcacgtaat ggtggggact cgtgagagac tgccggggtc aactcggagg 1140

aaggtgggga tgacgtcaag tcatcatgcc ccttatgtcc agggcttcac acatgctaca 1200

atggccggta caaagggctg cgatgccgcg aggttaagcg aatccttaaa agccggtctc 1260

agttcggatc ggggtctgca actcgacccc gtgaagtcgg agtcgctagt aatcgcagat 1320

cagcaacgct gcggtgaata cgttcccggg ccttgtacac accgcccgtc acgtcatgaa 1380

agtcggtaac acccgaagcc agtggcctaa ccctcgggag ggagctgtcg aag 1433

<210> 1271
<211> 1376
<212> DNA
<213> Mycobacterium alsiensis

<400> 1271
ttttgggagt ttgatcctgg ctcaggacga acgctggcgg cgtgcttaac acatgcaagt 60

cgaacgagtg gcgaacgggt gagtaacacg tgggtaatct gccctgcact tcgggataag 120

cctgggaaac tgggtctaat accgaatagg gaaaggcggt gtgggatggg cccgcggcct 180

atcagcttgt tggtggggtg acggcctacc aaggcgacga cgggtagccg gcctgagagg 240

gtgtccggcc acactgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc 360

gggttgtaaa cctctttcac catcgacgat gacggtaggt ggagaagaag caccggccaa 420

ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg ttgtccggaa ttactgggcg 480

taaagagctc gtaggtggtt tgtcgcgttg ttcgtgaaat ctcacggctt aactgtgagc 540

gtgcgggcga tacgggcaga ctggagtact gcaggggaga ctggaattcc tggtgtagcg 600

gtggaatgcg cagatatcag gaggaacacc ggtggcgaag gcgggtctct gggcagactg 660

acgctgagga gcgaaagcgt ggggagcgaa caggattaga taccctggta gtccacgccg 720

taaacggtgg gtactaggtg tgggttgatc cgtgccgtag ctaacgcatt aagtaccccg 780

cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc cgcacaagcg 840

gcggagcatg tggattaatt cgatgcaacg cgaagaacct tacctgggtt tgacatgtgc 900

aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 960

gcgcaaccct tgtctcatgt tgccagcggc cggggactcg tgagagactg ccggggtcaa 1020

ctcggaggaa ggtggggatg acgtcaagtc atcatgcccc ttatgtccag ggcttcacac 1080

atgctacaat ggccggcaaa gggctgcgat gccgcaaggt taagcgaatc ctttccggtc 1140

tcagttcgga cggggtctgc aactcgaccc cggaagtcgg agtcgctagt aatcgcagat 1200

cagcaacgct gcggtgaata cgttcccggg ccttgtacac accgcccgtc acgtcatgaa 1260

agtcggtaac acccgaagcc agtgcctagg gagctgtcga aggtgggatc ggcgattggg 1320

acgaagtcgt aacaaggtag ccgtaccgga aggtgcggct ggatcacctc ctttct 1376

<210> 1272
<211> 1537
<212> DNA
<213> Mycobacterium avium

<400> 1272
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggcctc ttcggaggta ctcgagtggc gaacgggtga gtaacacgtg 120

ggcaatctgc cctgcacttc gggataagcc tgggaaactg ggtctaatac cggataggac 180

ctcaagacgc atgtcttctg gtggaaagct tttgcggtgt gggatgggcc cgcggcctat 240

cagcttgttg gtggggtgac ggcctaccaa ggcgacgacg ggtagccggc ctgagagggt 300

gtccggccac actgggactg agatacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga cggccttcgg 420

gttgtaaacc tctttcacca tcgacgaagg tccgggtttt ctcggattga cggtaggtgg 480

agaagaagca ccggccaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt 540

gtccggaatt actgggcgta aagagctcgt aggtggtttg tcgcgttgtt cgtgaaatct 600

cacggcttaa ctgtgagcgt gcgggcgata cgggcagact agagtactgc aggggagact 660

ggaattcctg gtgtagcggt ggaatgcgca gatatcagga ggaacaccgg tggcgaaggc 720

gggtctctgg gcagtaactg acgctgagga gcgaaagcgt ggggagcgaa caggattaga 780

taccctggta gtccacgccg taaacggtgg gtactaggtg tgggtttcct tccttgggat 840

ccgtgccgta gctaacgcat taagtacccc gcctggggag tacggccgca aggctaaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac 960

gcgaagaacc ttacctgggt ttgacatgca caggacgcgt ctagagatag gcgttccctt 1020

gtggcctgtg tgcaggtggt gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttgtctca tgttgccagc gggtaatgcc ggggactcgt 1140

gagagactgc cggggtcaac tcggaggaag gtggggatga cgtcaagtca tcatgccccc 1200

tatgtccagg gcttcacaca tgctacaatg gccggtacaa agggctgcga tgccgtaagg 1260

ttaagcgaat ccttttaaag ccggtctcag ttcggattgg ggtctgcaac tcgaccccat 1320

gaagtcggag tcgctagtaa tcgcagatca gcaacgctgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac gtcatgaaag tcggtaacac ccgaagccag tggcctaacc 1440

cttttgggag ggagctgtcg aaggtgggat cggcgattgg gacgaagtcg taacaaggta 1500

gccgtaccgg aaggtgcggc tggatcacct cctttct 1537

<210> 1273
<211> 1468
<212> DNA
<213> Mycobacterium chelonae

<400> 1273
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggccc ttcggggtac 60

tcgagtggcg aacgggtgag taacacgtgg gtgatctgcc ctgcactctg ggataagcct 120

gggaaactgg gtctaatacc ggataggacc acacacttca tggtgagtgg tgcaaagctt 180

ttgcggtgtg ggatgagccc gcggcctatc agcttgttgg tggggtaatg gcccaccaag 240

gcgacgacgg gtagccggcc tgagagggtg accggccaca ctgggactga gatacggccc 300

agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc 360

gacgccgcgt gagggatgac ggccttcggg ttgtaaacct ctttcagtag ggacgaagcg 420

aaagtgacgg tacctacaga agaaggaccg gccaactacg tgccagcagc cgcggtaata 480

cgtagggtcc gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg 540

cgttgttcgt gaaaactcac agcttaactg tgggcgtgcg ggcgatacgg gcagactaga 600

gtactgcagg ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga 660

acaccggtgg cgaaggcggg tctctgggca gtaactgacg ctgaggagcg aaagcgtggg 720

tagcgaacag gattagatac cctggtagtc cacgccgtaa acggtgggta ctaggtgtgg 780

gtttccttcc ttgggatccg tgccgtagct aacgcattaa gtaccccgcc tggggagtac 840

ggtcgcaaga ctaaaactca aaggaattga cgggggcccg cacaagcggc ggagcatgtg 900

gattaattcg atgcaacgcg aagaacctta cctgggtttg acatgcgcag gacgtatcta 960

gagataggta ttcccttgtg gcctgcgtgc aggtggtgca tggctgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcctatgt tgccagcggg 1080

taatgccggg gactcgtagg agactgccgg ggtcaactcg gaggaaggtg gggatgacgt 1140

caagtcatca tgcccccttat gtccagggct tcacacatgc tacaatggcc agtacagagg 1200

gctgcgaagc cgcaaggtgg agcgaatccc ttaaagctgg tctcagttcg gattggggtc 1260

tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagtcgg taacacccga 1380

agccagtggc ctaacctttt ggagggagct gtcgaaggtg ggatcggcga ttgggacgaa 1440

gtcgtaacaa ggtagccgta ccggaagg 1468

<210> 1274
<211> 1481
<212> DNA
<213> Mycobacterium colombiense

<400> 1274
catgcaagtc gaacggaaag gcctcttcgg aggtactcga gtggcgaacg ggtgagtaac 60

acgtgggcaa tctgccctgc acttcgggat aagcctggga aactgggtct aataccggat 120

aggaccttta gacgcatgtc ttttggtgga aagcttttgc ggtgtgggat gggcccgcgg 180

cctatcagct tgttggtggg gtgatggcct accaaggcga cgacgggtag ccggcctgag 240

agggtgtccg gccacactgg gactgagata cggcccagac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggc gcaagcctga tgcagcgacg ccgcgtgggg gatgacggcc 360

ttcgggttgt aaacctcttt caccatcgac gaaggtccgg gttttctcgg attgacggta 420

ggtggagaag aagcaccggc caactacgtg ccagcagccg cggtaatacg tagggtgcga 480

gcgttgtccg gaattactgg gcgtaaagag ctcgtaggtg gtttgtcgcg ttgttcgtga 540

aatctcacgg cttaactgtg agcgtgcggg cgatacgggc agactagagt actgcagggg 600

agactggaat tcctggtgta gcggtggaat gcgcagatat caggaggaac accggtggcg 660

aaggcgggtc tctgggcagt aactgacgct gaggagcgaa agcgtgggga gcgaacagga 720

ttagataccc tggtagtcca cgccgtaaac ggtgggtact aggtgtgggt ttccttcctt 780

gggatccgtg ccgtagctaa cgcattaagt accccgcctg gggagtacgg ccgcaaggct 840

aaaactcaaa ggaattgacg ggggcccgca caagcggcgg agcatgtgga ttaattcgat 900

gcaacgcgaa gaaccttacc tgggtttgac atgcacagga cgcgtctaga gataggcgtt 960

cccttgtggc ctgtgtgcag gtggtgcatg gctgtcgtca gctcgtgtcg tgagatgttg 1020

ggttaagtcc cgcaacgagc gcaacccttg tctcatgttg ccagcgggta atgccgggga 1080

ctcgtgagag actgccgggg tcaactcgga ggaaggtggg gatgacgtca agtcatcatg 1140

ccccttatgt ccagggcttc acacatgcta caatggccgg tacaaagggc tgcgatgccg 1200

taaggttaag cgaatccttt taaagccggt ctcagttcgg attggggtct gcaactcgac 1260

cccatgaagt cggagtcgct agtaatcgca gatcagcaac gctgcggtga atacgttccc 1320

gggccttgta cacaccgccc gtcacgtcat gaaagtcggt aacacccgaa gccagtggcc 1380

taacctttg gagggagctg tcgaaggtgg gatcggcgat tgggacgaag tcgtaacaag 1440

gtagccgtac cggaaggtgc ggctggatca cctccttttc t 1481

<210> 1275
<211> 1475
<212> DNA
<213> Mycobacterium elephantis

<400> 1275
agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca agtcgaacgg 60

aaaggcccct tcgggggtgc tcgagtggcg aacgggtgag taacacgtgg gtgatctgcc 120

ctgcactttg ggataagcct gggaaactgg gtctaatacc gaatacaccc tgctggtcgc 180

atggcctggt gggggaaagc ttttgcggtg tgggatgggc ccgcggccta tcagcttgtt 240

ggtggggtga tggcctacca aggcgacgac gggtagccgg cctgagaggg tgtccggcca 300

cactgggact gagatacggc ccagactcct acgggaggca gcagtgggga atattgcaca 360

atgggcgcaa gcctgatgca gcgacgccgc gtgggggatg acggccttcg ggttgtaaac 420

ccctttcagt atcgacgaag ccgtgaggtg acggtaggta cagaagaagc accggccaac 480

tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt 540

aaagagctcg taggtggttt gtcgcgttgt ccgtgaaaac tcacagctta actgtgggcg 600

tgcgggcgat acgggcagac tggagtactg caggggagac tggaattcct ggtgtagcgg 660

tggaatgcgc agatatcagg aggaacaccg gtggcgaagg cgggtctctg ggcagtaact 720

gacgctgagg agcgaaagcg tggggagcga acaggattag ataccctggt agtccacgcc 780

gtaaacggtg ggtactaggt gtgggtttcc ttccttggga tccgtgccgt agctaacgca 840

ttaagtaccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac cttacctggg 960

tttgacatgc acaggacgcg tctagagata ggcgttccct tgtggcctgt gtgcaggtgg 1020

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

cccttgtctc atgttgccag cacgtgatgg tggggactcg tgagagactg ccggggtcaa 1140

ctcggaggaa ggtggggatg acgtcaagtc atcatgcccc ttatgtccag ggcttcacac 1200

atgctacaat ggccggtaca aagggctgcg atgccgtgag gtggagcgaa tcctttcaaa 1260

gccggtctca gttcggatcg gggtctgcaa ctcgaccccg tgaagtcgga gtcgctagta 1320

atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

cgtcatgaaa gtcggtaaca cccgaagccg gtggcctaac ccgcaaggga gggagccgtc 1440

gaaggtggga tcggcgattg ggacgaagtc gtaac 1475

<210> 1276
<211> 1485
<212> DNA
<213> Mycobacterium gordonae

<400> 1276
tagagtttga atcatggctc aggacgaacg ctggcggcgt gcttaacaca tgcaagtcga 60

acggtaaggc ccttcggggt acacgagtgg cgaacgggtg agtaacacgt gggtaatctg 120

ccctgcacat cgggataagc ctgggaaact gggtctaata ccgaatagga ccacagaaca 180

catgtcctgt ggtggaaagc ttttgcggtg tgggatgggc ccgcggccta tcagcttgtt 240

ggtggggtga tggcccacca aggcgacgac gggtagccgg cctgagaggg tgtccggcca 300

cactgggact gagatacggc ccagactcct acgggaggca gcagtgggga atattgcaca 360

atgggcgaaa gcctgatgca gcgacgccgc gtgggggatg acggccttcg ggttgtaaac 420

ctctttcacc atcgacgaag gttcgggttt tctcggattg acggtaggtg gagaagaagc 480

accggccaac tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat 540

tactgggcgt aaagagctcg taggtggttt gtcgcgttgt tcgtgaaatc tcacggctta 600

actgtgagcg tgcgggcgat acgggcagac ttgagtactg caggggagac tggaattcct 660

ggtgtagcgg tggaatgcgc agatatcagg aggaacaccg gtggcgaagg cgggtctctg 720

ggcagtaact gacgctgagg agcgaaagcg tggggagcga acaggattag ataccctggt 780

agtccacgcc gtaaacggtg ggtactaggt gtgggtttcc ttccttggga tccgtgccgt 840

agctaacgca ttaagtaccc cgcctgggga gtacggccgc aaggctaaaa ctcaaagaaa 900

ttgacggggg cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac 960

cttacctggg tttgacatgc acaggacgcc ggcagagatg tcggttccct tgtggcctgt 1020

gtgcaggtgg tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctc atgttgccag cgggtaatgc cggggactcg tgagagactg 1140

ccggggtcaa ctcggaggaa ggtggggatg acgtcaagtc atcatgcccc ttatgtccag 1200

ggcttcacac atgctacaat ggccggtaca gagggctgcg atgccgcgag gttaagcgaa 1260

tccttttaaa gccggtctca gttcggatcg gggtctgcaa ctcgaccccg tgaagtcgga 1320

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca cgtcatgaaa gtcggtaaca cccgaagcca gtggcctaac cctttgggag 1440

ggagctgtcg aaggtgggat cggcgattgg gacgaagtcg taaca 1485

<210> 1277
<211> 1495
<212> DNA
<213> Mycobacterium intracellulare

<400> 1277
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggaaaggccc cttcgggggt actcgagtgg cgaacgggtg agtaacacgt gggcaatctg 120

ccctgcactt cgggataagc ctgggaaact gggtctaata ccggatagga cctttaggcg 180

catgtcttta ggtggaaagc ttttgcggtg tgggatgggc ccgcggccta tcagcttgtt 240

ggtggggtga tggcctacca aggcgacgac gggtagccgg cctgagaggg tgtccggcca 300

cactgggact gagatacggc ccagactcct acgggaggca gcagtgggga atattgcaca 360

atgggcgcaa gcctgatgca gcgacgccgc gtgggggatg acggccttcg ggttgtaaac 420

ctctttcacc atcgacgaag gtccgggttt tctcggattg acggtaggtg gagaagaagc 480

accggccaac tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat 540

tactgggcgt aaagagctcg taggtggttt gtcgcgttgt tcgtgaaatc tcacggctta 600

actgtgagcg tgcgggcgat acgggcagac tagagtactg caggggagac tggaattcct 660

ggtgtagcgg tggaatgcgc agatatcagg aggaacaccg gtggcgaagg cgggtctctg 720

ggcagtaact gacgctgagg agcgaaagcg tggggagcga acaggattag ataccctggt 780

agtccacgcc gtaaacggtg ggtactaggt gtgggtttcc ttccttggga tccgtgccgt 840

agctaacgca ttaagtaccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac 960

cttacctggg tttgacatgc acaggacgcg tctagagata ggcgttccct tgtggcctgt 1020

gtgcaggtgg tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctc atgttgccag cgggtaatgc cggggactcg tgagagactg 1140

ccggggtcaa ctcggaggaa ggtggggatg acgtcaagtc atcatgcccc ttatgtccag 1200

ggcttcacac atgctacaat ggccggtaca aagggctgcg atgccgcaag gttaagcgaa 1260

tccttttaaa gccggtctca gttcggattg gggtctgcaa ctcgacccca tgaagtcgga 1320

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca cgtcatgaaa gtcggtaaca cccgaagcca gtggcctaac ccttgggagg 1440

gagctgtcga aggtgggatc ggcgattggg acgaagtcgt aacaaggtag ccgta 1495

<210> 1278
<211> 1469
<212> DNA
<213> Mycobacterium kansasii

<400> 1278
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggtct cttcggagac 60

actcgagtgg cgaacgggtg agtaacacgt gggcaatctg ccctgcacac cgggataagc 120

ctgggaaact gggtctaata ccggatagga ccacttggcg catgccttgt ggtggaaagc 180

ttttgcggtg tgggatgggc ccgcggccta tcagcttgtt ggtggggtga cggcctacca 240

aggcgacgac gggtagccgg cctgagaggg tgtccggcca cactgggact gagatacggc 300

ccagactcct acgggaggca gcagtgggga atattgcaca atgggcgcaa gcctgatgca 360

gcgacgccgc gtgggggatg acggccttcg ggttgtaaac ctctttcacc atcgacgaag 420

gtccgggttc tctcggattg acggtaggtg gagaagaagc accggccaac tacgtgccag 480

cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt aaagagctcg 540

taggtggttt gtcgcgttgt tcgtgaaatc tcacggctta actgtgagcg tgcgggcgat 600

acgggcagac tagagtactg caggggagac tggaattcct ggtgtagcgg tggaatgcgc 660

agatatcagg aggaacaccg gtggcgaagg cgggtctctg ggcagtaact gacgctgagg 720

agcgaaagcg tggggagcga acaggattag ataccctggt agtccacgcc gtaaacggtg 780

ggtactaggt gtgggtttcc ttccttggga tccgtgccgt agctaacgca ttaagtaccc 840

cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac cttacctggg tttgacatgc 960

acaggacgcg tctagagata ggcgttccct tgtggcctgt gtgcaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctc 1080

atgttgccag cgggtaatgc cggggactcg tgagagactg ccggggtcaa ctcggaggaa 1140

ggtggggatg acgtcaagtc atcatgcccc ttatgtccag ggcttcacac atgctacaat 1200

ggccggtaca aagggctgcg atgccgcgag gttaagcgaa tccttttaaa gccggtctca 1260

gttcggatcg gggtctgcaa ctcgaccccg tgaagtcgga gtcgctagta atcgcagatc 1320

agcaacgctg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca cgtcatgaaa 1380

gtcggtaaca cccgaagcca gtggcctaac cctcgggagg gagctgtcga aggtgggatc 1440

ggcgattggg acgaagtcgt aacaaggta 1469

<210> 1279
<211> 1314
<212> DNA
<213> Mycobacterium lacus

<400> 1279
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgggt gatctgccct gcacttcggg ataagcctgg gaaactgggt ctaataccgg 120

atagggaaag gcggtgtggg atgagcccgc ggcctatcag cttgttggtg gggtgacggc 180

ctaccaaggc gacgacgggt agccggcctg agagggtgtc cggccacact gggactgaga 240

tacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 300

gatgcagcga cgccgcgtgg gggatgacgg ccttcgggtt gtaaacctct ttcaccatcg 360

acgatgacgg tagatggaga agaagcaccg gccaactacg tgccagcagc cgcggtaata 420

cgtagggtgc gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg 480

cgttgttcgt gaaatctcac ggcttaactg tgagcgtgcg ggcgatacgg gcagactgga 540

gtactgcagg ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga 600

acaccggtgg cgaaggcggg tctctgggca gactgacgct gaggagcgaa agcgtgggga 660

gcgaacagga ttagataccc tggtagtcca cgccgtaaac ggtgggtact aggtgtgggt 720

tgatccgtgc cgtagctaac gcattaagta ccccgcctgg ggagtacggc cgcaaggcta 780

aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgtggat taattcgatg 840

caacgcgaag aaccttacct gggtttgaca tgtgcaggtg gtgcatggct gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtct catgttgcca 960

gcggccgggg actcgtgaga gactgccggg gtcaactcgg aggaaggtgg ggatgacgtc 1020

aagtcatcat gcccccttatg tccagggctt cacacatgct acaatggccg gcaaagggct 1080

gcgatgccgc gaggttaagc gaatcctttc cggtctcagt tcggacgggg tctgcaactc 1140

gaccccggaa gtcggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc 1200

ccgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gtaacacccg aagccagtgc 1260

ctagggagct gtcgaaggtg ggatcggcga ttgggacgaa gtcgtaacaa ggta 1314

<210> 1280
<211> 1553
<212> DNA
<213> Mycobacterium leprae

<400> 1280
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggtctc taaaaaatct tttttagaga tactcgagtg gcgaacgggt 120

gagtaacacg tgggtaatct gccctgcact tcagggataa gcttgggaaa ctgggtctaa 180

taccggatag gacttcaagg cgcatgtctt gtggtggaaa gctttttgcg gtgcaggatg 240

ggcccgcggc ctatcagctt gttggtgggg tgacggccta ccaaggcgac gacgggtagc 300

cggcctgaga gggtgtacgg ccacactggg actgagatac ggcccagact cctacgggag 360

gcagcagtgg ggaatattgc acaatgggcg caagcctgat gcagcgacgc cgcgtggggg 420

atgacggctt tcgggttgta aacctctttc accatcgacg aaggtctggg ttttctcgga 480

ttgacggtag gtggagaaga agcaccggcc aactacgtgc cagcagccgc ggtaatacgt 540

agggtgcgag cgttgtccgg aattactggg cgtaaagagc tcgtaggtgg tttgtcgcgt 600

tgttcgtgaa atctcacggc ttaactgtga gcgtgcgggc gatacgggca gactggagta 660

ctgcagggga gactggaatt cctggtgtag cggtggaatg cgcagatatc aggaggaaca 720

ccagtggcga aggcgggtct ctgggcagta actgacgctg aggagcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg gtgggtacta ggtgtgggtt 840

tccttccttg ggatccgtgc cgtagctaac gcattaagta ccccgcctgg ggagtacggc 900

cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga gcatgtggat 960

taattcgatg caacgcgaag aaccttacct gggtttgaca tgcacaggat gcgtctagag 1020

ataggcactc ccttgtggcc tgtgtgcagg tggtgcatgg ctgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttgt ctcatgttgc cagcacgtaa 1140

tggtggggac tcgtgagaga ctgccgcggt caactcggag gaaggtgggg atgacgtcaa 1200

gtcatcatgc cccttatgtc cagggcttca cacatgctac aatggccggt acaaagggct 1260

gcgatgccgc aaggttaagc gaatcctttt aaagccggtc tcagttcgga tcggggtctg 1320

caactcgacc ccgtgaagtc ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa 1380

tacgttcccg ggccttgtac acaccgcccg tcacgtcatg aaagtcggta acacccgaag 1440

ccagtggcct aaccctcggg agggagctgt ccaaggtggg atcggcgatt gggacgaagt 1500

cgtaacaagg tagccgtacc ggaaggtgcg gctggatcac ctcctttcta agg 1553

<210> 1281
<211> 1538
<212> DNA
<213> Mycobacterium lepromatosis

<400> 1281
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggaaaggtct cttaatactt aaacctatta aagatactcg agtggcgaac gggtgagtaa 120

cacgtgggta atctaccctg cacttcaggg ataagcctgg gaaaccgggt ctaataccgg 180

ataggacttc aaggcgcatg tcttgtggtg gaaagctttt gcggtgcggg atgggcccgc 240

ggcctatcag cttgttggtg gggtgacggc ctaccaaggc gacgacgggt agccggcctg 300

agagggtgtc cggccacact gggactgaga tacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtgg gggatgacgg 420

ctttcgggtt gtaaacctct tcaccattg acgaagatct gggttttctc ggattgacgg 480

taggtggaga agaagcaccg gccaactacg tgccagcagc cgcggtaata cgtagggtgc 540

gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg cgttgttcgt 600

gaaatctcac ggcttaactg tgagcgtgcg ggcgatacgg gcagactgga gtactgcagg 660

ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga acaccggtgg 720

cgaaggcggg tctctgggca gtaactgacg ctgaggagcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgccgtaa acggtgggta ctaggtgtgg gtttccttcc 840

ttgggatccg tgccgtagct aacgcattaa gtaccccgcc tggggagtac ggccgcaagg 900

ctaaaactca aaggaattga cggggcccgc acaagcggcg gagcatgtgg attaattcga 960

tgcaacgcga agaaccttac ctgggtttga catgcacagg acgcgtctag agataggcgt 1020

tccttttgg cctgtgtgca ggtggtgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt gtctcatgtt gccagcacgt aatggtgggg 1140

actcgtgaga gactgccgcg gtcaactcgg aggaaggtgg ggatgacgtc aagtcatcat 1200

gcccccttatg tccagggctt cacacatgct acaatggccg gtacaaaggg ctgcgatgcc 1260

gcaaggttaa gcgaatcctt attaaagccg gtctcagttc ggatcggggt ctgcaactcg 1320

accccgtgaa gccggagtcg ctagtaatcg cagatcagca acgctgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gtaacacccg aagccagtgg 1440

cctaaccctc gggagggagc tgtcgaaggt gggatcggcg attgggacga agtcgtaaca 1500

aggtagccgt accggaaggt gcggttggat cacctcct 1538

<210> 1282
<211> 1310
<212> DNA
<213> Mycobacterium mageritense

<400> 1282
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgggt gatctgccct gcactttggg ataagcctgg gaaactgggt ctaataccga 120

atagggaaag gcggtgtggg atgggcccgc ggcctatcag cttgttggtg gggtgatggc 180

ctaccaaggc gacgacgggt agccggcctg agagggtgac cggccacact gggactgaga 240

tacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 300

gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt gtaaacctct tcagcaaga 360

cgatgacggt atgtgcagaa gaaggaccgg ccaactacgt gccagcagcc gcggtaatac 420

gtagggtccg agcgttgtcc ggaattactg ggcgtaaaga gctcgtaggt ggtttgtcgc 480

gttgttcgtg aaaactcaca gcttaactgt gggcgtgcgg gcgatacggg cagactggag 540

tactgcaggg gagactggaa ttcctggtgt agcggtggaa tgcgcagata tcaggaggaa 600

caccggtggc gaaggcgggt ctctgggcag actgacgctg aggagcgaaa gcgtggggag 660

cgaacaggat tagataccct ggtagtccac gccgtaaacg gtgggtacta ggtgtgggtt 720

gatccgtgcc gtagctaacg cattaagtac cccgcctggg gagtacggcc gcaaggctaa 780

aactcaaagg aattgacggg ggcccgcaca agcggcggag catgtggatt aattcgatgc 840

aacgcgaaga accttacctg ggtttgacat gtgcaggtgg tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctc atgttgccag 960

cacgtgggga ctcgtgagag actgccgggg tcaactcgga ggaaggtggg gatgacgtca 1020

agtcatcatg ccccttatgt ccagggcttc acacatgcta caatggccgg caaagggctg 1080

cgatgccgtg aggtggagcg aatcctttcc ggtctcagtt cggacggggt ctgcaactcg 1140

accccggaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc 1200

cgggccttgt acacaccgcc cgtcacgtca tgaaagtcgg taacacccga agccggtgcc 1260

tagggagccg tcgaaggtgg gatcggcgat tgggacgaag tcgtaacaag 1310

<210> 1283
<211> 1471
<212> DNA
<213> Mycobacterium mantenii

<400> 1283
tggttcagga cgaacgctgg cggcgtgctt aacacatgca agtcgaacgg aaaggcctct 60

tcggaggtac tcgagtggcg aacgggtgag taacacgtgg gcaatctgcc ctgcacttcg 120

ggataagcct gggaaactgg gtctaatacc gaataggacc acttggcgca tgccttgtgg 180

tggaaagctt ttgcggtgtg ggatgggccc gcggcctatc agcttgttgg tggggtgatg 240

gcctaccaag gcgacgacgg gtagccggcc tgagagggtg tccggccaca ctgggactga 300

gatacggccc agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc 360

ctgatgcagc gacgccgcgt gggggatgac ggccttcggg ttgtaaacct ctttcaccat 420

cgacgaaggc tcactttgtg ggttgacggt aggtggagaa gaagcaccgg ccaactacgt 480

gccagcagcc gcggtaatac gtagggtgcg agcgttgtcc ggaattactg ggcgtaaaga 540

gctcgtaggt ggtttgtcgc gttgttcgtg aaatctcacg gcttaactgt gagcgtgcgg 600

gcgatacggg cagactagag tactgcaggg gagactggaa ttcctggtgt agcggtggaa 660

tgcgcagata tcaggaggaa caccggtggc gaaggcgggt ctctgggcag taactgacgc 720

tgaggagcga aagcgtgggg agcgaacagg attagatacc ctggtagtcc acgccgtaaa 780

cggtgggtac taggtgtggg tttccttcct tgggatccgt gccgtagcta acgcattaag 840

taccccgcct ggggagtacg gccgcaaggc taaaactcaa aggaattgac gggggcccgc 900

acaagcggcg gagcatgtgg attaattcga tgcaacgcga agaaccttac ctgggtttga 960

catgcacagg acgcgtctag agataggcgt tcccttgtgg cctgtgtgca ggtggtgcat 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt 1080

gtctcatgtt gccagcgggt aatgccgggg actcgtgaga gactgccggg gtcaactcgg 1140

aggaaggtgg ggatgacgtc aagtcatcat gccccttatg tccagggctt cacacatgct 1200

acaatggccg gtacaaaggg ctgcgatgcc gtaaggttaa gcgaatcctt ttaaagccgg 1260

tctcagttcg gattggggtc tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc 1320

agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacgtca 1380

tgaaagtcgg taacacccga agccagtggc ctaacccttt gggagggagc tgtcgaaggt 1440

gggatcggcg attgggacga agtcgtaaca a 1471

<210> 1284
<211> 1535
<212> DNA
<213> Mycobacterium marinum

<400> 1284
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggtctc ttcggagata ctcgagtggc gaacgggtga gtaacacgtg 120

ggcgatctgc cctgcacttc gggataagcc tgggaaactg ggtctaatac cggataggac 180

cacgggattc atgtcctgtg gtggaaagct tttgcggtgt gggatgggcc cgcggcctat 240

cagcttgttg gtggggtaac ggcctaccaa ggcgacgacg ggtagccggc ctgagagggt 300

gtccggccac actgggactg agatacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga cggccttcgg 420

gttgtaaacc tctttcacca tcgacgaagg ttcgggtttt ctcggattga cggtaggtgg 480

agaagaagca ccggccaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt 540

gtccggaatt actgggcgta aagagctcgt aggtggtttg tcgcgttgtt cgtgaaatct 600

cacggcttaa ctgtgagcgt gcgggcgata cgggcagact agagtactgc aggggagact 660

ggaattcctg gtgtagcggt ggaatgcgca gatatcagga ggaacaccgg tggcgaaggc 720

gggtctctgg gcagtaactg acgctgagga gcgaaagcgt ggggagcgaa caggattaga 780

taccctggta gtccacgccg taaacggtgg gtactaggtg tgggtttcct tccttgggat 840

ccgtgccgta gctaacgcat taagtacccc gcctggggag tacggccgca aggctaaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat gtggattaat tcgatgcaac 960

gcgaagaacc ttacctgggt ttgacatgca caggacgcgt ctagagatag gcgttccctt 1020

gtggcctgtg tgcaggtggt gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttgtctca tgttgccagc acgtaatggt ggggactcgt 1140

gagagactgc cggggtcaac tcggaggaag gtggggatga cgtcaagtca tcatgcccct 1200

tatgtccagg gcttcacaca tgctacaatg gccggtacaa agggctgcga tgccgcgagg 1260

ttaagcgaat cctttaaagc cggtctcagt tcggatcggg gtctgcaact cgaccccgtg 1320

aagtcggagt cgctagtaat cgcagatcag caacgctgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcacg tcatgaaagt cggtaacacc cgaagccagt ggcctaaccc 1440

tttgggaggg agctgtcgaa ggtgggatcg gcgattggga cgaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gatcacctcc tttct 1535

<210> 1285
<211> 1484
<212> DNA
<213> Mycobacterium microti

<400> 1285
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggtct cttcggagat 60

actcgagtgg cgaacgggtg agtaacacgt gggtgatctg ccctgcactt cgggataagc 120

ctgggaaact gggtctaata ccggatagga ccacgggatg catgtcttgt ggtggaaagc 180

gctttagcgg tgtgggatga gcccgcggcc tatcagcttg ttggtggggt gacggcctac 240

caaggcgacg acgggtagcc ggcctgagag ggtgtccggc cacactggga ctgagatacg 300

gcccagactc ctacgggagg cagcagtggg gaatattgca caatgggcgc aagcctgatg 360

cagcgacgcc gcgtggggga tgacggcctt cgggttgtaa acctctttca ccatcgacga 420

aggtccgggt tctctcggat tgacggtagg tggagaagaa gcaccggcca actacgtgcc 480

agcagccgcg gtaatacgta gggtgcgagc gttgtccgga attactgggc gtaaagagct 540

cgtaggtggt ttgtcgcgtt gttcgtgaaa tctcacggct taactgtgag cgtgcgggcg 600

atacgggcag actagagtac tgcaggggag actggaattc ctggtgtagc ggtggaatgc 660

gcagatatca ggaggaacac cggtggcgaa ggcgggtctc tgggcagtaa ctgacgctga 720

ggagcgaaag cgtggggagc gaacaggatt agataccctg gtagtccacg ccgtaaacgg 780

tgggtactag gtgtgggttt ccttccttgg gatccgtgcc gtagctaacg cattaagtac 840

cccgcctggg gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca 900

agcggcggag catgtggatt aattcgatgc aacgcgaaga accttacctg ggtttgacat 960

gcacaggacg cgtctagaga taggcgttcc cttgtggcct gtgtgcaggt ggtgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgtc 1080

tcatgttgcc agcacgtaat ggtggggact cgtgagagac tgccggggtc aactcggagg 1140

aaggtgggga tgacgtcaag tcatcatgcc ccttatgtcc agggcttcac acatgctaca 1200

atgaccggta caaagggctg cgatgccgcg aggttaagcg aatccttaaa agccggtctc 1260

agttcggatc ggggtctgca actcgacccc gtgaagtcgg agtcgctagt aatcgcagat 1320

cagcaacgct gcggtgaata cgttcccggg ccttgtacac accgcccgtc acgtcatgaa 1380

agtcggtaac acccgaagcc agtggcctaa ccctcgggag ggagctgtcg aaggtgggat 1440

cggcgattgg gacgaagtcg taacaaggta gccgtaccgg aagg 1484

<210> 1286
<211> 1273
<212> DNA
<213> Mycobacterium neoaurum

<400> 1286
tggcgaacgg gtgagtaaca cgtgggtgat ctgccctgca ctttgggata agcctgggaa 60

actgggtcta ataccgaata tgatcatcgg cttcatggtc ggtggtggaa agcttttgcg 120

gtgtgggatg ggcccgcggc ctatcagctt gttggtgggg taatggccta ccaaggcgac 180

gacgggtagc cggcctgaga gggtgaccgg ccacactggg actgagatac ggcccagact 240

cctacgggag gcagcagtgg ggaatattgc acaatgggcg caagcctgat gcagcgacgc 300

cgcgtgaggg atgacggcct tcgggttgta aacctctttc agcacagacg aagcgcaagt 360

gacggtatgt gcagaagaag gaccggccaa ctacgtgcca gcagccgcgg taatacgtag 420

ggtccgagcg ttgtccggaa ttactgggcg taaagagctc gtaggtggtt tgtcgcgttg 480

ttcgtgaaaa ctcacagctt aactgtgggc gtgcgggcga tacgggcaga ctagagtact 540

gcaggggaga ctggaattcc tggtgtagcg gtggaatgcg cagatatcag gaggaacacc 600

ggtggcgaag gcgggtctct gggcagtaac tgacgctgag gagcgaaagc gtggggagcg 660

aacaggatta gataccctgg tagtccacgc cgtaaacggt gggtactagg tgtgggtttc 720

cttccttggg atccgtgccg tagctaacgc attaagtacc ccgcctgggg agtacggccg 780

caaggctaaa actcaaagga attgacgggg gcccgcacaa gcggcggagc atgtggatta 840

attcgatgca acgcgaagaa ccttacctgg gtttgacatg cacaggacgc tggtagagat 900

atcagttccc ttgtggcctg tgtgcaggtg gtgcatggct gtcgtcagct cgtgtcgtga 960

gatgttgggt taagtcccgc aacgagcgca acccttgtcc tatgttgcca gcgggttatg 1020

ccggggactc gtaggagact gccggggtca actcggagga aggtggggat gacgtcaagt 1080

catcatgccc cttatgtcca gggcttcaca catgctacaa tggccggtac aaagggctgc 1140

gatgccgtga ggtggagcga atcctttcaa agccggtctc agttcggatc ggggtctgca 1200

actcgacccc gtgaagtcgg agtcgctagt aatcgcagat cagcaacgct gcggtgaata 1260

cgttcccggg cct 1273

<210> 1287
<211> 1523
<212> DNA
<213> Mycobacterium parascrofulaceum

<400> 1287
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggtctc ttcggagata ctcgagtggc gaacgggtga gtaacacgtg 120

ggcaatctgc cctgcacttc gggataagcc tgggaaactg ggtctaatac cggataggac 180

cacttggcgc atgccttgtg gtggaaagct ttgcggtgt gggatgggcc cgcggcctat 240

cagctagttg gtggggtgat ggcctaccaa ggcgacgacg ggtagccggc ctgagagggt 300

gtccggccac actgggactg agatacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgcaag cctgatgcag cgacgccgcg tgggggatga cggccttcgg 420

gttgtaaacc tctttcagca gggacgaagc gcaagtgacg gtacctgcag aagaagcacc 480

ggccaactac gtgccagcag ccgcggtaat acgtagggtg cgagcgttgt ccggaattac 540

tgggcgtaaa gagctcgtag gtggtttgtc gcgttgttcg tgaaaaccgg gggcttaacc 600

ctcggcgtgc gggcgatacg ggcagactag agtactgcag gggagactgg aattcctggt 660

gtagcggtgg aatgcgcaga tatcaggagg aacaccggtg gcgaaggcgg gtctctgggc 720

agtaactgac gctgaggagc gaaagcgtgg ggagcgaaca ggattagata ccctggtagt 780

ccacgccgta aacggtgggt actaggtgtg ggtttccttc cttgggatcc gtgccgtagc 840

taacgcatta agtaccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg 900

acgggggccc gcacaagcgg cggagcatgt ggattaattc gatgcaacgc gaagaacctt 960

acctgggttt gacatgcaca ggacgcgtct agagataggc gttcccttgt ggcctgtgtg 1020

caggtggtgc atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtctcatg ttgccagcgg gtaatgccgg ggactcgtga gagactgccg 1140

gggtcaactc ggaggaaggt ggggatgacg tcaagtcatc atgcccctta tgtccagggc 1200

ttcacacatg ctacaatggc cggtacaaag ggctgcgatg ccgcaaggtt aagcgaatcc 1260

ttttaaagcc ggtctcagtt cggatcgggg tctgcaactc gaccccgtga agtcggagtc 1320

gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacgt catgaaagtc ggtaacaccc gaagccagtg gcctaaccct tgggagggag 1440

ctgtcgaagg tgggatcggc gattgggacg aagtcgtaac aaggtagccg taccggaagg 1500

tgcggctgga tcacctcctt tct 1523

<210> 1288
<211> 1417

<212> DNA
<213> Mycobacterium paraterrae

<400> 1288
tgcttaacac atgcaagtcg aacggaaagg ccctttcggg ggtactcgag tggcgaacgg 60

gtgagtaaca cgtgggtgat ctgccctgca ctttgggata agcctgggaa actgggtcta 120

ataccgaata ggaccacgcg cttcatggtg tgtggtggaa agcttttgcg gtgtgggatg 180

ggcccgcggc ctatcagctt gttggtgggg taatggccta ccaaggcgac gacgggtagc 240

cggcctgaga gggtgtccgg ccacactggg actgagatac ggcccagact cctacgggag 300

gcagcagtgg ggaatattgc acaatgggcg caagcctgat gcagcgacgc cgcgtggggg 360

atgacggcct tcgggttgta aacctctttc agtatcggcg aagctccagg attcttcttg 420

gggtgacagt aggtacagaa gaagcaccgg ccaactacgt gccagcagcc gcggtaatac 480

gtagggtgcg agcgttgtcc ggaattactg ggcgtaaaga gctcgtaggt ggtttgtcac 540

gttgtccgtg aaaactcaca gcttaactgt gggcgtgcgg gcgatacggg cagactggag 600

tactgtaggg gagactggaa ttcctggtgt agcggtggaa tgcgcagata tcaggaggaa 660

caccggtggc gaaagcgggt ctctgggcag taactgacgc tgaggagcga aagcgtgggg 720

agcgaacagg attagatacc ctggtagtcc acgccgtaaa cggtgggtac taggtgtggg 780

tttccttcct ttagggatcc gtgccgtagc taacgcatta agtaccccgc ctggggagta 840

cggccgcaag gctaaaactc aaaggaattg acgggggccc gcacaagcgg cggagcatgt 900

ggattaattc gatgcaacgc gaagaacctt acctgggttt gacatgcaca ggacgccggt 960

agagatatcg gttcccttgt ggcctgtgtg caggtggtgc atggctgtcg tcagctcgtg 1020

tcgtgagatg ctgggttaag tcccgcaacg agcgcaaccc ttgtctcatg ttgccagcac 1080

gttatggtgg ggactcgtga gagactgccg gggtcaactc ggaggaaggt ggggatgacg 1140

tcaagtcatc atgccccttа tgtccagggc ttcacacatg ctacaatggc cggtacaaag 1200

ggctgcgatc ccgtgagggt tagcgaatcc tttaaagccg gtctcagttc ggattggggt 1260

ctgcaactcg accccatgaa gtcggagtcg ctagtaatcg cagatcagca acgctgcggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacgtc atgaaagtcg gtaacacccg 1380

aagccggtgg cctaaccctt gtggagggag ccgtcga 1417

<210> 1289
<211> 1486
<212> DNA
<213> Mycobacterium phlei

<400> 1289
tagagtttga tcatggctca ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cggaaaggcc ccttcggggg tactcgagtg gcgaacgggt gagtaacacg tgggtgatct 120

gccctgcact ctgggataag cctgggaaac tgggtctaat accggataca cccttctggt 180

tgcatggctg ggaggggaaa gcttttgcgg tgtgggatgg gcccgcggcc tatcagcttg 240

ttggtggggt gatggcctac caaggcgacg acgggtagcc ggcctgagag ggtgtccggc 300

cacactggga ctgagatacg gcccagactc ctacgggagg cagcagtggg gaatattgca 360

caatgggcgc aagcctgatg cagcgacgcc gcgtggggga tgacggcctt cgggttgtaa 420

acccctttca gtagggacga agcgtgagtg acggtaccta cagaagaagc accggccaac 480

tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt 540

aaagagctcg taggtggttt gtcgcgttgt tcgtgaaaac tcacagctta actgtgggcg 600

tgcgggcgat acgggcagac tagagtactg caggggagac tggaattcct ggtgtagcgg 660

tggaatgcgc agatatcagg aggaacaccg gtggcgaagg cgggtctctg ggcagtaact 720

gacgctgagg agcgaaagcg tggggagcga acaggattag ataccctggt agtccacgcc 780

gtaaacggtg ggtactaggt gtgggtttcc ttccttggga tccgtgccgt agctaacgca 840

ttaagtaccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac cttacctggg 960

tttgacatgc acaggacgac ggcagagatg tcgtttccct tgtggcctgt gtgcaggtgg 1020

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

cccttgtctc atgttgccag cacgttatgg tggggactcg tgagagaccg ccggggtcaa 1140

ctcggaggaa ggtggggatg acgtcaagtc atcatgcccc ttatgtccag ggcttcacac 1200

atgctacakt ggccggtaca aagggctgcg atgccgtgag gtggagcgaa tcctttcaaa 1260

gccggtctca gttcggatcg gggtctgcaa ctcgaccccg tgaagtcgga gtcgctagta 1320

atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

cgtcatgaaa gtcggtaaca cccgaagccg gtggcctaac cccttgtggg agggagccgt 1440

cgaaggtggg atcggcgatt gggacgaagt cgtaacaagg agccgc 1486

<210> 1290
<211> 1522
<212> DNA
<213> Mycobacterium seoulense

<400> 1290
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cggaaaggcc ccttcggggg tactcgagtg gcgaacgggt gagtaacacg tgggcaatct 120

gccctgcact tcgggataag cctgggaaac tgggtctaat accgaatagg accacttggc 180

gcatgccttg tggtggaaag cttttgcggt gtgggatggg cccgcggcct atcagcttgt 240

tggtggggtg atggcctacc aaggcgacga cgggtagccg gcctgagagg gtgtccggcc 300

acactgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc gggttgtaaa 420

cctctttcac catcgacgaa ggtccgggtt tctcggattg acggtaggtg gagaagaagc 480

accggccaac tacgtgccag cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat 540

tactgggcgt aaagagctcg taggtggttt gtcgcgttgt tcgtgaaatc tcacggctta 600

actgtgagcg tgcgggcgat acgggcagac tagagtactg caggggagac tggaattcct 660

ggtgtagcgg tggaatgcgc agatatcagg aggaacaccg gtggcgaagg cgggtctctg 720

ggcagtaact gacgctgagg agcgaaagcg tggggagcga acaggattag ataccctggt 780

agtccacgcc gtaaacggtg ggtactaggt gtgggtttcc ttccttggga tccgtgccgt 840

agctaacgca ttaagtaccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac 960

cttacctggg tttgacatgc acaggacgcg tctagagata ggcgttccct tgtggcctgt 1020

gtgcaggtgg tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtctc atgttgccag cgggtaatgc cggggactcg tgagagactg 1140

ccggggtcaa ctcggaggaa ggtggggatg acgtcaagtc atcatgcccc ttatgtccag 1200

ggcttcacac atgctacaat ggccggtaca aagggctgcg atgccgcaag gttaagcgaa 1260

tccttttaaa gccggtctca gttcggatcg gggtctgcaa ctcgaccccg tgaagtcgga 1320

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca cgtcatgaaa gtcggtaaca cccgaagcca gtggcctaac ccttgggagg 1440

gagctgtcga aggtgggatc ggcgattgga cgaagtcgta acaaggtagc cgtaccggaa 1500

ggtgcggctg gatcacctcc tt 1522

<210> 1291
<211> 1525
<212> DNA
<213> Mycobacterium smegmatis

<400> 1291
ttgtttggag agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca 60

agtcgaacgg aaaggccctt tcgggggtac tcgagtggcg aacgggtgag taacacgtgg 120

gtgatctgcc ctgcactttg ggataagcct gggaaactgg gtctaatacc gaatacaccc 180

tgctggtcgc atggcctggt aggggaaagc ttttgcggtg tgggatgggc ccgcggccta 240

tcagcttgtt ggtggggtga tggcctacca aggcgacgac gggtagccgg cctgagaggg 300

tgaccggcca cactgggact gagatacggc ccagactcct acgggaggca gcagtgggga 360

atattgcaca atgggcgcaa gcctgatgca gcgacgccgc gtgagggatg acggccttcg 420

ggttgtaaac ctctttcagc acagacgaag cgcaagtgac ggtatgtgca gaagaaggac 480

cggccaacta cgtgccagca gccgcggtaa tacgtagggt ccgagcgttg tccggaatta 540

ctgggcgtaa agagctcgta ggtggtttgt cgcgttgttc gtgaaaactc acagcttaac 600

tgtgggcgtg cgggcgatac gggcagacta gagtactgca ggggagactg gaattcctgg 660

tgtagcggtg gaatgcgcag atatcaggag gaacaccggt ggcgaaggcg ggtctctggg 720

cagtaactga cgctgaggag cgaaagcgtg gggagcgaac aggattagat accctggtag 780

tccacgccgt aaacggtggg tactaggtgt gggtttcctt ccttgggatc cgtgccgtag 840

ctaacgcatt aagtaccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt 900

gacgggggcc cgcacaagcg gcggagcatg tggattaatt cgatgcaacg cgaagaacct 960

tacctgggtt tgacatgcac aggacgccgg cagagatgtc ggttcccttg tggcctgtgt 1020

gcaggtggtg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttgtctcat gttgccagca cgttatggtg gggactcgtg agagactgcc 1140

ggggtcaact cggaggaagg tggggatgac gtcaagtcat catgcccctt atgtccaggg 1200

cttcacacat gctacaatgg ccggtacaaa gggctgcgat gccgtgaggt ggagcgaatc 1260

ctttcaaagc cggtctcagt tcggatcggg gtctgcaact cgaccccgtg aagtcggagt 1320

cgctagtaat cgcagatcag caacgctgcg gtgaatacgt tcccgggcct tgtacacacc 1380

gcccgtcacg tcatgaaagt cggtaacacc cgaagccggt ggcctaaccc ttgtggaggg 1440

agccgtcgaa ggtgggatcg gcgattggga cgaagtcgta acaaggtagc cgtaccggaa 1500

ggtgcggctg gatcacctcc tttct 1525

<210> 1292
<211> 1478
<212> DNA
<213> Mycobacterium sp. 1761

<400> 1292
gaacgctggc ggcgtgctta acacatgcaa gtcgaacgtg aaggcttcct tcggcatagt 60

cgagtggcga acgggtgagt aacacgtggg tgatctgccc tgcacttcgg gataagcttg 120

ggaaactggg tctaataccg gatagacgct gctacccgca tgccttttgg tggaaagctt 180

ttgcggtgtg ggatgggccc gcggcctatc agcttgttgg tgaggtaacg gcctaccaag 240

gcgacgacgg gtagccggcc tgagagggtg tccggccaca ctgggactga gatacggccc 300

agactcctac cgggagcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc 360

gacgccgcgt gggggatgac ggccttcggg tggtaaacct ctttcaccat cgacgaaggt 420

cctggtcttc tccgattgac ggtaggtgga gaagaagcac cggccaacta cgtgccagca 480

gccgcggtaa tacgtagggt gcgagcgttg tccggaatta ctgggcgtaa agagctcgta 540

ggtggtttgt cgcgttgttc gtgaaatctc acggcttaac tgtgagcgtg cgggcgatac 600

gggcagacta gagtactgca ggggagactg gaattcctgg tgtagcggtg gaatgcgcag 660

atatcaggag gaacaccggt ggcgaaggcg ggtctctggg cagtaactga cgctgaggag 720

cgaaagcgtg gggagcgaac aggattagat accctggtag tccacgccgt aaacggtggg 780

tactaggtgt gggtttcctt ccttgggatc cgtgccatag ctaacgcatt aagtaccccg 840

cctgaggagt acggccgcaa ggctaaaact caaaggaatt gacggggcc cgcaccagcg 900

gcggagcatg tggattaatt cgatgcaacg cgaagaacct tacctgggtt tgacatgcac 960

aggacgcgtc tagagatagg cgttcccttg tggcctgtgt gcaggtggtg catggctgtc 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgtttcat 1080

gttgccagcg ggtaatgccg gggactcgtg agagactgcc ggggtcaact cggaggaagg 1140

tggggatgac gtcaagtcat catgcccctt atgtccaggg cttcacacat gctacaatgg 1200

ccggtacaaa gggccgcgat gccgcgaggt taagcgaatc cttttaaagc cggtctcagt 1260

tcggatcggg gtctgcaact cgaccccgtg aagtcggagt cgctagtaat cgcagatcag 1320

caacgctgcg gtgaatacgt tcccgggcct tgtacacccc gcccgtcacg tcatgaaagt 1380

cggtaacacc cgaagccagt ggcctaaccc ctccggaggg agctgtcgaa ggtgggatcg 1440

gcgattggga cgaagtcgta acaaggtagc cgtaccgg 1478

<210> 1293
<211> 1507
<212> DNA
<213> Mycobacterium sp. 1776

<400> 1293
ctggcggcgt gcttaacaca tgcaagtcga acggaaaggc cctttcgga aggtactcga 60

gtggcgaacg ggtgagtaac acgtgggtga tctgccctgc acttcgggat aagcctggga 120

aactgggtct aataccggat aggaccacct gtcgcatggt gtgtggtgga aagcttttgc 180

ggtgtgggat gggcccgcgg cctatcaact tgttggtggg gtgatggcct accaaggcga 240

cgacgggtag ccggcctgag agggtgtccg gccacactgg gactgagata cggcccagac 300

tcctacggga ggcagcagtg gggaatattg cacaatgggc gcaagcctga tgcagcgacg 360

ccgcgtgggg gatgacggcc ttcgggttgt aaacctcttt caccatcgac gaagctgcgg 420

gttttctcct ggtgacagta tgtggagaag aagcaccggc caactacgtg ccagcagccg 480

cggtaatacg tagggtgcaa gcgttgtccg gaattactgg gcgtaaagag ctcgtaggtg 540

gtttgtcccg ttgttcgtga aatgacacag cttaactgtg ggcgtgcggg cgatacgggc 600

atactgtagt actgcagggg agactggaat tcctggtgta gcggtggaat gcgcagatat 660

caggaggaac accggtggcg aaggcgggtc tctgggcagt aactgacgct gaggagcgaa 720

agcgtgggga gcgaacagga ttagataccc tggtagtcca cgccgtaaac ggtgggtact 780

aggtgtgggt ttctttccta aggatccgtg ccgtagctaa cgcattaaat accccgcctg 840

gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcggcgg 900

agcatgtgga ttaattcgat gcaacgcgaa gaaccttacc tgggtttgac atgcacagga 960

cgcgtctaga gataggcgtt cccttgtggc ctgtgtgcag gtggtgcatg gctgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg tctcatgttg 1080

ccagcgcgtg atggcgggga ctcgtgagag actgccgggg tcaactcgga ggaaggtggg 1140

gatgacgtca agtcatcatg ccccttatgt ccagggcttc acacatgcta caatggccgg 1200

tacaaagggc tgcgatgccg tgaggttaaa ccaatccttg taaagccggt ctcagttcgg 1260

atcggggtct gcaactcgac cccgtgaagt cgaagtcgct agtaatcgca gatcagcaac 1320

gctgcggtga atacgttccc gggccttgta cacaccgccc gtcacgtcat gaaagtcggt 1380

aacacccgaa gccggtggcc taacccgttt gggagggagc cgtcgaaggt gggatcgacg 1440

attgggacga agtcgtaaca aggtagccgt accggaaggt gctgctgata aacccacctc 1500

aataaaa 1507

<210> 1294
<211> 1487
<212> DNA
<213> Mycobacterium sp. 1781

<400> 1294
catgccgggc tgctaccatg caagtcgacg gaaggcccct ttcgggggt actcgagtgg 60

cgaacgggtg agtaacacgt gggtgatctg ccctgcactt cgggataagc ttgggaaact 120

gggtctaata ccggatagga ccacatgtcg catggtgtgt ggtggaaagc ttttgcggtg 180

tgggatgggc ccgcggccta tcagcttgtt ggtggggtga tggcctacca aggcgacgac 240

gggtagccgg cctgagaggg tgtccggcca cactgggact gagatacggc ccagactcct 300

acgggaggca gcagtgggga atattgcaca atgggcgcaa gcctgatgca gcgacgccgc 360

gtgggggatg acggccttcg ggttgtaaac ctctttcacc atcgacgaag ctgcgggttt 420

tctcgtggtg acggtaggtg gagaagaagc accggccaac tacgtgccag cagccgcggt 480

aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt aaagagctcg taggtggttt 540

gtcgcgttgt tcgtggaatg ccacagctta actgtgggcg tgcgggcgat acgggcagac 600

tggagtactg caggggagac tggaattcct ggtgtagcgg tggaatgcgc agatatcagg 660

aggaacaccg gtggcgaagg cgggtctctg ggcagtaact gacgctgagg agcgaaagcg 720

tggggagcga acaggattag ataccctggt agtccacgcc gtaaacggtg ggtactaggt 780

gtgggttctt tcctaaggat ccgtgccgta gctaacgcat taagtacccc gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggg cccgcacaag cggcgggagc 900

atgtggatta attcgatgca acgcggaaga acctttacct gggtttgaca tgcacaggac 960

gcgtctagag ataggcgttt cccttgtggc ctgtgtgcag gtggtgcatg gctgtcgtca 1020

gctcgtgtcg tggagatgtt gggttaaggt cccgcaacga ggcgcaaccc ttgtctcatg 1080

ttgccagcgc gtgatgggcg ggacctcgtg gagaagactg cctggggtca cctcggagga 1140

aggtggggga tgacgtccaa gtcatcatgc cccttatgtc cagggcttca cacatgccta 1200

caatggccgg tacaaagggc tgcgatgccg tgaggattta agcgaatcct tgttaaagct 1260

cggtcttcga gttcggaatt cggggtctgc aactcgaccc cgtgaagtcg gagtcgctag 1320

taatcgcaga tcagcaacgc tgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacgtcatga aagtcggtaa cacccgaagc cggtggccta acccgtttgg gagggagccg 1440

tcgaaggtgg gatcggcgat tggacgaagt cgtaacaagt agcttca 1487

<210> 1295
<211> 1472
<212> DNA
<213> Mycobacterium sp. 1791

<400> 1295
gaacgctggc ggcgtgctta acacatgcaa gtcgaacgga aaggtccttc gggcctactc 60

gagtggcgaa cgggtgagta acacgtgggc aatctgccct gcacttcggg ataagcttgg 120

gaaactgggt ctaataccgg gtagaccgcg tcatgcatgt ccggtggtgg aaagcttttg 180

cggtgtggga tgggcccgcg gcctatcagc ttgttggtgg ggtgatggcc taccaaggcg 240

acgacgggta gccggcctga gagggtgtcc ggccacactg ggactgagat acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgcaagcctg atgcagcgac 360

gccgcgtggg ggatgacggc cttcgggttg taaacctctt tcaccatcga cgaaggttcc 420

ggttttcttc ggattgacgg taggtggaga agaagcaccg gccaactacg tgccagcagc 480

cgcggtaata cgtagggtgc gagcgttgtc cggaattact gggcgtaaag agctcgtagg 540

tggtttgtcg cgttgttcgt gaaatctcac ggcttaactg tgagcgtgcg ggcgatacgg 600

gcagacttga gtactgcagg ggagactgga attcctggtg tagcggtgga atgcgcagat 660

atcaggagga acaccggtgg cgaaggcggg tctctgggca gtaactgacg ctgaggagcg 720

aaagcgtggg gagcgaacag gattagatac cctggtagtc cacgccgtaa acggtgggta 780

ctaggtgtgg gtttccttcc ttgggatccg tgccgtagct aacgcattaa gtaccccgcc 840

tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc 900

ggagcatgtg gattaattcg atgcaacgcg aagaacctta cctgggtttg acatgcacag 960

gacgccggca gagatgtcgg ttcccttgtg gcctgtgtgc aggtggtgca tggctgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtctcatgt 1080

tgccagcggg taatgccggg gactcgtgag agactgccgg ggtcaactcg gaggaaggtg 1140

gggatgacgt caagtcatca tgccccttat gtccagggct tcacacatgc tacaatggcc 1200

ggtacaaagg gctgcgatgc cgcgaggtta agcgaatcct tttaaagccg gtctcagttc 1260

ggatcggggt ctgcaactcg accccgtgaa gtcggagtcg ctagtaatcg cagatcagca 1320

acgctgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacgtc atgaaagtcg 1380

gtaacacccg aagcccgtgg cctaacccgt tttggaggga gctgtcgaag gtgggatcgg 1440

cgattgggac gaagtcgtaa caaggtagcc gt 1472

<210> 1296
<211> 1486
<212> DNA
<213> Mycobacterium sp. 1797

<400> 1296
gaacgctggc ggcgtgctta acacatgcaa gtcgaacgtg aaggcttcct tcggcatagt 60

cgagtggcga acgggtgagt aacacgtggg tgatctgccc tgcacttcgg gataagcctg 120

ggaaactggg tctaataccg gatagacgct gctacccgca tgccttgtgg tggaaagctt 180

ttgcggtgtg ggatgggccc gcggcctatc agcttgttgg tgaggtaatg gcttaccaag 240

gcgacgacgg gtagccggcc tgagagggtg tccggccaca ctgggactga gatacggccc 300

agactcctac cggaagcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc 360

gacgccgcgt gagggatgac ggccttcggg ttgtaaacct ccttcaccat cgacgaatga 420

tctgagtttt tctcggattg acggtaggtg gagaagaagc accggccaac tacgtgccag 480

cagccgcggt aatacgtagg gtgcgagcgt tgtccggaat tactgggcgt aaagagctcg 540

taggtggttt gtcgcgttgt tcgtgaaatc tcacggctta actgtgagcg tgcgggcgat 600

acgggcagac tagagtactg caggggagac tggaattcct ggtgtagcgg tggaatgcgc 660

agatatcagg aggaacaccg gtggcgaagg cgggtctctg ggcagtaact gacgctgagg 720

agcgaaagcg tggggagcga acaggattag ataccctggt agtccacgcc gtaaacggtg 780

ggtactaggt gtgggtttcc ttccttggga tccgtgccgt agctaacgca ttaagtaccc 840

cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac cttacctggg tttgacatgc 960

acaggacgcg tctagagata ggcgttccct tgtggcctgt gtgcaggtgg tgcatggctg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctc 1080

atgttgccag cgggtaatgc cggggactcg tgagagactg ccggggtcaa ctcggaggaa 1140

ggtggggatg acgtcaagtc atcatgcccc ttatgtccag ggcttcacac atgctacaat 1200

ggccggtaca aagggctgcg atgccgtaag gttaagcgaa tccttttaaa gccggtctca 1260

gttcggattg gggtctgcaa ctcgacccca tgaagtcgga gtcgctagta atcgcagatc 1320

agcaacgctg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca cgtcatgaaa 1380

gtcggtaaca cccgaagccg gtggcctaac cctctctgga gggagccgtc gaaggtggga 1440

tcggcgattg ggacgaagtc gtaacaaggt agccgtaccg gaaggt 1486

<210> 1297
<211> 1328
<212> DNA
<213> Mycobacterium sp. AQ1GA4

<400> 1297
ggtgagtaac acgtgggtga tctgccctgc actttgggat aagcctggga aactgggtct 60

aataccgaat aggactccgg actgcatggt ctggggtgga aagcttttgc ggtgtgggat 120

gggcccgcgg cctatcagct tgttggtggg gtgatggcct accaaggcga cgacgggtag 180

ccggcctgag agggtgtccg gccacactgg gactgagata cggcccagac tcctacggga 240

ggcagcagtg gggaatattg cacaatgggc gcaagcctga tgcagcgacg ccgcgtgggg 300

gatgacggcc ttcgggttgt aaacctcttt cgcctacgac gaagcgtaag tgacggtagt 360

aggagaagaa gcaccggcca actacgtgcc agcagccgcg gtaatacgta gggtgcgagc 420

gttgtccgga attactgggc gtaaagagct cgtaggtggt ttgtcgcgtt gttcgtgaaa 480

actcacagct taactgtggg cgtgcgggcg atacgggcag actggagtac tgcaggggag 540

actggaattc ctggtgtagc ggtggaatgc gcagatatca ggaggaacac cggtggcgaa 600

ggcgggtctc tgggcagtaa ctgacgctga ggagcgaaag cgtggggagc gaacaggatt 660

agataccctg gtagtccacg ccgtaaacgg tgggtactag gtgtgggttt ccttccttgg 720

gatccgtgcc gtagctaacg cattaagtac cccgcctggg gagtacggcc gcaaggctaa 780

aactcaaagg aattgacggg ggcccgcaca agcggcggag catgtggatt aattcgatgc 840

aacgcgaaga accttacctg ggtttgacat gcacaggacg actgcagaga tgtggtttcc 900

cttgtggcct gtgtgcaggt ggtgcatggc tgtcgtcagc tcgtgtcgtg agatgttggg 960

ttaagtcccg caacgagcgc aacccttgtc tcatgttgcc agcacgttat ggtggggact 1020

cgtgagagac tgccggggtc aactcggagg aaggtgggga tgacgtcaag tcatcatgcc 1080

ccttatgtcc agggcttcac acatgctaca atggccggta caaagggctg cgatgccgtg 1140

aggtggagcg aatccttgtt aaagccggtc tcagttcgga tcggggtctg caactcgacc 1200

ccgtgaagtc ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg 1260

ggccttgtac acaccgcccg tcacgtcatg aaagtcggta acacccgaag ccggtggcct 1320

aacccttg 1328

<210> 1298
<211> 1513
<212> DNA
<213> Mycobacterium sp. B10-07.09.0206

<400> 1298
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggaaaggccc ykytygsrgg 60

gtgctcgagt ggcgaacggg tgagtaacac gtgggtgatc tgccctgcac ttcgggataa 120

gcttgggaaa ctgggtctaa taccggatag gactccgaga tgcatgtctt ggggtggaaa 180

gctttttgcg gtgtgggatg ggcccgcggc ctatcagctt gttggtgggg tgatggccta 240

ccaaggcgac gacgggtagc cggcctgaga gggtgtccgg ccacactggg actgagatac 300

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg caagcctgat 360

gcagcgacgc cgcgtggggg atgacggcct tcgggttgta aacctctttc accatcgacg 420

aagctgccgc tttttgtggt ggtgacggta ggtggagaag aagcaccggc caactacgtg 480

ccagcagccg cggtaatacg tagggtgcga gcgttgtccg gaattactgg gcgtaaagag 540

ctcgtaggtg gtttgtcgcg ttgttcgtga aattccctgg cttaactggg ggcgtgcggg 600

cgatacgggc agactggagt actgcagggg agactggaat tcctggtgta gcggtggaat 660

gcgcagatat caggaggaac accggtggcg aaggcgggtc tctgggcagt aactgacgct 720

gaggagcgaa agcgtgggga gcgaacagga ttagataccc tggtagtcca cgccgtaaac 780

ggtgggtact aggtgtgggt ttccttcctt gggatccgtg ccgtagctaa cgcattaagt 840

accccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca 900

caagcggcgg agcatgtgga ttaattcgat gcaacgcgaa gaaccttacc tgggtttgac 960

atgcacagga cgcwycyaga gatrggkgtt cccttgtggc ctgtgtgcag gtggtgcatg 1020

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 1080

tctcatgttg ccagcgcgtg atggcgggga ctcgtgagag actgccgggg tcaactcgga 1140

ggaaggtggg gatgacgtca agtcatcatg ccccttatgt ccagggcttc acacatgcta 1200

caatggccgg tacaaagggc tgcgatgccg tgaggtttag cgaatccttt aaagccggtc 1260

tcagttcgga tcggggtctg caactcgacc ccgtgaagtc ggagtcgcta gtaatcgcag 1320

atcagcaatg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacgtcatg 1380

aaagtcggta acacccgaag cccatggcct aacccgcaag ggagggagtg gtcgaaggtg 1440

ggatcggcga ttgggacgaa gtcgtaacaa ggtagccgta ccggaaggtg cggctggatc 1500

acctcctttc taa 1513

<210> 1299
<211> 1402
<212> DNA
<213> Mycobacterium sp. GN-10546

<400> 1299
catgcaagtc gaacggaaag gccctttcgg gggtactcga gtggcgaacg ggtgagtaac 60

acgtgggtga tctgccctgc actttgggat aagcctggga aactgggtct aataccgaat 120

aggaccgcat gcttcatggt gtgtggtgga aagcttttgc ggtgtgggat gggcccgcgg 180

cctatcagct tgttggtggg gtaatggcct accaaggcga cgacgggtag ccggcctgag 240

agggtgtccg gccacactgg gactgagata cggcccagac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggc gcaagcctga tgcagcgacg ccgcgtgggg gatgacggcc 360

ttcgggttgt aaacctcttt cagtatcggc gaagctccgg gatttttctt ggggtgacgg 420

taggtacaga agaagcaccg gccaactacg tgccagcagc cgcggtaata cgtagggtgc 480

gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtca cgttgtccgt 540

gaaaactcac agcttaactg tgggcgtgcg ggcgatacgg gcagactgga gtactgtagg 600

ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga acaccggtgg 660

cgaaggcggg tctctgggca gtaactgacg ctgaggagcg aaagcgtggg gagcgaacag 720

gattagatac cctggtagtc cacgccgtaa acggtgggta ctaggtgtgg gtttccttcc 780

tttagggatc cgtgccgtag ctaacgcatt aagtaccccg cctggggagt acggccgcaa 840

ggctaaaact caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggattaatt 900

cgatgcaacg cgaagaacct tacctgggtt tgacatgcac aggacgccag cagagatgtt 960

ggttcccttg tggcctgtgt gcaggtggtg catggctgtc gtcagctcgt gtcgtgagat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttgtctcat gttgccagca cgttatggtg 1080

gggactcgtg agagactgcc ggggtcaact cggaggaagg tggggatgac gtcaagtcat 1140

catgcccctt atgtccaggg cttcacacat gctacaatgg ccggtacaaa gggctgcgat 1200

cccgtgaggg ttagcgaatc ctttaaagcc ggtctcagtt cggattgggg tctgcaactc 1260

gaccccatga agtcggagtc gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacgt catgaaagtc ggtaacaccc gaagccggtg 1380

gcctaaccct tgtggaggga gc 1402

<210> 1300
<211> 1390
<212> DNA
<213> Mycobacterium sp. GN-10827

<400> 1300
tgcaagtcga acggaaaggc cccttcgggg gtgctcgagt ggcgaacggg tgagtaacac 60

gtgggtgatc tgccctgcac tttgggataa gcctgggaaa ctgggtctaa taccgaatac 120

accctgctgg tcgcatggcc tggtggggga aagcttttgc ggtgtgggat gggcccgcgg 180

cctatcagct tgttggtggg gtgatggcct accaaggcga cgacgggtag ccggcctgag 240

agggtgtccg gccacactgg gactgagata cggcccagac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggc gcaagcctga tgcagcgacg ccgcgtgggg gatgacggcc 360

ttcgggttgt aaacccctttt cagtatcgac gaagccgtga ggtgacggta ggtacagaag 420

aagcaccggc caactacgtg ccagcagccg cggtaatacg tagggtgcga gcgttgtccg 480

gaattactgg gcgtaaagag ctcgtaggtg gtttgtcgcg ttgtccgtga aaactcacag 540

cttaactgtg ggcgtgcggg cgatacgggc agactggagt actgcagggg agactggaat 600

tcctggtgta gcggtggaat gcgcagatat caggaggaac accggtggcg aaggcgggtc 660

tctgggcagt aactgacgct gaggagcgaa agcgtgggga gcgaacagga ttagataccc 720

tggtagtcca cgccgtaaac ggtgggtact aggtgtgggt ttccttcctt gggatccgtg 780

ccgtagctaa cgcattaagt accccgcctg gggagtacgg ccgcaaggct aaaactcaaa 840

ggaattgacg ggggcccgca caagcggcgg agcatgtgga ttaattcgat gcaacgcgaa 900

gaaccttacc tgggtttgac atgcacagga cgcgtctaga gataggcgtt cccttgtggc 960

ctgtgtgcag gtggtgcatg gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1020

cgcaacgagc gcaacccttg tctcatgttg ccagcacgtg atggtgggga ctcgtgagag 1080

actgccgggg tcaactcgga ggaaggtggg gatgacgtca agtcatcatg ccccttatgt 1140

ccagggcttc acacatgcta caatggccgg tacaaagggc tgcgatgccg tgaggtggag 1200

cgaatccttt caaagccggt ctcagttcgg atcggggtct gcaactcgac cccgtgaagt 1260

cggagtcgct agtaatcgca gatcagcaac gctgcggtga atacgttccc gggccttgta 1320

cacaccgccc gtcacgtcat gaaagtcggt aacacccgaa gccggtggcc taacccgcaa 1380

gggagggagc 1390

<210> 1301
<211> 1383
<212> DNA
<213> Mycobacterium sp. GN-11124

<400> 1301
tcgaacggaa aggccctttc gggggtgctc gagtggcgaa cgggtgagta acacgtgggt 60

gatctgccct gcacttcggg ataagcctgg gaaactgggt ctaataccgg ataggaccac 120

ggtctgcatg gattgtggtg gaaagctttt gcggtgtggg atgggcccgc ggcctatcag 180

cttgttggtg gggtgatggc ctaccaaggc gacgacgggt agccggcctg agagggtgtc 240

cggccacact gggactgaga tacggcccag actcctacgg gaggcagcag tggggaatat 300

tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtgg gggatgacgg ccttcgggtt 360

gtaaacccct ttcaataggg acgaagcgca agtgacggta cctatagaag aagcaccggc 420

caactacgtg ccagcagccg cggtaatacg tagggtgcga gcgttgtccg gaattactgg 480

gcgtaaagag ctcgtaggtg gtttgtcgcg ttgtccgtga aaactcacag cttaactgtg 540

ggcgtgcggg cgatacgggc agactggagt actgcagggg agactggaat tcctggtgta 600

gcggtggaat gcgcagatat caggaggaac accggtggcg aaggcgggtc tctgggcagt 660

aactgacgct gaggagcgaa agcgtgggga gcgaacagga ttagataccc tggtagtcca 720

cgccgtaaac ggtgggtact aggtgtgggt ttccttcctt gggatccgtg ccgtagctaa 780

cgcattaagt accccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg 840

ggggcccgca caagcggcgg agcatgtgga ttaattcgat gcaacgcgaa gaaccttacc 900

tgggtttgac atgcacagga cgccggcaga gatgtcggtt cccttgtggc ctgtgtgcag 960

gtggtgcatg gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1020

gcaacccttg tctcatgttg ccagcgggta atgccgggga ctcgtgagag actgccgggg 1080

tcaactcgga ggaaggtggg gatgacgtca agtcatcatg ccccttatgt ccagggcttc 1140

acacatgcta caatggccgg tacaaagggc tgcgatgccg tgaggtggag cgaatccttt 1200

caaagccggt ctcagttcgg atcggggtct gcaactcgac cccgtgaagt cggagtcgct 1260

agtaatcgca gatcagcaac gctgcggtga atacgttccc gggccttgta cacaccgccc 1320

gtcacgtcat gaaagtcggt aacacccgaa gccggtggcc taacccccttg tgggagggag 1380

ccg 1383

<210> 1302
<211> 1404
<212> DNA
<213> Mycobacterium sp. GN-9188

<400> 1302
catgcaagtc gaacggaaag gccctttcgg gggtactcga gtggcgaacg ggtgagtaac 60

acgtgggtga tctgccctgc actttgggat aagcctggga aactgggtct aataccgaat 120

atgatcatgc gcctcatggt gtgtggtgga aagcttttgc ggtgtgggat gggcccgcgg 180

cctatcagct tgttggtggg gtaatggcct accaaggcga cgacgggtag ccggcctgag 240

agggtgtccg gccacactgg gactgagata cggcccagac tcctacggga ggcagcagtg 300

gggaatattg cacaatgggc gcaagcctga tgcagcgacg ccgcgtgggg gatgacggcc 360

ttcgggttgt aaacctcttt cagtatcggc gaagctccag ggttttcttt ggggtgacgg 420

taggtacaga agaagcaccg gccaactacg tgccagcagc cgcggtaata cgtagggtgc 480

gagcgttgtc cggaattact gggcgtaaag agctcgtagg tggtttgtcg cgttgtccgt 540

gaaaactcac agctcaactg tgggcgtgcg ggcgatacgg gcagactgga gtactgtagg 600

ggagactgga attcctggtg tagcggtgga atgcgcagat atcaggagga acaccggtgg 660

cgaaggcggg tctctgggca gtaactgacg ctgaggagcg aaagcgtggg gagcgaacag 720

gattagatac cctggtagtc cacgccgtaa acggtgggta ctaggtgtgg gtttccttcc 780

tttagggatc cgtgccgtag ctaacgcatt aagtaccccg cctggggagt acggccgcaa 840

ggctaaaact caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggattaatt 900

cgatgcaacg cgaagaacct tacctgggtt tgacatgcac aggacgccgg tagagatatc 960

ggttcccttg tggcctgtgt gcaggtggtg catggctgtc gtcagctcgt gtcgtgagat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttgtctcat gttgccagca cgttatggtg 1080

gggactcgtg agagactgcc ggggtcaact cggaggaagg tggggatgac gtcaagtcat 1140

catgcccctt atgtccaggg cttcacacat gctacaatgg ccggtacaaa gggctgcgat 1200

accgtgaggt ttagcgaatc ctttaaagcc ggtctcagtt cggatcgggg tctgcaactc 1260

gaccccgtga agtcggagtc gctagtaatc gcagatcagc aacgctgcgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacgt catgaaagtc ggtaacaccc gaagccggtg 1380

gcctaaccct tgtggaggga gccg 1404

<210> 1303
<211> 1386
<212> DNA
<213> Mycobacterium sp. GR-2007-210

<400> 1303
agtcgaacgg aaaggccctt cggggtactc gagtggcgaa cgggtgagta acacgtgggt 60

gatctgccct gcactttggg ataagcctgg gaaactgggt ctaataccga atacaccctg 120

ctggccgcat ggtctggtgg gggaaagctt ttgcggtgtg ggatgggccc gcggcctatc 180

agcttgttgg tgaggttacg gctcaccaag gcgacgacgg gtagccggcc tgagagggtg 240

atcggccaca ctgggactga gatacggccc agactcctac gggaggcagc agtggggaat 300

attgcacaat gggcgcaagc ctgatgcagc gacgccgcgt gggggatgac ggccttcggg 360

ttgtaaacct ctttcagtag ggacgaagcg caagtgacgg tacctacaga agaaggaccg 420

gccaactacg tgccagcagc cgcggtaata cgtagggtcc gagcgttgtc cggaattact 480

gggcgtaaag agctcgtagg tggtttgtcg cgttgttcgt gaaaaccggg ggcttaaccc 540

tcggcgtgcg ggcgatacgg gcagacttga gtactgcagg ggagactgga attcctggtg 600

tagcggtgga atgcgcagat atcaggagga acaccggtgg cgaaggcggg tctctgggca 660

gtaactgacg ctgaggagcg aaagcgtggg gagcgaacag gattagatac cctggtagtc 720

cacgccgtaa acggtgggta ctaggtgtgg gtttccttcc ttgggatccg tgccgtagct 780

aacgcattaa gtaccccgcc tggggagtac ggccgcaagg ctaaaactca aagaaattga 840

cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg aagaacctta 900

cctgggtttg acatgcacag gacgccggca gagatgtcgg ttcccttgtg gcctgtgtgc 960

aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1020

gcgcaaccct tgtctcatgt tgccagcacg ttatggtggg gactcgtgag agactgccgg 1080

ggtcaactcg gaggaaggtg gggatgacgt caagtcatca tgccccttat gtccagggct 1140

tcacacatgc tacaatggcc ggtacaaagg gctgcgatgc cgtgaggtgg agcgaatcct 1200

ttcaaagccg gtctcagttc ggatcggggt ctgcaactcg accccgtgaa gtcggagtcg 1260

ctagtaatcg cagatcagca acgctgcggt gaatacgttc ccgggccttg tacacaccgc 1320

ccgtcacgtc atgaaagtcg gtaacacccg aagccggtgg cctaacccct tgtgggaggg 1380

agccgt 1386

<210> 1304
<211> 1484
<212> DNA
<213> Mycobacterium sp. HE5

<400> 1304
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggaaaggccc ttcggggtac tcgagtggcg aacgggtgag taacacgtgg gtgatctgcc 120

ctgcactttg ggataagcct gggaaactgg gtctaatacc gaataggacc gcatgcttca 180

tggtgtgtgg tggaaagctt ttgcggtgtg ggatgggccc gcggcctatc agcttgttgg 240

tggggtaatg gcctaccaag gcgacgacgg gtagccggcc tgagagggtg accggccaca 300

ctgggactga gatacggccc agactcctac gggaggcagc agtggggaat attgcacaat 360

gggcgcaagc ctgatgcagc gacgccgcgt gagggatgac ggccttcggg ttgtaaacct 420

ctttcagcag ggacgaagcg caagtgacgg tacctgcaga agaaggaccg gccaactacg 480

tgccagcagc cgcggtaata cgtagggtcc gagcgttgtc cggaattact gggcgtaaag 540

agctcgtagg tggtttgtcg cgttgttcgt gaaaactcac agcttaactg tgggcgtgcg 600

ggcgatacgg gcagactgga gtactgcagg ggagactgga attcctggtg tagcggtgga 660

atgcgcagat atcaggagga acaccggtgg cgaaggcggg tctctgggca gtaactgacg 720

ctgaggagcg aaagcgtggg gagcgaacag gattagatac cctggtagtc cacgccgtaa 780

acggtgggta ctaggtgtgg gtttccttcc ttgggatccg tgccgtagct aacgcattaa 840

gtaccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg 900

cacaagcggc ggagcatgtg gattaattcg atgcaacgcg aagaacctta cctgggtttg 960

acatgcacag gacgccggca gagatgtcgg ttcccttgtg gcctgtgtgc aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

tgtctcatgt tgccagcacg ttatggcggg gactcgtgag agactgccgg ggtcaactcg 1140

gaggaaggtg gggatgacgt caagtcatca tgccccttat gtccagggct tcacacatgc 1200

tacaatggcc ggtacaaagg gctgcgatgc cgtgaggtgg agcgaatcct ttcaaagccg 1260

gtctcagttc ggatcggggt ctgcaactcg accccgtgaa gtcggagtcg ctagtaatcg 1320

cagatcagca acgctgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacgtc 1380

atgaaagtcg gtaacactcg aagccggtgg cctaacccct tgtgggaggg agccgtcgaa 1440

ggtgggatcg gcgattggga cgaagtcgta acaaggtagc cgta 1484

<210> 1305
<211> 1470
<212> DNA
<213> Mycobacterium sp. NLA001000736

<400> 1305
agtttgatca tggttcagga cgaacgctgg cggcgtgctt aacacatgca agtcgaacgg 60

aaaggcccct tcgggggtgc tcgagtggcg aacgggtgag taacacgtgg gtgatctgcc 120

ctgcactctg ggataagcct gggaaactgg gtctaatacc ggataggacc gcgcatcgca 180

tggtgtgtgg tggaaagctt ttgcggtgtg ggatgggccc gcggcctatc agcttgttgg 240

tggggttatg gcctaccaag gcgacgacgg gtagccggcc tgagagggtg tccggccaca 300

ctgggactga gatacggccc agactcctac gggaggcagc agtggggaat attgcacaat 360

gggcggaagc ctgatgcagc gacgccgcgt gagggatgac ggccttcggg ttgtaaacct 420

ctttcagcct cgacgaagcg caagtgacgg taggggcaga agaagcaccg gccaactacg 480

tgccagcagc cgcggtaata cgtagggtgc gagcgttgtc cggaattact gggcgtaaag 540

agctcgtagg tggtttgtcg cgtcgtccgt gaaatcccat ggcttaactg tgggcgtgcg 600

ggcgatacgg gcagacttga gtactgcagg ggagactgga attcctggtg tagcggtgga 660

atgcgcagat atcaggagga acaccggtgg cgaaggcggg tctctgggca gtaactgacg 720

ctgaggagcg aaagcgtggg gagcgaacag gattagatac cctggtagtc cacgccgtaa 780

acggtgggta ctaggtgtgg gtttccttcc ttgggatccg tgccgtagct aacgcattaa 840

gtaccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg 900

cacaagcggc ggagcatgtg gattaattcg atgcaacgcg aagaacctta cctgggtttg 960

acatgcacag gacgactgca gagatgtggt ttcccttgtg gyctgtgtac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

tgttccatgt tgccagcgcg taatggcggg gactcatggg agactgccgg ggtcaactcg 1140

gaggaaggtg gggatgacgt caagtcatca tgcccttat gtccagggct tcacacatgc 1200

tacaatggcc ggtacaaagg gctgcgatgc cgtgaggtgg agcgaatcct ttcaaagccg 1260

gtctcagttc ggatcggggt ctgcaactcg accccgtgaa gtcggagtcg ctagtaatcg 1320

cagatcagca acgctgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacgtc 1380

atgaaagtcg gtaacacccg aagccagtgg cctaaccctt tgggggggag ctgtcgaagg 1440

tgggatcggc gattgggacg aagtcgtaac 1470

<210> 1306
<211> 1465
<212> DNA
<213> Mycobacterium sp. W

<400> 1306
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cggaaaggcc ccttcggggg tactcgagtg gcgaacgggt gagtaacacg tgggcaatct 120

gccctgcact tcgggataag cctgggaaac tgggtctaat accggatagg acctttaggc 180

gcatgtcttt aggtggaaag cttttgcggt gtgggatggg cccgcggcct atcagcttgt 240

tggtggggtg atggcctacc aaggcgacga cgggtagccg gcctgagagg gtgtccggcc 300

acactgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc gggttgtaaa 420

cctctttcac catcgacgaa ggtccgggtt ttctcggatt gacggtaggt ggagaagaag 480

caccggccaa ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg ttgtccggaa 540

ttactgggcg taaagagctc gtaggtggtt tgtcgcgttg ttcgtgaaat ctcacggctt 600

aactgtgagc gtgcgggcga tacgggcaga ctagagtact gcaggggaga ctggaattcc 660

tggtgtagcg gtggaatgcg cagatatcag gaggaacacc ggtggcgaag gcgggtctct 720

gggcagtaac tgacgctgag gagcgaaagc gtggggagcg aacaggatta gataccctgg 780

tagtccacgc cgtaaacggt gggtactagg tgtgggtttc cttccttggg atccgtgccg 840

tagctaacgc attaagtacc ccgcctgggg agtacggccg caaggctaaa actcaaagga 900

attgacgggg gcccgcacaa gcggcggagc atgtggatta attcgatgca acgcgaagaa 960

ccttacctgg gtttgacatg cacaggacgc gtctagagat aggcgttccc ttgtggcctg 1020

tgtgcaggtg gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccttgtct catgttgcca gcgggtaatg ccggggactc gtgagagact 1140

gccggggtca actcggagga aggtggggat gacgtcaagt catcatgccc cttatgtcca 1200

gggcttcaca catgctacaa tggccggtac aaagggctgc gatgccgcaa ggttaagcga 1260

atccttttaa agccggtctc agttcggatt ggggtctgca actcgacccc atgaagtcgg 1320

agtcgctagt aatcgcagat cagcaacgct gcggtgaata cgttcccggg ccttgtacac 1380

accgcccgtc acgtcatgaa agtcggtaac acccgaagcc agtggcctaa cccttgggag 1440

ggagctgtcg aaggtgggat cggcg 1465

<210> 1307
<211> 1540
<212> DNA
<213> Mycobacterium tuberculosis

<400> 1307
tttgtttgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggtctc ttcggagata ctcgagtggc gaacgggtga gtaacacgtg 120

ggtgatctgc cctgcacttc gggataagcc tgggaaactg ggtctaatac cggataggac 180

cacgggatgc atgtcttgtg gtggaaagcg ctttagcggt gtgggatgag cccgcggcct 240

atcagcttgt tggtggggtg acggcctacc aaggcgacga cgggtagccg gcctgagagg 300

gtgtccggcc acactgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg 360

aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgggggat gacggccttc 420

gggttgtaaa cctctttcac catcgacgaa ggtccgggtt ctctcggatt gacggtaggt 480

ggagaagaag caccggccaa ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg 540

ttgtccggaa ttactgggcg taaagagctc gtaggtggtt tgtcgcgttg ttcgtgaaat 600

ctcacggctt aactgtgagc gtgcgggcga tacgggcaga ctagagtact gcaggggaga 660

ctggaattcc tggtgtagcg gtggaatgcg cagatatcag gaggaacacc ggtggcgaag 720

gcgggtctct gggcagtaac tgacgctgag gagcgaaagc gtggggagcg aacaggatta 780

gataccctgg tagtccacgc cgtaaacggt gggtactagg tgtgggtttc cttccttggg 840

atccgtgccg tagctaacgc attaagtacc ccgcctgggg agtacggccg caaggctaaa 900

actcaaagga attgacgggg gcccgcacaa gcggcggagc atgtggatta attcgatgca 960

acgcgaagaa ccttacctgg gtttgacatg cacaggacgc gtctagagat aggcgttccc 1020

ttgtggcctg tgtgcaggtg gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt 1080

taagtcccgc aacgagcgca acccttgtct catgttgcca gcacgtaatg gtggggactc 1140

gtgagagact gccggggtca actcggagga aggtggggat gacgtcaagt catcatgccc 1200

cttatgtcca gggcttcaca catgctacaa tggccggtac aaagggctgc gatgccgcga 1260

ggttaagcga atccttaaaa gccggtctca gttcggatcg gggtctgcaa ctcgaccccg 1320

tgaagtcgga gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca cgtcatgaaa gtcggtaaca cccgaagcca gtggcctaac 1440

cctcgggagg gagctgtcga aggtgggatc ggcgattggg acgaagtcgt aacaaggtag 1500

ccgtaccgga aggtgcggct ggatcacctc ctttctaagg 1540

<210> 1308
<211> 1475
<212> DNA
<213> Mycobacterium ulcerans

<400> 1308
ctggcggcgt gcttaacaca tgcaagtcga acggaaaggt ctcttcggag atactcgagt 60

ggcgaacggg tgagtaacac gtgggcgatc tgccctgcac ttcgggataa gcctgggaaa 120

ctgggtctaa taccggatag gaccacggga ttcatgtcct gtggtggaaa gcttttgcgg 180

tgtgggatgg gcccgcggcc tatcagcttg ttggtggggt aacggcctac caaggcgacg 240

acgggtagcc ggcctgagag ggtgtccggc cacactggga ctgagatacg gcccagactc 300

ctacgggagg cagcagtggg gaatattgca caatgggcgc aagcctgatg cagcgacgcc 360

gcgtggggga tgacggcctt cgggttgtaa acctctttca ccatcgacga aggttcgggt 420

tttctcggat tgacggtagg tggagaagaa gcaccggcca actacgtgcc agcagccgcg 480

gtaatacgta gggtgcgagc gttgtccgga attactgggc gtaaagagct cgtaggtggt 540

ttgtcgcgtt gttcgtgaaa tctcacggct taactgtgag cgtgcgggcg atacgggcag 600

actagagtac tgcaggggag actggaattc ctggtgtagc ggtggaatgc gcagatatca 660

ggaggaacac cggtggcgaa ggcgggtctc tgggcagtaa ctgacgctga ggagcgaaag 720

cgtggggagc gaacaggatt agataccctg gtagtccacg ccgtaaacgg tgggtactag 780

gtgtgggttt ccttccttgg gatccgtgcc gtagctaacg cattaagtac cccgcctggg 840

gagtacggcc gcaaggctaa aactcaaagg aattgacggg ggcccgcaca agcggcggag 900

catgtggatt aattcgatgc aacgcgaaga accttacctg ggtttgacat gcacaggacg 960

cgtctagaga taggcgttcc cttgtggcct gtgtgcaggt ggtgcatggc tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgtc tcatgttgcc 1080

agcacgtaat ggtggggact cgtgagagac tgccggggtc aactcggagg aaggtgggga 1140

tgacgtcaag tcatcatgcc ccttatgtcc agggcttcac acatgctaca atggccggtg 1200

caaagggctg cgatgccgcg aggttaagcg aatcctttaa cgccggtctc agttcggatc 1260

ggggtctgca actcgacccc gtgaagtcgg agtcgctagt aatcgcagat cagcaacgct 1320

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acgtcatgaa agtcggtaac 1380

acccgaagcc agtggcctaa ccctttggga gggagctgtc gaaggtggga tcggcgattg 1440

ggacgaagtc gtaacaaggt agccgtaccg gaagg 1475

<210> 1309
<211> 1471
<212> DNA
<213> Mycobacterium vulneris

<400> 1309
gttcaggacg aacgctggcg gcgtgcttaa cacatgcaag tcgaacggaa aggcctcttc 60

ggaggtactc gagtggcgaa cgggtgagta acacgtgggc aatctgccct gcacttcggg 120

ataagcctgg gaaactgggt ctaataccgg ataggacctt tagacgcatg tcttttggtg 180

gaaagctttt gcggtgtggg atgggcccgc ggcctatcag cttgttggtg gggtgacggc 240

ctaccaaggc gacgacgggt agccggcctg agagggtgtc cggccacact gggactgaga 300

tacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcagcga cgccgcgtgg gggatgacgg ccttcgggtt gtaaacctct ttcaccatcg 420

acgaaggttc gggttttctc ggattgacgg taggtggaga agaagcaccg gccaactacg 480

tgccagcagc cgcggtaata cgtagggtgc gagcgttgtc cggaattact gggcgtaaag 540

agctcgtagg tggtttgtcg cgttgttcgt gaaatctcac ggcttaactg tgagcgtgcg 600

ggcgatacgg gcagactaga gtactgcagg ggagactgga attcctggtg tagcggtgga 660

atgcgcagat atcaggagga acaccggtgg cgaaggcggg tctctgggca gtaactgacg 720

ctgaggagcg aaagcgtggg gagcgaacag gattagatac cctggtagtc cacgccgtaa 780

acggtgggta ctaggtgtgg gtttccttcc ttgggatccg tgccgtagct aacgcattaa 840

gtaccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg 900

cacaagcggc ggagcatgtg gattaattcg atgcaacgcg aagaacctta cctgggtttg 960

acatgcacag gacgcgtcta gagataggcg ttcccttgtg gcctgtgtgc aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

tgtctcatgt tgccagcggg taatgccggg gactcgtgag agactgccgg ggtcaactcg 1140

gaggaaggtg gggatgacgt caagtcatca tgccccttat gtccagggct tcacacatgc 1200

tacaatggcc ggtacaaagg gctgcgatgc cgcaaggtta agcgaatcct tttaaagccg 1260

gtctcagttc ggattggggt ctgcaactcg accccatgaa gtcggagtcg ctagtaatcg 1320

cagatcagca acgctgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacgtc 1380

atgaaagtcg gtaacacccg aagccagtgg cctaaccttt tggagggagc tgtcgaaggt 1440

gggatcggcg attgggacga agtcgtaaca a 1471

<210> 1310
<211> 1346
<212> DNA
<213> Mycoplasma agalactiae

<400> 1310
gatgaacgct ggctgtgtgc ctaatacatg catgtcgagc gatgatagca atatcatagc 60

ggcgaatggg tgagtaacac gtactcaacg tacctttag attgggatag cggatggaaa 120

catccgataa taccgaatac ttattatttt tgcatgaaag taatataaaa ggaagcgttt 180

gcttcgctag aagatcggag tgcgcaacat tagctagttg gtgaggtaac ggcccaccaa 240

ggcgatgatg tttagcgggg ttgagagatt gatccgccac actgggactg agatacggcc 300

cagactccta cgggaggcag cagtagggaa tattccacaa tggacgaaag tctgatggag 360

cgacacagcg tgcaggatga aggccctatg ggttgtaaac tgctgtggtt agggaagaaa 420

aagtagcgta ggaaatgacg ctaccttgac ggtacctgat tagaaagcaa cggctaacta 480

tgtgccagca gccgcggtaa tacataggtt gcaagcgtta tccgaaatta ttgggcgtaa 540

agcgtctgta ggttgtttgt taagtctggc gttaaatttt ggggctcaac cccaaaacgc 600

gttggatact ggcagactag agttatgtag aggttagcgg aattccttgt gaagcggtga 660

aatgcgtaga tataaggaag aacatcaata tggcgaaggc agctaactgg gcatacactg 720

acactgagag acgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccc 780

taaacgatga tcattagttg atggggaact catcgacgca gctaacgcat taaatgatcc 840

gcctgagtag tacgttcgca agaataaaac ttaaaggaat tgacggggat ccgcacaagc 900

ggtggagcat gtggtttaat ttgaagatac gcgtagaacc ttacccactc ttgacatctt 960

ctgcaaagct atggagacat agtggaggtt aacagaatga cagatggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttcggttaag tcctgcaacg agcgcaaccc ttatccttag 1080

ttactaccat ttagttgagc actctaagga gactgcccga gtaatcggga ggaaggtggg 1140

gacgacgtca aatcatcatg cctcttacga gtggggctac acacgtgcta caatggacgg 1200

tacaaagaga agcgaagtgg tgacatggag caaacctcaa aaaaccgttc tcagttcgga 1260

ttgaagtctg caactcgact tcatgaagtc ggaatcgcta gtaatcgtag atcagctacg 1320

ctacggtgaa tacgttctcg ggtctt 1346

<210> 1311
<211> 1339
<212> DNA
<213> Mycoplasma amphoriforme

<400> 1311
ttgatcctgg ctcaggatta acgctggcgg catgcctaat acatgcaagt cgatcgagag 60

gcgaacgggt gagtaacacg tatccaattt accccatagc ggggataact agtcgaaaga 120

ttagctaata ccgcataact aaagttacta tgggataagg gtgcggcata tcagctagtt 180

ggtgaggtaa cggcccacca aggcaatgac gtgtagttat gctgagaggt agaataacca 240

caatggaact gagacacggt ccatactcct acgggaggca gcagtaggga atttttcaca 300

atggacgaaa gtctgatgga gcaatgccgc gtgaacgatg aaggtcttgt gattgtaaag 360

ttcttttatt taggaagatg accgtactat ttgaataagt aacgactaac tatgtgccag 420

cagtcgcggt aatacatagg ttgcaagcgt tatccggatt tattgggcgt aaaacaagcg 480

caggcggatt agaaagtctg gtgttaaaat cactgcttaa cggttgaatg cattggaaac 540

ttctagtcta gagtgtggta gagagttctg gaactccatg tggagcggtg gaatgcgtag 600

atatatggaa gaacaccagc tgcgaaggcg agaacttagg ccaactgacg cttaggcttg 660

aaagtgtggg gagcaaatag gattagatac cctagtagtc cacaccgtaa acgatggatg 720

ttaaacgtcg gggcctcggt gttgcagtta acacattaaa catcctgcct gggtagtaca 780

ttcgcaagaa tgaaactcaa aggaattgac ggggacccgc acaagtggtg gagcatgttg 840

cttaattcga cggtacacga aaaaccttac ctagacttga catcgacagg tggtgcatgg 900

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccg caacgcgcaa cccttatcgt 960

tagttatcta acgagactgc caacgcaagt tggaggaagg tggggatgac gtcaaatcat 1020

catgccttat gtctagggct gcaaacgtgc tacaatggcc aacaaacagt taccaaaccg 1080

taaggtggtg agtatctgct tggtctcagt tcggatgagg gctgcaattc gccctcagaa 1140

gtcggaatca ctagtaatcg cgaatcagct atgtcgcggt gaatacgttc tcgggtcttg 1200

tacacaccgc ccgtcaaact acgagagttg atagtgtcta aaaccgtgtg ctaagcgcat 1260

gtctaggaca agattaatga ttggagttaa gtcgtaacaa ggtaccccta cgagaacgtg 1320

ggggtggatc acctccttt 1339

<210> 1312
<211> 1525
<212> DNA
<213> Mycoplasma arthritidis

<400> 1312
atatttttaa gagtttgatc ctggctcagg atgaacgctg gctgtgtgcc taatacatgc 60

atgtcgagcg gaagtagcaa tactttagcg gcgaatgggt gagtaacacg tgcttaatct 120

acccttaga ctggaataac taatggaaac attggctaat gccggatgcg catggaatcg 180

catgattccg ttgtgaaagg agcctcaaag ctccactaga ggatgagggt gcggaacatt 240

agcttgttgg tgaggtaacg gcccaccaag gcaatgatgt ttagccgggt cgagagactg 300

aacggccaca ttgggactga gatacggccc aaactcctac gggaggcagc agtagggaat 360

attccacaat gagcgaaagc ttgatggagc gacacagcgt gcacgatgac ggtcttcgga 420

ttgtaaagtg ctgttatagg ggaagaacac ttagttgagg aaatgcttct aagctgacgg 480

taccctgtca gaaagcgatg gctaactatg tgccagcagc cgcggtaata cataggtcgc 540

aagcgttatc cggaattatt gggcgtaaag cgttcgtagg ctgtttatta agtctggagt 600

taaatcccag ggctcaaccc tggctcgctt tggatactgg taaactagag ttagatagag 660

gtaagcggaa ttccatgtga agcggtgaaa tgcgtagata tatggaagaa caccaaaggc 720

gaaggcagct tgctgggtct atactgacgc tgagggacga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgatcat tagtcggtgg attaatcact 840

gacgcagcta acgcattaaa tgatccgcct gagtagtatg ctcgcaagag tgaaacttaa 900

aggaattgac ggggacccgc acaagcggtg gagcatgtgg tttaatttga agatacgcgg 960

agaaccttac ccactcttga catccttcgc aaagctatag agatatagtg gaggttaacg 1020

gagtgacaga tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgtttg gtcaagtcct 1080

gcaacgagcg caacccctat ctttagttac taacgagtca tgtcgaggac tctagagata 1140

ctgcctgggt aactgggagg aaggtgggga tgacgtcaaa tcatcatgcc tcttacgagt 1200

ggggcaacac acgtgctaca atggtcggta caaagagaag caatatggcg acatggagca 1260

aatctcaaaa agccgatctc agttcggatt ggagtctgca attcgactcc atgaagtcgg 1320

aatcgctagt aatcgcagat cagctatgct gcggtgaata cgttctcggg tcttgtacac 1380

accgcccgtc acaccatggg agctggtaat acccaaagtc ggtttgctaa cctcggaggc 1440

gactgcctaa ggtaggactg gtgactgggg tgaagtcgta acaaggtatc cctacgagaa 1500

cgtggggatg gatcacctcc tttct 1525

<210> 1313
<211> 1474
<212> DNA
<213> Mycoplasma bovoculi

<400> 1313
ctcgctgtgt gcctaataca tgcatgttga acggaatatt ttagcttgct aaaatattta 60

gtagcgaatg ggtgagtaac acgtacctaa tctaccttta ggttcgggat aacttttgga 120

aacaagagct aatacctgat atagtttatt ttcgcatgaa gataaataaa aaggagcttc 180

acggcttcgc ctagaaatga gggtgcggaa cattagttag ttggtgaggt aatggctcac 240

caagacgatg atgtttagcg gggccaagag gttgtaccgc cacactggga ctgagatacg 300

gcccagactc ctacgggagg cagcagtaag gaattttcca caatgagcga aagcttgatg 360

gagcgacaca gcgtgcacga tgaagtcttt agggatgtaa agtgctgtta taaggaaaga 420

aaaaattaaa taggaaatga tttaatcttg acggtacctt attagaaagc gacggcaaac 480

tatgtgccag cagccgcggt aatacatagg tcgcaagcgt tatccggaat tattgggcgt 540

aaagcgtccg taggtgtttt gttaagttta aggttaaata ctgaagctca acttcagccc 600

gctttagata ctggcaaaat agaattatga agaggttagc ggaattccta gtggagcggt 660

ggaatgcgta gatattagga agaacaccaa taggcgaagg cagctaactg gtcataaatt 720

gacactaagg gacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgct 780

gtaaacgatg atcattagtt ggtggtaata atcactagca cagctaacgc gataaatgat 840

ccgcctgagt agtatgctcg caagagtgaa acttaaagga attgacggga acccgcacaa 900

gcggtggagc atgtggttta atttgaagat acgcggagaa ccttacccac tcttgacatc 960

cttgcaaagc tatagagata tagtagaggt taacaagatg acagatggtg catggttgtc 1020

gtcagctcgt gtcgtgagat gttaggttaa gtcctgcaac gagcgcaacc cctttcttta 1080

gttactaaca ttaagttgag gactctagag acactgccag cgtaagctgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gcctcttacg agtggggcaa cacacgtgct acaatggcta 1200

ctacaaagag aagcaaaacg gtgacgtcca gcaaatctca aaaaagtagt cccagttcgg 1260

attgaagtct gcaactcgac ttcatgaagt cggaatcgct agtaatcgca ggtcagctat 1320

actgcggtga atacgttctc gggttttgta cacaccgccc gtcacaccat gggagttggt 1380

aatacccaaa gtcggttagt taacttcgga gactgctgcc taaggtagga ctgatgactg 1440

gggtgaagtc gtaacaaggt atccctacga gaac 1474

<210> 1314
<211> 1459
<212> DNA
<213> Mycoplasma faucium

<400> 1314
ctggctgtgt gcctaataca tgcatgtcga gcggaagtag caatacttta gcggcgaatg 60

ggtgagtaac acgtgcttaa tctacctttt agattggaat acctaatgga aacattggtt 120

aatgccggat acgcatgaaa tcgcatgatt tcgttgtgaa aggagcgttt gctccgctaa 180

aagatgaggg tgcggaacat tagctagttg gtgaggtaat ggcccaccaa ggctatgatg 240

tttagccggg tcgagagact gaacggccac attgggactg agatacggcc caaactccta 300

cgggaggcag cagtagggaa tattccacaa tgagcgaaag cttgatggag cgacacagcg 360

tgcacgatga aggccctcgg gttgtaaagt gctgttgcaa gggaagaaca cttagttgag 420

gaaatgcaac taagctgacg gtaccttgtt agaaagcgat ggctaactat gtgccagcag 480

ccgcggtaat acataggtcg caagcgttat ccggaattat tgggcgtaaa gcgttcgtag 540

gctgtttatt aagtctggag tcaaatccca gggctcaacc ctggctcgct ttggatactg 600

gtaaactaga gttggataga ggtaagcgga attccatgtg aagcggtgaa atgcgtagat 660

atatggaaga acaccaaagg cgaaggcagc ttactgggtc tatactgacg ctgagggacg 720

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgatca 780

ttagtcggtg ggagccactg acgcagctaa cgcattaaat gatccgcctg agtagtatgc 840

tcgcaagagt gaaacttaaa ggaattgacg gggacccgca caagcggtgg agcatgtggt 900

ttaatttgaa gatacgcgga gaaccttacc cactcttgac atcctttgca aagctataga 960

gatatagtgg aggttaacag agtgacagat ggtgcatggt tgtcgtcagc tcgtgtcgtg 1020

agatgtttgg tcaagtcctg caacgagcgc aacccctatc tttagttact aacgagtcat 1080

gttgaggact ctagagatac tgcctgggta actgggagga aggtggggat gacgtcaaat 1140

catcatgcct cttacgagtg gggcaacaca cgtgctacaa tggtcggtac aaagagacgc 1200

aatacggtga cgtggagcaa atctcaaaaa gccgatctca gttcggattg aagtctgcaa 1260

ttcgacttca tgaagtcgga atcgctagta atcgcagatc agctatgctg cggtgaatac 1320

gttctcgggt cttgtacaca ccgcccgtca caccatggga gctggtaata cccaaagtcg 1380

gtttgctaac ctcggaggcg actgcctaag gtaggactgg tgactggggt gaagtcgtaa 1440

caaggtatcc ctacgagaa 1459

<210> 1315
<211> 1517
<212> DNA
<213> Mycoplasma fermentans

<400> 1315
atttttcga gagtttgatc ctggctcagg atgaacgctg gctgtgtgcc taatacatgc 60

atgtcgagcg aaggtagcaa taccttagcg gcgaatgggt gagtaacacg tgctcaacgt 120

acccttcagt ttggcatagc gactggaaac agtcgataat ttcaaatact cgtagttttc 180

gcatgaagat tacggaaaag aagcgtttgc ttcgctggag gagcggggtg cgtaacatta 240

gctagttggt gaggtaacgg cccaccaagg cgatgatgtt tagcggggtt gagagactga 300

accgccacac tgggactgag atacggccca gactcctacg ggaggcagca gtagggaata 360

ttccacaatg ggcgaaagcc tgatggagcg acacagcgtg aaggatgaag gtcctatgga 420

ttgtaaactt ctgtggtaag ggaagaaaag acagaatagg aaatgatttt gttttgacgg 480

taccttatta gaaagcaacg gctaactatg tgccagcagc cgcggtaata cataggttgc 540

aagcgttatc cggaattatt gggcgtaaag cgtctgtagg ttgtttgtta agtctggcgt 600

taaattttgg ggctcaaccc caaaacgcgt tggatactgg caggctagag ttgtgtagag 660

gttagcggaa ttccttgtga agcggtgaaa tgcgtagata taaggaagaa caccaagatg 720

gcgaaggcag ctaactggac atatactgac actgagagac gaaagcgtgg ggagcaaaca 780

ggattagata ccctggtagt ccacgcccta aacgatgatc attagctgat ggggaactca 840

tcggcgcagc taacgcatta aatgatccgc ctgagtagta cgttcgcaag aataaaactt 900

aaaggaattg acggggatcc gcacaagcgg tggagcatgt ggtttaattt gaagatacgc 960

gtagaacctt acccactctt gacatcttct gcaaagctat ggagacatag tggaggttaa 1020

cagaatgaca gatggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt tggttaagtc 1080

ctgcaacgag cgcaaccctt atccttagtt actaccattc agttgaggac tctaaggaga 1140

ctgcccgagt aatcgggagg aaggtgggga tgacgtcaaa tcatcatgcc tcttacgagt 1200

ggggcaacac acgtgctaca atggccggta caaagagaag cgaagtggtg acatggagca 1260

aacctcaaaa aaccggtctc agttcggatt gtagtctgca actcgactac atgaagtcgg 1320

aatcgctagt aatcgtagat cagctacgct acggtgaata cgttctcggg tcttgtacac 1380

accgcccgtc aaaccatggg agctggtaat gcccgaagtc ggtttataaa caaactgcct 1440

aaggcaggac tggtgactgg ggttaagtcg taacaaggta tccctacgag aacgtgggga 1500

tggatcacct cctttct 1517

<210> 1316
<211> 1545
<212> DNA
<213> Mycoplasma flocculare

<400> 1316
gcaatcatga gagtttgatc ctagctcagg atgaacgcta gctgtgtgct taatacatgc 60

atttgaacgg gatagtattt tagttttact aaagtattgt tttagtagca aatgggtgag 120

taacacgtac ctaacctacc ttttggactg ggataaccat tggaaacagt ggctaatacc 180

ggatataata aaaattcaca tgaattttta tgaaaaggag cgaaaataag ctccaccaaa 240

aaatgggggt gcgcaacatt agttagttgg tagggtaaag gcctaccaag acgatgatgt 300

ttagcggggc caagaggttg taccgccaca ctgggattga gatacggccc agactcctac 360

gggaggcagc agtaaggaat attccacaat gagcgaaagc ttgatggagc gacacagcgt 420

gcaggatgaa gtctttaggt atgtaaactg ctgttgtaag ggaagaaaaa aattaggtag 480

ggaatgatct aatcttgacg gtaccttact agaaagcgac ggcaaactat gtgccagcag 540

ccgcggtaat acataggtcg caagcgttat ccggaattat tgggcgtaaa gcgttcgtag 600

gtttttttgtt aagtttaagg ttaaatgcta aagctcaact ttagtccgct ttagatactg 660

gcaaaataga attatgaaga ggttagcgga attcctagtg gagtggtgga atacgtagat 720

attaggaaga acaccaatag gcgaaggcag ctaactggtc atatattgac actgagggac 780

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgatc 840

attagttggt ggcagaagtc actagcgcag ctaacgcgtt aaatgatccg cctgagtagt 900

atgctcgcaa gagtgaaact taaaggaatt gacgggaacc cgcacaagcg gtggagcatg 960

tggtttaatt tgaggatacg cgtagaacct tacccactct tgacattctc gcaaaactat 1020

agagatatag cggaggctaa cgagattaca gatggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt aggttaagtc ctgcaacgag cgcaaccctt ttctttagtt gctaacatta 1140

agttgagaac cctagagata ctgccggtgt aaaccggagg aaggtgggga tgacgtcaaa 1200

tcatcatgcc tcttacgagt ggggcaacac acgtgctaca atggctacta caaagagcag 1260

caaaacagtg atgtcaagct aatctcaaaa aagtagtctc agttcggatt gaagtctgca 1320

actcgacttc atgaagtcgg aatcgctagt aatcgcaggt cagctatact gcggtgaata 1380

cgttctcggg ttttgtacac accgcccgtc acaccatggg agttggtaat gcccaaagtc 1440

ggtgagttaa cctcggagac cattgcctaa ggcaggaccg atgactgggg tgaagtcgta 1500

acaaggtatc cctacgagaa cgtggggatg gaacacctcc tttct 1545

<210> 1317
<211> 1521
<212> DNA
<213> Mycoplasma genitalium

<400> 1317
ttttttctga gagtttgatc ctggctcagg attaacgctg gcggcatgcc taatacatgc 60

aagtcgatcg gaagtagcaa tactttagag gcgaacgggt gagtaacacg tatccaatct 120

accttataat gggggataac tagttgaaaa actagctaat accgcataag aactttagtt 180

cgcatgaatt aaagttgaaa ggacctgcaa gggttcgtta tttgatgagg gtgcgccata 240

tcagctagtt ggtagggtaa tggcctacca aggcaatgac gtgtagctat gctgagaagt 300

agaatagcca caatgggact gagacacggc ccatactcct acgggaggca gcagtaggga 360

atttttcaca atgagcgaaa gcttgatgga gcaatgccgc gtgaacgatg aaggtctttt 420

tgattgtaaa gttcttttat ttgggaagaa tgactctagc aggcaatggc tggagtttga 480

ctgtaccact ttgaataagt gacgactaac tatgtgccag cagtcgcggt aatacatagg 540

tcgcaagcgt tatccggatt tattgggcgt aaagcaagcg caggcggatt gaaaagtctg 600

gtgttaaagg cagctgctta acagttgtat gcattggaaa ctatcagtct agagtgtggt 660

agggagtttt ggaatttcat gtggagcggt gaaatgcgta gatatatgaa ggaacaccag 720

tggcgaaggc gaaaacttag gccattactg acgcttaggc ttgaaagtgt ggggagcaaa 780

taggattaga taccctagta gtccacaccg taaacgatag atactagctg tcggagcgat 840

cccttcggta gtgaagttaa cacattaagt atctcgcctg ggtagtacat tcgcaagaat 900

gaaactcaaa cggaattgac ggggacccgc acaagtggtg gagcatgttg cttaattcga 960

cggtacacga aaaaccttac ctagacttga catccttggc aaagttatgg aaacataatg 1020

gaggttaacc gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccttat cgttagttac attgtttaac gagactgcta 1140

atgtaaattg gaggaaggaa gggatgacgt caaatcatca tgcccttat gtctagggct 1200

gcaaacgtgc tacaatggcc aatacaaaca gtagccaact tgtaaaagtg agcaaatctg 1260

aaaagttggt ctcagttcgg attgagggct gcaattcgtc ctcatgaagc tggaatcact 1320

agtaatcgcg aatcagctat gtcgcggtga atacgttctc gggtcttgta cacaccgccc 1380

gtcaaactat gaaagctggt aatatttaaa aacgtgttgc taacctttat tggaagcgca 1440

tgtcaaggat agcaccggtg attggagtta agtcgtaaca aggtacccct acgagaacgt 1500

gggggtggat cacctccttt c 1521

<210> 1318
<211> 1521
<212> DNA
<213> Mycoplasma hominis

<400> 1318
```
tttttataag agtttgatcc tggctcagga tgaacgctgg ctgtgtgcct aatacatgca        60

tgtcgagcga ggttagcaat aacctagcgg cgaatgggtg agtaacacgt gcttaatcta       120

ccttttagat tggaataccc attggaaaca atggctaatg ccggatacgc atggaaccgc       180

atggttccgt tgtgaaaggc gctgtaaggc gccactaaaa gatgagggtg cggaacatta       240

gttagttggt gaggtaatgg cccaccaaga ctatgatgtt tagccgggtc gagagactga       300

acggccacat tgggactgag atacggccca aactcctacg ggaggcagca gtagggaata       360

ttccacaatg agcgaaagct tgatggagcg acacagcgtg cacgatgaag gtcttcggat       420

tgtaaagtgc tgttataagg gaagaacatt tgcaatagga aatgattgca gactgacggt       480

accttgtcag aaagcgatgg ctaactatgt gccagcagcc gcggtaatac ataggtcgca       540

agcgttatcc ggaattattg ggcgtaaagc gttcgtaggc tgtttgttaa gtctggagtt       600

aaatcccggg gctcaacccc ggctcgcttt ggatactagc aaactagagt tagatagagg       660

taagcggaat tccatgtgaa gcggtgaaat gcgtagatat atggaagaac accaaaggcg       720

aaggcagctt actgggtcta tactgacgct gagggacgaa agcgtgggga gcaaacagga       780

ttagataccc tggtagtcca cgccgtaaac gatgatcatt agtcggtgga gaatcactga       840

cgcagctaac gcattaaatg atccgcctga gtagtatgct cgcaagagtg aaacttaaag       900

gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taatttgaag atacacggaa       960

aaccttaccc actcttgaca tccttcgcaa agctatagag atatagtgga ggttatcgga      1020

gtgacagatg gtgcatggtt gtcgtcagct cgtgtcgtga gatgtttggt caagtcctgc      1080

aacgagcgca acccctatct ttagttacta acattaagtt gaggactcta gagatactgc      1140

ctgggtaact gggaggaagg tggggatgac gtcaaatcat catgcctctt acgagtgggg      1200

ccacacacgt gctacaatgg tcggtacaaa gagaagcaat atggcgacat ggagcaaatc      1260

tcaaaaagcc gatctcagtt cggattggag tctgcaattc gactccatga agtcggaatc      1320

gctagtaatc gcagatcagc tatgctgcgg tgaatacgtt ctcgggtctt gtacacaccg      1380

cccgtcacac catgggagct ggtaataccc aaagtcggtt tgctaacctc ggaggcgacc      1440

gcctaaggta ggactggtga ctggggtgaa gtcgtaacaa ggtatcccta cgagaacgtg      1500

gggatggatc acctcctttc t                                                1521
```

<210> 1319
<211> 1510
<212> DNA
<213> Mycoplasma orale

<400> 1319
```
agagtttgat cctggctcag gatgaacgct ggctgtgtgc ctaatacatg catgtcgagc        60
```

ggaagtagca atactttagc ggcgaatggg tgagtaacac gtgcttaatc tacctttag 120

attggaatac ctaatggaaa cattggttaa tgccggatac gcatgaagtc gcatgacttc 180

gttgtgaaag gagcgtttgc tccgctaaga gatgagggtg cggaacatta gctagttggt 240

gaggtaatgg cccaccaagg ctatgatgtt tagccgggtc gagagactga acggccacat 300

tgggactgag atacggccca aactcctacg ggaggcagca gtagggaata ttccacaatg 360

agcgaaagct tgatggagcg acacagcgtg cacgatgaag gccctcgggt tgtaaagtgc 420

tgttgcaagg gaagaacagt tagttgagga aatgcttcta atctgacggt accttgttag 480

aaagcgacgg ctaactatgt gccagcagcc gcggtaatac ataggtcgca agcgttatcc 540

ggaattattg ggcgtaaagc gttcgtaggc tgtttattaa gtctggagtc aaatcccagg 600

gctcaaccct ggctcgcttt ggatactggt aaactagagt tagatagagg taagcggaat 660

tccatgtgga gcggtgaaat gcgtagatat atggaagaac accaaaggcg aaggcagctt 720

actgggtcta tactgacgct gagggacgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgctgtaaac gatgatcatt agtcggtgga aaactactga cgcagctaac 840

gcattaaatg atccgcctga gtagtatgct cgcaagagtg aaacttaaag gaattgacgg 900

ggacccgcac aagcggtgga gcatgtggtt taatttgaag atacgcggag aaccttaccc 960

actcttgaca tcccctgcaa agctatagag atatagtaga ggttaacagg gtgacagatg 1020

gtgcatggtt gtcgtcagct cgtgtcgtga gatgtttggt caagtcctgc aacgagcgca 1080

acccctatct ttagttacta acgagtcatg tcgaggactc tagagatact gcctgggtaa 1140

ccgggaggaa ggtggggatg acgtcaaatc atcatgcctc ttacgagtgg ggctacacac 1200

gtgctacaat ggtcggtaca aagagaagca atatggcgac atggagcaaa tctcaaaaag 1260

ccgatctcag ttcggattga agtctgcaat tcgacttcat gaagtcggaa tcgctagtaa 1320

tcgcagatca gctacgctgc ggtgaatacg ttctcgggtc ttgtacacac cgcccgtcac 1380

accatgggag ctggtaatac ccaaagtcgg tttgctaacc tcggaggcga ctgcctaagg 1440

taggactggt gactggggtg aagtcgtaac aaggtatccc tacgagaacg tgcggctgga 1500

tcacctcctt 1510

<210> 1320
<211> 1475
<212> DNA
<213> Mycoplasma ovipneumoniae

<400> 1320
ctatctgtgt gcttaataca tgcatgttga acggaatatg ttagcttgct aatatattta 60

gtagcaaatg ggtgagtaac acgtacctaa cctacctttt ggaccgggat aaccattgga 120

aacagcggct aataccagat acgataaaaa aatgcatgtt tttttattaa aagaagcctt 180

taaagcttca ccaaaaaatg ggggtgcgca acattagtta gttggtaggg taaaggccta 240

ccaagacgat gatgtttagc ggggccaaga ggctgtaccg ccacactggg attgagatac 300

ggcccagact cctacgggag gcagcagtaa ggaatattcc acaatgagcg aaagcttgat 360

ggagcgacac agagtgcagg atgaagtctt tagggatgta aactgctgtt gtaagggaag 420

aaaaaactag ataggaaatg atttagtctt gacggtacct tattagaaag tgacggcaaa 480

ctatgtgcca gcagccgcgg taatacatag gtcgcaagcg ttatccggaa ttattgggcg 540

taaagcgtcc gcaggttttt tgttaagttt aaggttaaat gctaaagctc aactttagtt 600

cgctttagat actgacaaaa tagaattatg aagaggttag cggaattcct agtggagcgg 660

tggaatgcgt agatattagg aagaacacca ataggcgaag gcagctaact ggtcatatat 720

tgacactaat ggacgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc 780

cgtaaacgat gatcattagt tggtggcaaa agtcactagc acagctaacg cgttaaatga 840

tccgcctgag tagtatgctc gcaagagtga aacttaaagg aattgacggg aacccgcaca 900

agcggtggag catgtggttt aatttgaaga tacgcgtaga accttaccca ctcttgacat 960

cctcgcaaaa ctatagagat atagcggagg ctaacgagat gacagatggt gcatggttgt 1020

cgtcagctcg tgtcgtgaga tgttaggtta agtcctgcaa cgagcgcaac ccttttcttt 1080

agttgctaac attaagttga gaaccctaga gatactgccg gtgcaaaccg gaggaaggcg 1140

gggatgacgt caaatcatca tgcctcttac gagtggggca acacacgtgc tacaatggct 1200

actacaaaga gcagcgaaac agtgatgtca agctaatctc aaaaaagtag tctcagttcg 1260

gattgaagtc tgcaactcga cttcatgaag tcggaatcgc tagtaatcgc aggtcagcta 1320

tactgcggtg aatacgttct cgggttttgt acacaccgcc cgtcacacca tgggagttgg 1380

taatgcccaa agtcggtgag ttaacctcgg agaccattac ctaaggcagg accgatgact 1440

ggggtgaagt cgtaacaagg tatccctacg agaac 1475

<210> 1321
<211> 1516
<212> DNA
<213> Mycoplasma penetrans

<400> 1321
tcaattttaa gagtttgatc ctggctcagg attaacgcta gcgggatgcc taatacatgc 60

aagtcggacg aagcacttgt gcttagtggc gaacgggtga gtaacacgta tctaacatac 120

cttttagtgg gggataactg gttgaaaaac tagctaatac cgcataggac attactatcg 180

catgagaaaa tgtttaaagt tgcgtttgca acgctttaag attgaggtgt ggcatatcag 240

atagttggta gggtaacggc ctaccaagtc tatgacgtgt agctgtgctg agaggcaaaa 300

cagccacaat ggaactgaga cacggtccat acttctacgg gaggcagcag tagggaattt 360

ttcacaatgg gcgcaagcct gatggagcaa tcccgcgtga acgacgaagg ttttttaaat 420

tgtaaagttc ttttattggg gacgaattgt aagaagagga aatgcttttt atttgactgt 480

acccttttgaa taagtatcgg ctaactatgt gccagcagcc gcggtaatac ataggatgca 540

agcgttatcc ggatttactg ggcgtaaagc gagcgcaggc ggatttacaa gtctggtgtt 600

aaatatagct gcccaacagt tatatgcatt ggaaactgta agtctagagt gcagtagaga 660

gttttggaac tccatgtgga gcggtggaat gcgtagatat atggaagaac accagaggcg 720

aaggcgaaaa cttaggctgt tactgacgct taggctcgaa agtgtgggga gcaaatagga 780

ttagataccc tagtagtcca caccgtaaac gatggtaatt aaatcttggt acgggatgta 840

tcaggattgc agttaacaca ttaaattacc cgcctgggta gtacattcgc aagaatgaaa 900

ctcaaacgga attgacgggg acccgcacaa gtggtggagc atgttgctta attcgacgat 960

acacgtaaaa ccttacctgg gtttgacatc ctctgcaaag ctatagagat atagtggagg 1020

ttaacagagt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttatcgtt agttacttca tctagcgaga ctgccagcgt 1140

aagctggagg aaggtgggga tgacgtcaaa tcatcatgcc ctttatatcc agggccgcaa 1200

acgtgctaca atggtcggta caaactgttg ccaatcagca atgaggagct aatcagagaa 1260

agccgatctc agttcggatc gagggctgca attcgtcctc gtgaagttgg aatcactagt 1320

aatcgcaaat cagccatgtt gcggtgaata cgttctcggg tcttgtacac accgcccgtc 1380

aaactatgag agctggtaat acctaaaacc gttaagctaa cctcgtgagg cttgcgtcta 1440

gggtaggact ggtaattgga gttaagtcgt aacaaggtac ccctacggga atgtgggggt 1500

ggatcacctc ctttct 1516

<210> 1322
<211> 1559
<212> DNA
<213> Mycoplasma pneumoniae

<400> 1322
tgttctttca aaactggatg caatctgtca atttttctga gagtttgatc ctggctcagg 60

attaacgctg gcggcatgcc taatacatgc aagtcgatcg aaagtagtaa tactttagag 120

gcgaacgggt gagtaacacg tatccaatct accttataat gggggataac tagttgaaag 180

actagctaat accgcataag aactttggtt cgcatgaatc aaagttgaaa ggacctgcaa 240

gggttcgtta tttgatgagg gtgcgccata tcagctagtt ggtggggtaa cggcctacca 300

aggcaatgac gtgtagctat gctgagaagt agaatagcca caatgggact gagacacggc 360

ccatactcct acgggaggca gcagtaggga atttttcaca atgagcgaaa gcttgatgga 420

gcaatgccgc gtgaacgatg aaggtcttta agattgtaaa gttcttttat ttgggaagaa 480

tgactttagc aggtaatggc tagagtttga ctgtaccatt ttgaataagt gacgactaac 540

tatgtgccag cagtcgcggt aatacatagg tcgcaagcgt tatccggatt tattgggcgt 600

aaagcaagcg caggcggatt gaaaagtctg gtgttaaagg cagctgctta acagttgtat 660

gcattggaaa ctattaatct agagtgtggt agggagtttt ggaatttcat gtggagcggt 720

gaaatgcgta gatatatgaa ggaacaccag tggcgaaggc gaaaacttag gccattactg 780

acgcttaggc ttgaaagtgt ggggagcaaa taggattaga taccctagta gtccacaccg 840

taaacgatag atactagctg tcggggcgat cccctcggta gtgaagttaa cacattaagt 900

atctcgcctg ggtagtacat tcgcaagaat gaaactcaaa cggaattgac ggggacccgc 960

acaagtggtg gagcatgttg cttaattcga cggtacacga aaaaccttac ctagacttga 1020

catccttggc aaagttatgg aaacataatg gaggttaacc gagtgacagg tggtgcatgg 1080

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttat 1140

cgttagttac attgtctagc gagactgcta atgcaaattg gaggaaggaa gggatgacgt 1200

caaatcatca tgccccttat gtctagggct gcaaacgtgc tacaatggcc aatacaaaca 1260

gtcgccagct tgtaaaagtg agcaaatctg taaagttggt ctcagttcgg attgagggct 1320

gcaattcgtc ctcatgaagt cggaatcact agtaatcgcg aatcagctat gtcgcggtga 1380

atacgttctc gggtcttgta cacaccgccc gtcaaactat gaaagctggt aatatttaaa 1440

aacgtgttgc taaccattag gaagcgcatg tcaaggatag caccggtgat tggagttaag 1500

tcgtaacaag gtacccctac gagaacgtgg gggtggatca cctcctttct aatggagtt 1559

<210> 1323
<211> 1466
<212> DNA
<213> Mycoplasma putrefaciens

<400> 1323
ctggcggcat gcctaataca tgcaagtcga acgggggtgc ttgcacccca gtggcgaacg 60

ggtgagtaac acgtatctaa cctaccttat agcgggggat aacttttgga aacgaaagat 120

aataccgcat gtgaatctta ttatcgcatg agaaaagatt gaaagaaccg tttggttcac 180

tatgagatgg ggatgcggcg tattagctag taggtgaggt aatggctcac ctaggcgatg 240

atacgtagcc gaactgagag gttgatcggc cacattggga ctgagatacg gcccagactc 300

ctacgggagg cagcagtagg gaatttttca caatggacga aagtctgatg aagcaatgcc 360

gcgtgagtga tgacggcctt cgggttgtaa agctctgttg taagggaaga aaaaataaag 420

taggaaatgc ctttatattg acggtacctt accagaaagc cacggctaac tatgtgccag 480

cagccgcggt aatacatagg tggcaagcgt tatccggatt tattgggcgt atagggtgcg 540

taggcggttg tgcaagtttg aggttaaagt ccggagctca actccggttc gccttgaaaa 600

ctgcattact agaatacaag agaggtaagc ggaattccat gtgtagcggt gaaatgcgta 660

gatatatgga agaacacctg tggcgaaagc ggcttactgg tttgttattg acgctgaggc 720

acgaaagcgt ggggagcaaa taggattaga taccctagta gtccacgccg taaacgatga 780

gtactaggtg ttgggtgaac tcagcgccgc agctaacgca ttaagtactc cgcctgagta 840

gtatgctcgc aagagtgaaa ctcaaaggaa ttgacgggga cccgcacaag tggtggagca 900

tgtggtttaa ttcgaagcaa cacgaagaac cttaccaggg cttgacatcc agtgcaaagc 960

tatagagata tagtagaggt taacattgag acaggtggtg catggttgtc gtcagttcgt 1020

gccgtgaggt gttgggttaa gtcccgcaac gaacgcaacc cttgtcgtta gttactaaca 1080

ttaagttgag gactctaacg agactgctag tgtaagctag aggaaggtgg ggatgacgtc 1140

aaatcatcat gcccccttatg tcctgggcta cacacgtgct acaatggctg gtacaaagag 1200

tcgcaatctc gcgaggggga gctaatctca aaaaaccagt ctcagttcgg attgaagtct 1260

gcaactcgac ttcatgaagc cggaatcact agtaatcgcg aatcagctat gtcgcggtga 1320

atacgttctc gggtcttgta cacaccgccc gtcacaccac gagagttggt aataccagaa 1380

gtgggtagct taaccgcaag gagagcgcct cccaaggtag gactagcgat tggggtgaag 1440

tcgtaacaag gtatccgtac gggaac 1466

<210> 1324
<211> 1474
<212> DNA
<213> Mycoplasma salivarium

<220>
<221> modified_base
<222> (152)..(152)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (188)..(188)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (329)..(330)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (486)..(486)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (541)..(541)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (553)..(554)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (760)..(760)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (890)..(891)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (896)..(952)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1041)..(1041)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1168)..(1168)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1437)..(1437)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1439)..(1439)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1470)..(1470)
<223> a, c, t, g, unknown or other

<400> 1324
aattttaaga gtttgatcct ggctcaggat gaacgctggc tgtgtgccta atacatgcat 60

gtcgagcgga agtagcaata ctttagcggc gaatgggtga gtaacacgtg cttaatctac 120

ctcttagatt ggaataccta atggaaacat tngttaatgc cggatacgca tggagtcgca 180

tgactccntt gtgaaagggg cctttaaagc tccactaaga gatgagggtg cggaacatta 240

gctagttggt gaggtaacgg cccaccaagg ctatgatgtt tagccgggtc gagagactga 300

acggccacat tgggactgag atacggccnn aactcctacg ggaggcagca gtagggaata 360

ttccacaatg agcgaaagct tgatggagcg acacagcgtg cacgatgaag gtcttatgga 420

ttgtaaagtg ctgttgctag ggaagaaaaa gtagttgagg aaatgcttct acattgacgg 480

tacctngtta gaaagcgatg gctaactatg tgccagcagc cgcggtaata cataggtcgc 540

nagcgttatc cgnnattatt gggcgtaaag cgttcgtagg ctgtttatta agtctggagt 600

caaatcccag ggctcaaccc tggctcgctt tggatactgg taaactagag ttggatagag 660

gtaagcggaa ttccatgtga agcggtgaaa tgcgtagata tatggaagaa caccaaaggc 720

gaaggcagct tactgggttt atactgacgc tgaggaacgn aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgatcat tagtcggcag agaactgttg 840

acgcagctaa cgcattaaat gatccgcctg agtagtatgc tcgcaagagn naaacnnnnn 900

nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nntacgcgga 960

gaaccttacc cactcttgac atccttcgca aagctataga gatatagtgg aggttaacgg 1020

agtgacagat ggtgcatggt ngtcgtcagc tcgtgtcgtg agatgtttgg tcaagtcctg 1080

caacgagcgc aacccctatc tttagttact aacgagtcat gtcgaggact ctagagatac 1140

tgcctgggta actgggagga aggtgggnat gacgtcaaat catcatgcct cttacgagtg 1200

gggcaacaca cgtgctacaa tggtcggtac aaagagaagc aatatggcga catggagcaa 1260

atctcaaaaa gccgatctca gttcggattg aagtctgcaa ttcgacttca tgaagtcgga 1320

atcgctagta atcgcagatc agctatgctg cggtgaatac gttctcgggt cttgtacaca 1380

ccgcccgtca caccatggga gctggtaata cccaaagtcg gtttgctaac cgtccgngna 1440

ggcgactgcc taaggtagga ctggtgactn gggt 1474

<210> 1325
<211> 1290
<212> DNA
<213> Mycoplasmataceae genomosp. P1 oral clone MB1_G23

<400> 1325
gattaacgct ggcggtacgt ctaatacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtaggt aacctgccta caagttgggg ataacacaag gaaacttgtg ctaataccga 120

ataattaaag ctgcttgaag aggggcctgc ggcgcattag ttagttggta aggtaatggc 180

ttaccaagac gatgatgcgt agctggactg agaggttgaa cagccacatt gggactgaga 240

aacggcccag actcctacgg gaggcagcag tagagaatct tcggcaatgg gggaaaccct 300

gaccgagcga taccgcgtga gtgatgaaat acttcggtat gtaaaattct tttattaaag 360

aagatgacgt tatttaatga ataagtcccg gctaactatg tgccagcagc cgcggtaata 420

cataggggac gagcgttatc cggaataatt gggcgtaaag ggtgcgtagg cggtgtgtta 480

agttcaaggt ttaatcgtag ggctcaaccc tatatcgctt tgaaaactgg cacactagag 540

taagatagag gcaagtggaa ttccatgtgt agcggtaaaa tgcgtaaata tatggcagaa 600

caccagaggc gaaggcggct tgctgggtct accgacgctg aggcacgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagcacta aaagtcgggt 720

tcggctttca agttaacgcg ataagtgctc cgcctgagta gtacgtacgc aagtataaaa 780

ctcaaaggaa ttggcgggac ctcgcacaag cggtggatca tgttgtttaa ttcgttgata 840

cgcgatgaac cttaccaggc cttgacatat acaggtggtg catggttgtc gtcagctcgt 900

gtcgtgagat gttaggttaa gtcctgcaac gagcgcaact cttattgcta tttgccatca 960

tgggcactat agtgagactg ccagtgataa actggaggaa ggtgggaatg acgtcaaatc 1020

atcatgcccc ttatggcctg ggccacaaac gtgatacaat ggttgtcaaa aggatgctag 1080

aaagtgattt taggcaaatc cttacaatct cagttcggat gaagtctgca actcgacttc 1140

agaagtcgga atcgctagta atcgtagatc agaacgctac ggtgaatacg ttctcgaggt 1200

ttgcacacac cgcccgtcaa accacgaaag ttaacaatac ccaaaaccgg tgcctaagga 1260

gccgtctaag gtagggttaa tgattggggt 1290

<210> 1326
<211> 1484
<212> DNA
<213> Myroides odoratimimus

<400> 1326
agcggcaggc ctaacacatg caagtcgagg ggtagaaaga gcttgctttt ttgagaccgg 60

cgcacgggtg agtaacgcgt atgcaaccta ccttatacag gggaatagcc cgaagaaatt 120

cggattaatg ctccatggtt tatcgatatg gcatcgtatt gataataaag atttatcggt 180

ataagatggg catgcgtatc attagctagt tggtgtggta acggcatacc aaggcaacga 240

tgattagggg tcctgagagg gagatccccc acactggtac tgagacacgg accagactcc 300

tacgggaggc agcagtgagg aatattggtc aatggaggca actctgaacc agccatgccg 360

cgtgcaggat gacggtccta tggattgtaa actgcttttg tacaggaaga aacctcccta 420

cgagtaggga cttgacggta ctgtaagaat aaggatcggc taactccgtg ccagcagccg 480

cggtaatacg gaggatccga gcgttatccg gaattattgg gtttaaaggg ttcgtaggcg 540

gctttgtaag tcagtggtga aatttcctag cttaactagg acactgccat tgatactgca 600

gagcttgaat aatatggaag taactagaat atgtagtgta gcggtgaaat gcttagatat 660

tacatggaat accaattgcg aaggcaggtt actacgtatt tattgacgct gatgaacgaa 720

agcgtgggga gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatggatact 780

agctgttcgg ttttcggact gagtggctaa gcgaaagtga taagtatccc acctggggag 840

tacgttcgca agaatgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat 900

gtggtttaat tcgatgatac gcgaggaacc ttaccagggc ttaaatgtag attgacagat 960

ttggaaacag atttttcttc ggacaattta caaggtgctg catggttgtc gtcagctcgt 1020

gccgtgaggt gtcaggttaa gtcctataac gagcgcaacc cctattgtta gttaccagcg 1080

cgtagaggcg gggactctag caagactgcc ggtgcaaacc gtgaggaagg tggggatgac 1140

gtcaaatcat cacggccctt acgtcctggg ctacacacgt gctacaatgg caagtacaga 1200

aagcagctac ctggcaacag gatgcgaatc tccaaagctt gtctcagttc ggattggagt 1260

ctgcaactcg actctatgaa gctggaatcg ctagtaatcg gatatcagcc atgatccggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcaagcc atggaagctg ggggtacctg 1380

aagtcggtga ccgcaaggag ctgcctaggg taaaactagt aactagggct aagtcgtaac 1440

aaggtagccg taccggaagg tgcggctgga tcacctcctt tcta 1484

<210> 1327
<211> 1481
<212> DNA
<213> Myroides sp. MY15

<400> 1327
agagtttgat cctggctcag gatgaacgct agcggcaggc ctaacacatg caagtcgagg 60

ggtatattga gcttgcttaa tagagaccgg cgcacgggtg agtaacgcgt atgcaaccta 120

ccttctacag gggaatagcc cgaagaaatt cggattaatg ctccatggtt taattgaatg 180

gcatcattta attaataaag atttatcggt agaagatggg catgcgtatc attagctagt 240

tggtgtggta acggcatacc aaggcgacga tgattagggg tcctgagagg gagatccccc 300

acactggtac tgagacacgg accagactcc tacgggaggc agcagtgagg aatattggtc 360

aatggaggca actctgaacc agccatgccg cgtgcaggat gacggtccta tggattgtaa 420

actgcttttg tacaggaaga aacctcgcta cgagtagcga tttgacggta ctgtaagaat 480

aaggatcggc taactccgtg ccagcagccg cggtaatacg gaggatccga gcgttatccg 540

gaattattgg gtttaaaggg ttcgtaggcg gttggataag tcagtggtga aatttcttag 600

cttaactaag acccggccat tgatactgtt tgacttgaat agtatggaag taactagaat 660

atgtagtgta gcggtgaaat gcttagatat tacatggaat accaattgcg aaggcagggt 720

tactacgtac ttattgacgc tgatgaacga aagcgtgggg agcgaacagg attagatacc 780

ctggtagtcc acgccgtaaa cgatggatac tagctgttcg gttttcggac tgagtggcta 840

agcgaaagtg ataagtatcc cacctgggga gtacgttcgc aagaatgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgata cgcgaggaac 960

cttaccaggg cttaaatgta gattgacagg tttggaaaca gacttttctt cggacaattt 1020

acaaggtgct gcatggttgt cgtcagctcg tgccgtgagg tgtcaggtta agtcctataa 1080

cgagcgcaac ccctattgtt agttaccatc gagtaatgtc gggaactcta gcaagactgc 1140

cggtgcaaac cgtgaggaag gtggggatga cgtcaaatca tcacggccct tacgtcctgg 1200

gctacacacg tgctacaatg gtcagtacag aaagcagcta cctggcgaca ggatgcgaat 1260

ctcaaaagct gatcacagtt cggattggag tctgcaactc gactccatga agctggaatc 1320

gctagtaatc ggatatcagc catgatccgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcaagc catggaagct gggggtacct gaagtcggtg accgcaagga gctgcctagg 1440

gtaaaactag taactagggc taagtcgtaa caaggtaacc a 1481

<210> 1328
<211> 1545
<212> DNA
<213> Neisseria bacilliformis

<400> 1328
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcggacg gcagcacaga gaagcttgct tcttgggtgg cgagtggcga acgggtgagt 120

aacgcatcgg aacgtaccga gtaatggggg ataactgtcc gaaaggacag ctaataccgc 180

atacgccctg agggggaaag cgggggatct taggacctcg cgttattcga gcggccgatg 240

tctgattagc tggttggcgg ggtaaaggcc caccaaggcg acgatcagta gcgggtctga 300

gaggatgatc cgccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatttt ggacaatggg cgcaagcctg atccagccat gccgcgtgtc tgaagaaggc 420

cttcgggttg taaaggactt ttgtcaggga agaaaagggg catgttaata ccgtgctctg 480

atgacggtac ctgaagaata agcaccggct aactacgtgc cagcagccgc ggtaatacgt 540

agggtgcgag cgttaatcgg aattactggg cgtaaagcgg gcgcagacgg ttacttaagc 600

gggatgtgaa atccccgggc tcaacccggg aactgcgttc cgaactgggt ggctagagtg 660

tgtcagaggg gggtagaatt ccacgtgtag cagtgaaatg cgtagagatg tggaggaata 720

ccgatggcga aggcagcccc ctgggataac actgacgttc atgcccgaaa gcgtgggtag 780

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcgatta gctgttgggg 840

cacttgatgc cttagtagcg tagctaacgc gtgaaatcga ccgcctgggg agtacggtcg 900

caagattaaa actcaaagga attgacgggg acccgcacaa gcggtggatg atgtggatta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatg tacggaacct tccagagacg 1020

gaagggtgcc ttcgggagcc gtaacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttgt cattagttgc catcatttgg 1140

ttgggcactc taatgagact gccggtgaca aaccggagga aggtggggat gacgtcaagt 1200

cctcatggcc cttatgacca gggcttcaca cgtcatacaa tggtcggtac agagggtagc 1260

caagccgcga ggcggagcca atcccagaaa accgatcgta gtccggattg cactctgcaa 1320

ctcgagtgca tgaagtcgga atcgctagta atcgcaggtc agcatactgc ggtgaatacg 1380

ttcccgggtc ttgtacacac cgcccgtcac accatgggag tgggggatac cagaagcagg 1440

taggctaacc gcaagggggc cgcttgccac ggtatgcttc atgactgggg tgaagtcgta 1500

acaaggtagc cgtaggggaa cctgcggctg gatcacctcc tttct 1545

<210> 1329
<211> 1549
<212> DNA
<213> Neisseria cinerea

<400> 1329
tgaacataag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcggacgg cagcacagag aagcttgctt cttgggtggc gagtggcgaa cgggtgagta 120

acatatcgga acgtaccgag tagtggggga taactgatcg aaagatcagc taataccgca 180

tacgtcttga gagggaaagc aggggacctt cgggccttgc gctattcgag cggccgatat 240

ctgattagct agttggtggg gtaaaggcct accaaggcga cgatcagtag cgggtctgag 300

aggatgatcc gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaattttg gacaatgggc gcaagcctga tccagccatg ccgcgtgtct gaagaaggcc 420

ttcgggttgt aaaggacttt tgtcagggaa gaaaaggctg ttgctaatat cagcggctga 480

tgacggtacc tgaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggtgcgagc gttaatcgga attactgggc gtaaagcgag cgcagacggt tacttaagca 600

ggatgtgaaa tccccgggct caacctggga actgcgttct gaactgggtg actagagtgt 660

gtcagaggga ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 720

cgatggcgaa ggcagcctcc tgggataaca ctgacgttca tgctcgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcaattag ctgttgggca 840

acttgattgt tcagtagcgt agctaacgcg tgaaattgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaagaac cttacctggt cttgacatgt acggaatcct ccagagacgg 1020

aggagtgcct tcgggagccg taacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcattcagt 1140

tgggcactct aatgagactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgaccag ggcttcacac gtcatacaat ggtcggtaca gagggtagcc 1260

aagccgcgag gtggagccaa tctcacaaaa ccgatcgtag tccggattgc actctgcaac 1320

tcgagtgcat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt gggggatacc agaagtaggt 1440

aggataaccg caaggggtcc gcttaccacg gtatgcttca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct ttctagaga 1549

<210> 1330
<211> 1544
<212> DNA
<213> Neisseria elongata

<400> 1330
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcggacg gcagcggggt agtgcttgca ctactgccgg cgagtggcga acgggtgagt 120

aatatattgg aacgtaccga gtaatggggg ataaccaatc gaaagattgg ctaataccgc 180

atacgctctg aggaggaaag caggggacct tcgggccttg cgttattcga gcggccaata 240

tctgattagc tagttggtgg ggtaaaggcc taccaaggcg acgatcagta gcgggtctga 300

gaggatgatc cgccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatttt ggacaatggg cgcaagcctg atccagccat gccgcgtgtc tgaagaaggc 420

cttcgggttg taaaggactt ttgttaggga agaaaaggaa cggttaatac ccgtttctgc 480

tgacggtacc taaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggtgcgagc gttaatcgga attactgggc gtaaagcgag cgcagacggt tacttaagca 600

ggatgtgaaa tccccgggct caacctggga actgcgttct gaactgggta gctagagtat 660

gtcagagggg ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 720

cgatggcgaa ggcagccccc tgggataata ctgacgttca tgctcgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcgattag ctgttgggca 840

gcttgactgc ttagtagcgt agctaacgcg tgaaatcgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaagaac cttacctggt cttgacatgt acggaacctt ccagagacgg 1020

aagggtgcct tcgggagccg taacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcatttagt 1140

tgggcactct aatgagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgaccag ggcttcacac gtcatacaat ggtcggtaca aagggtagcc 1260

aagccgcgag gcggagccaa tctcataaaa ccgatcgtag tccggattgc actctgcaac 1320

tcgagtgcat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt gggggatacc agaagtaggt 1440

agggtaaccg taaggagccc gcttaccacg gtatgcttca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct ttct 1544

<210> 1331
<211> 1549
<212> DNA
<213> Neisseria flavescens

<400> 1331
tgaacataag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcggacgg cagcacagag aagcttgctt cttgggtggc gagtggcgaa cgggtgagta 120

atatatcgga acgtaccgag taatggggga taactaatcg aaagattagc taataccgca 180

tattctctga ggaggaaagc aggggacctt cgggccttgc gttattcgag cggccgatat 240

ctgattagct agttggtggg gtaaaggcct accaaggcga cgatcagtag cgggtctgag 300

aggatgatcc gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaattttg gacaatgggc gcaagcctga tccagccatg ccgcgtgtct gaagaaggcc 420

ttcgggttgt aaaggacttt tgtcagggaa gaaaaggctg ttgctaatat cgacagctga 480

tgacggtacc tgaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggtgcgagc gttaatcgga attactgggc gtaaagcgag cgcagacggt tacttaagca 600

ggatgtgaaa tccccgggct caacctggga actgcgttct gaactgggtg actagagtgt 660

gtcagaggga ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 720

cgatggcgaa ggcagcctcc tgggataaca ctgacgttca tgctcgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcaattag ctgttgggca 840

acttgattgc ttagtagcgt agctaacgcg tgaaattgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaagaac cttacctggt cttgacatgt acggaatcct ccagagacgg 1020

aggagtgcct tcgggagccg taacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcatttagt 1140

tgggcactct aatgagactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgaccag ggcttcacac gtcatacaat ggtcggtaca gagggtagcc 1260

aagccgcgag gtggagccaa tctcacaaaa ccgatcgtag tccggattgc actctgcaac 1320

tcgagtgcat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt gggggatacc agaagtaggt 1440

agggtaaccg caaggagccc gcttaccacg gtatgcttca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct ttctagaga 1549

<210> 1332
<211> 1278
<212> DNA

<213> Neisseria genomosp. P2 oral clone MB5_P15

<400> 1332
attgaacgct ggcggcatgc tttacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acatattgga acgtaccgag tagtggggga taactaatcg aaagattagc taataccgca 120

tacggaaaga cgctatttga gcggccaata tcggattagc tagttggtgg ggtaaaggcc 180

taccaaggcg acgatccgta gcgggtctga gaggacgatc cgccgcattg ggactgagac 240

acggcccaaa ctcctacggg aggcagcagt ggggaatttt ggacaatggg ggcaaccctg 300

atccagccat gccgcgtgtc tgaagaaggc cttcgggttg taaaggactt ttgctaggga 360

agatgacggt acctaaagaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac 420

gtagggtgcg agcgttaatc ggaattactg ggcgtaaagc gagcgcagac ggtttgtcaa 480

gcaggatgtg aaatccccga gctcaacttg ggaactgcgt tctgaactgg caggctagag 540

tatgtcagag gggggtagaa ttccacgtgt agcagtgaaa tgcgtagaga tgtggaggaa 600

taccgatggc gaaggcagcc ccctggggta actgacgttc atgctcgaaa gcgtgggtag 660

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcaatta gctgttgggc 720

gcttagtagc gaagctaacg cgtgaaattg accgcctggg gagtacggtc gcaagattaa 780

aactcaaagg aattgacggg gacccgcaca agcggtggat gatgtggatt aattcgatgc 840

aacgcgaaga accttacctg gtcttgacat gcacaggtgc tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtcat tagttgccat 960

catgggcact ctaatgagac tgccggtgac aaaccggagg aaggtgggga tgacgtcaag 1020

tcctcatggc ccttatgacc agggcttcac acgtcataca atggttggca gagggtagcc 1080

aaatcgcgag atggagccaa tcccagccaa tcgtagtccg gatgcactct gcaactcgag 1140

tgcagaagtc ggaatcgcta gtaatcgcag gtcagcatac tgcggtgaat acgttcccgg 1200

gtcttgtaca caccgcccgt cacaccatgg gagtggggga taccagaagt aggtggctag 1260

gccgcttacc acggtatg 1278

<210> 1333
<211> 1553
<212> DNA
<213> Neisseria gonorrhoeae

<400> 1333
gattgaacat aagagtttga tcctggctca gattgaacgc tggcggcatg ctttacacat 60

gcaagtcgga cggcagcaca gggaagcttg cttctcgggt ggcgagtggc gaacgggtga 120

gtaacatatc ggaacgtacc gggtagcggg ggataactga tcgaaagatc agctaatacc 180

gcatacgtct tgagagggaa agcaggggac cttcgggcct tgcgctatcc gagcggccga 240

tatctgatta gctggttggc ggggtaaagg cccaccaagg cgacgatcag tagcgggtct 300

gagaggatga tccgccacac tgggactgag acacggccca gactcctacg ggaggcagca 360

gtggggaatt ttggacaatg ggcgcaagcc tgatccagcc atgccgcgtg tctgaagaag 420

gccttcgggt tgtaaaggac ttttgtcagg gaagaaaagg ccgttgccaa tatcggcggc 480

cgatgacggt acctgaagaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac 540

gtagggtgcg agcgttaatc ggaattactg ggcgtaaagc gggcgcagac ggttacttaa 600

gcaggatgtg aaatccccgg gctcaacccg ggaactgcgt tctgaactgg gtgactcgag 660

tgtgtcagag ggaggtggaa ttccacgtgt agcagtgaaa tgcgtagaga tgtggaggaa 720

taccgatggc gaaggcagcc tcctgggata acactgacgt tcatgtccga aagcgtgggt 780

agcaaacagg attagatacc ctggtagtcc acgccctaaa cgatgtcaat tagctgttgg 840

gcaacttgat tgcttggtag cgtagctaac gcgtgaaatt gaccgcctgg ggagtacggt 900

cgcaagatta aaactcaaag gaattgacgg ggacccgcac aagcggtgga tgatgtggat 960

taattcgatg caacgcgaag aaccttacct ggttttgaca tgtgcggaat cctccggaga 1020

cggaggagtg ccttcgggag ccgtaacaca ggtgctgcat ggctgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtcattagtt gccatcattc 1140

ggttgggcac tctaatgaga ctgccggtga caagccggag gaaggtgggg atgacgtcaa 1200

gtcctcatgg cccttatgac cagggcttca cacgtcatac aatggtcggt acagagggta 1260

gccaagccgc gaggcggagc caatctcaca aaaccgatcg tagtccggat tgcactctgc 1320

aactcgagtg catgaagtcg gaatcgctag taatcgcagg tcagcatact gcggtgaata 1380

cgttcccggg tcttgtacac accgcccgtc acaccatggg agtgggggat accagaagta 1440

ggtagggtaa ccgcaaggag cccgcttacc acggtatgct tcatgactgg ggtgaagtcg 1500

taacaaggta gccgtagggg aacctgcggc tggatcacct cctttctaga gaa 1553

<210> 1334
<211> 1549
<212> DNA
<213> Neisseria lactamica

<400> 1334
tgaacataag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcggacgg cagcggggta gtgcttgcac tactgccggc gagtggcgaa cgggtgagta 120

acatatcgga acgtaccggg cagtggggga taactgatcg aaagatcagc taataccgca 180

tattttctga ggaagaaagc aggggacctt cgggccttgc gctatccgag cggccgatat 240

ctgattagct ggttggcggg gtaaaggccc accaaggcga cgatcagtag cgggtctgag 300

aggacgatcc gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaattttg gacaatgggc gcaagcctga tccagccatg ccgcgtgtct gaagaaggcc 420

ttcgggttgt aaaggacttt tgtcggggaa gaaaaggtcg gggttaatac cctcggctga 480

tgacggtacc cgaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggtgcgagc gttaatcgga attactgggc gtaaagcggg cgcagacggt tacttaagca 600

ggatgtgaaa tccccgggct caacccggga attgcgttct gaactgggtg gctagagtgt 660

gtcagaggga ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 720

cgatggcgaa ggcagcctcc tgggataaca ctgacgttca tgcccgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcgattag ctgttgggca 840

gcctgactgc ttggtagcga agctaacgcg tgaaatcgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaagaac cttacccggt tttgacatgt acggaatcct ccggagacgg 1020

gggagtgcct tcgggagccg taacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcattcagt 1140

tgggcactct aatgagactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgaccgg ggcttcacac gtcatacaat ggtcggtaca gagggtagcc 1260

aagccgcgag gcggagccaa tctcacaaaa ccgatcgtag tccggattgc actctgcaac 1320

tcgagtgcat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt gggggatacc agaagcaggt 1440

aggctaaccg caaggaggcc gcttgccacg gtatgcttca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct ttctagaga 1549

<210> 1335
<211> 1529
<212> DNA
<213> Neisseria macacae

<400> 1335
agagtttgat cctggctcag attgaacgct ggcggcatgc tttacacatg caagtcggac 60

ggcagcacag agaagcttgc ttcttgggtg gcgagtggcg aacgggtgag taacatatcg 120

gaacgtaccg agcagtgggg gataactaat cgaaagatta gctaataccg catatattct 180

gaggaagaaa gcaggggacc atttggcctt gcgctgtttg agcggccgat atctgattag 240

ctagttggtg gggtaaaggc ctaccaaggc gacgatcagt agcgggtctg agaggatgat 300

ccgccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaattt 360

tggacaatgg gcgcaagcct gatccagcca tgccgcgtgt ctgaagaagg ccttcgggtt 420

gtaaaggact tttgtcaggg aagaaaaggg cggggttaat acccctgtct gatgacggta 480

cctgaagaat aagcaccggc taactacgtg ccagcagccg cggtaatacg tagggtgcga 540

gcgttaatcg gaattactgg gcgtaaagcg ggcgcagacg gttacttaag caggatgtga 600

aatccccggg ctcaacctgg gaactgcgtt ctgaactggg tgactagagt gtgtcagagg 660

gaggtagaat tccacgtgta gcagtgaaat gcgtagagat gtggaggaat accgatggcg 720

aaggcagcct cctgggataa cactgacgtt catgcccgaa agcgtgggta gcaaacagga 780

ttagataccc tggtagtcca cgccctaaac gatgtcgatt agctgttggg cagcatgact 840

gcttagtagc gaagctaacg cgtgaaatcg accgcctggg gagtacggtc gcaagattaa 900

aactcaaagg aattgacggg gacccgcaca agcggtggat gatgtggatt aattcgatgc 960

aacgcgaaga accttacctg gtcttgacat gtacggaacc ctccagagac ggaggggtgc 1020

cttcgggagc cgtaacacag gtgctgcatg gctgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaacccttg tcattagttg ccatcattaa gttgggcact 1140

ctaatgagac tgccggtgac aagccggagg aaggtgggga tgacgtcaag tcctcatggc 1200

ccttatgacc agggcttcac acgtcataca atggtcggta cagagggtag ccaagccgcg 1260

aggtggagcc aatctcacaa aaccgatcgt agtccggatt gcactctgca actcgagtgc 1320

atgaagtcgg aatcgctagt aatcgcaggt cagcatactg cggtgaatac gttcccgggt 1380

cttgtacaca ccgcccgtca caccatggga gtgggggata ccagaagtag gtagggtaac 1440

cgcaaggagc ccgcttacca cggtatgctt catgactggg gtgaagtcgt aacaaggtag 1500

ccgtagggga acctgcggct ggatcacct 1529

<210> 1336
<211> 1549
<212> DNA
<213> Neisseria meningitidis

<400> 1336
tgaacataag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcggacgg cagcacagag aagcttgctt ctcgggtggc gagtggcgaa cgggtgagta 120

acatatcgga acgtaccgag tagtggggga taactgatcg aaagatcagc taataccgca 180

tacgtcttga gagagaaagc aggggacctt cgggccttgc gctattcgag cggccgatat 240

ctgattagct agttggtggg gtaaaggcct accaaggcga cgatcagtag cgggtctgag 300

aggatgatcc gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaattttg gacaatgggc gcaagcctga tccagccatg ccgcgtgtct gaagaaggcc 420

ttcgggttgt aaaggacttt tgtcagggaa gaaaaggctg ttgctaatat cagcggctga 480

tgacggtacc tgaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggtgcgagc gttaatcgga attactgggc gtaaagcggg cgcagacggt tacttaagca 600

ggatgtgaaa tccccgggct caacccggga actgcgttct gaactgggtg actcgagtgt 660

gtcagaggga ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 720

cgatggcgaa ggcagcctcc tgggacaaca ctgacgttca tgcccgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcaattag ctgttgggca 840

acctgattgc ttggtagcgt agctaacgcg tgaaattgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaagaac cttacctggt cttgacatgt acggaatcct ccggagacgg 1020

aggagtgcct tcgggagccg taacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcattcagt 1140

tgggcactct aatgagactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgaccag ggcttcacac gtcatacaat ggtcggtaca gagggtagcc 1260

aagccgcgag gcggagccaa tctcacaaaa ccgatcgtag tccggattgc actctgcaac 1320

tcgagtgcat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt gggggatacc agaagtaggt 1440

aggataacca caaggagtcc gcttaccacg gtatgcttca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct ttctagaga 1549

<210> 1337
<211> 1547
<212> DNA
<213> Neisseria mucosa

<400> 1337
aacataagag tttgatcctg gctcagattg aacgctggcg gcatgcttta cacatgcaag 60

tcggacggca gcacagagaa gcttgcttct tgggtggcga gtggcgaacg ggtgagtaac 120

atatcggaac gtaccgagca gtgggggata actaatcgaa agattagcta ataccgcata 180

tattctgagg aagaaagcag gggaccattt ggccttgcgc tgtttgagcg gccgatatct 240

gattagctag ttggtggggt aaaggcctac caaggcgacg atcagtagcg ggtctgagag 300

gatgatccgc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 360

gaattttgga caatgggcgc aagcctgatc cagccatgcc gcgtgtctga agaaggcctt 420

cgggttgtaa aggacttttg tcagggaaga aaaggatagg gttaataccc ctgtctgatg 480

acggtacctg aagaataagc accggctaac tacgtgccag cagccgcggt aatacgtagg 540

gtgcgagcgt taatcggaat tactgggcgt aaagcgggcg cagacggtta cttaagcagg 600

atgtgaaatc cccgggctca acctgggaac tgcgttctga actgggtgac tagagtgtgt 660

cagagggagg tagaattcca cgtgtagcag tgaaatgcgt agagatgtgg aggaataccg 720

atggcgaagg cagcctcctg ggataacact gacgttcatg cccgaaagcg tgggtagcaa 780

acaggattag ataccctggt agtccacgcc ctaaacgatg tcgattagct gttgggcagc 840

ttgactgctt agtagcgaag ctaacgcgtg aaatcgaccg cctggggagt acggtcgcaa 900

gattaaaact caaaggaatt gacggggacc cgcacaagcg gtggatgatg tggattaatt 960

cgatgcaacg cgaagaacct tacctggtct tgacatgtac ggaaccctcc agagacggag 1020

gggtgccttc gggagccgta acacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccttgtcat tagttgccat cattaagttg 1140

ggcactctaa tgagactgcc ggtgacaagc cggaggaagg tggggatgac gtcaagtcct 1200

catggccctt atgaccaggg cttcacacgt catacaatgg tcggtacaga gggtagccaa 1260

gccgcgaggt ggagccaatc tcacaaaacc gatcgtagtc cggattgcac tctgcaactc 1320

gagtgcatga agtcggaatc gctagtaatc gcaggtcagc atactgcggt gaatacgttc 1380

ccgggtcttg tacacaccgc ccgtcacacc atgggagtgg gggataccag aagtaggtag 1440

ggtaaccgca aggagcccgc ttaccacggt atgcttcatg actggggtga agtcgtaaca 1500

aggtagccgt aggggaacct gcggctggat cacctccttt ctagaga 1547

<210> 1338
<211> 1352
<212> DNA
<213> Neisseria pharyngis

<400> 1338
cacagagaag cttgcttctt gggtggcgag tggcgaacgg gtgagtaaca tatcggaacg 60

taccgagcag tgggggataa ctaatcgaaa gattagctaa taccgcatat attctgagga 120

agaaagcagg ggaccatttg gccttgcgct gtttgagcgg ccgatatctg attagctggt 180

tggtggggta aaggcctacc aaggcgacga tcagtagcgg gtctgagagg atgatccgcc 240

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg aattttggac 300

aatgggcgca agcctgatcc agccatgccg cgtgtctgaa gaaggccttc gggttgtaaa 360

ggacttttgt cagggaagaa aaggacaggg ttaatacccc tgtctgatga cggtacctga 420

agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt 480

aatcggaatt actgggcgta aagcgggcgc agacggttac ttaagcagga tgtgaaatcc 540

ccgggctcaa cctgggaact gcgttctgaa ctgggtgact agagtgtgtc agagggaggt 600

agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga tggcgaaggc 660

agcctcctgg gataacactg acgttcatgc ccgaaagcgt gggtagcaaa caggattaga 720

taccctggta gtccacgccc taaacgatgt cgattagctg ttgggcagct tgactgctta 780

gtagcgaagc taacgcgtga aatcgaccgc ctggggagta cggtcgcaag attaaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggatgatgt ggattaattc gatgcaacgc 900

gaagaacctt acctggtctt gacatgtacg gaaccctcca gagacggagg ggtgccttcg 960

ggagccgtaa cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttgtcatt agttgccatc attaagttgg gcactctaat 1080

gagactgccg gtgacaagcc ggaggaaggt ggggatgacg tcaagtcctc atggcccttа 1140

tgaccagggc ttcacacgtc atacaatggt cggtacagag ggtagccaag ccgcgaggtg 1200

gagccaatct cacaaaaccg atcgtagtcc ggattgcact ctgcaactcg agtgcatgaa 1260

gtcggaatcg ctagtaatcg caggtcagca tactgcggtg aatacgttcc cgggtcttgt 1320

acacaccgcc cgtcacacca tgggagtggg gg 1352

<210> 1339
<211> 1545
<212> DNA
<213> Neisseria polysaccharea

<400> 1339
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcggacg gcagcacaga gaagcttgct tcttgggtgg cgagtggcga acgggtgagt 120

aacatatcgg aacgtaccga gtagtggggg ataactgatc gaaagatcag ctaataccgc 180

atacgtcttg agagggaaag caggggacct tcggaccttg cgctattcga gcggccgata 240

tctgattagc tagttggtgg ggtaaaggcc taccaaggcg acgatcagta gcgggtctga 300

gaggatgatc cgccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatttt ggacaatggg cgcaagcctg atccagccat gccgcgtgtc tgaagaaggc 420

cttcgggttg taaaggactt ttgtcaggga agaaaaggct gttgctaata tcagcggctg 480

atgacggtac ctgaagaata agcaccggct aactacgtgc cagcagccgc ggtaatacgt 540

agggtgcgag cgttaatcgg aattactggg cgtaaagcgg gcgcagacgg ttacttaagc 600

aggatgtgaa atccccgggc tcaacccggg aactgcgttc tgaactgggt gactcgagtg 660

tgtcagaggg aggtagaatt ccacgtgtag cagtgaaatg cgtagagatg tggaggaata 720

ccgatggcga aggcagcctc ctgggataac actgacgttc atgcccgaaa gcgtgggtag 780

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcaatta gctgttgggc 840

aacttgattg cttggtagcg tagctaacgc gtgaaattga ccgcctgggg agtacggtcg 900

caagattaaa actcaaagga attgacgggg acccgcacaa gcggtggatg atgtggatta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatg tacggaatcc tccagagacg 1020

gaggagtgcc ttcgggagcc gtaacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttgt cattagttgc catcattcgg 1140

ttgggcactc taatgagact gccggtgaca agccggagga aggtggggat gacgtcaagt 1200

cctcatggcc cttatgacca gggcttcaca cgtcatacaa tggtcggtac agagggtagc 1260

caagccgcga ggtggagcca atctcacaaa accgatcgta gtccggattg cactctgcaa 1320

ctcgagtgca tgaagtcgga atcgctagta atcgcaggtc agcatactgc ggtgaatacg 1380

ttcccgggtc ttgtacacac cgcccgtcac accatgggag tgggggatac cagaagtggg 1440

taggataacc gcaaggggtc cgcttaccac ggtatgcttc atgactgggg tgaagtcgta 1500

acaaggtagc cgtaggggaa cctgcggctg gatcacctcc tttct 1545

<210> 1340
<211> 1549
<212> DNA
<213> Neisseria sicca

<400> 1340
tgaacataag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcggacgg cagcacagag aagcttgctt cttgggtggc gagtggcgaa cgggtgagta 120

acatatcgga acgtaccgag cagtggggga taactaatcg aaagattagc taataccgca 180

tatcttctga ggaagaaagc aggggaccat ttggccttgc gctgtttgag cggccgatat 240

ctgattagct agttggtggg gtaaaggcct accaaggcga cgatcagtag cgggtctgag 300

aggatgatcc gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaattttg gacaatgggc gcaagcctga tccagccatg ccgcgtgtct gaagaaggcc 420

ttcgggttgt aaaggacttt tgtcagggaa gaaaagggcg gggttaatac ccctgtctga 480

tgacggtacc tgaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggtgcgagc gttaatcgga attactgggc gtaaagcggg cgcagacggt tacttaagca 600

ggatgtgaaa tccccgggct caacttggga actgcgttct gaactgggtg actagagtgt 660

gtcagaggga ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 720

cgatggcgaa ggcagcctcc tgggataaca ctgacgttca tgcccgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcgattag ctgttgggca 840

gcatgactgc ttagtagcga agctaacgcg tgaaatcgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaagaac cttacctggt cttgacatgt acggaaccct ccagagacgg 1020

aggggtgcct tcgggagccg taacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcattaagt 1140

tgggcactct aatgagactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgaccag ggcttcacac gtcatacaat ggtcggtaca gagggtagcc 1260

aagccgcgag gtggagccaa tctcacaaaa ccgatcgtag tccggattgc actctgcaac 1320

tcgagtgcat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt gggggatacc agaagtaggt 1440

agggtaaccg caaggagccc gcttaccacg gtatgcttca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct ttctagaga 1549

<210> 1341
<211> 1254
<212> DNA
<213> Neisseria sp. KEM232

<400> 1341
ctttacacat gcaagtcgga cgagtggcga acgggtgagt aatgtattgg aacgtaccga 60

gtaatggggg ataaccaatc gaaagattgg ctaataccgc atacggaaag gcgttattcg 120

agcggccaat atctgattag ctggttggtg gggtaaaggc ctaccaaggc gacgatcagt 180

agcgggtctg agaggatgat ccgccacact gggactgaga cacggcccag actcctacgg 240

gaggcagcag tggggaattt tggacaatgg gcgcaagcct gatccagcca tgccgcgtgt 300

ctgaagaagg ccttcgggtt gtaaaggact tttgtcaggg aagatgacgg tacctgaaga 360

ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc gagcgttaat 420

cggaattact gggcgtaaag cgggcgcaga cggtttgtta agcaggatgt gaaatccccg 480

ggctcaaccc gggaactgcg ttctgaactg gcaggctaga gtgtgtcaga ggggggtaga 540

attccacgtg tagcagtgaa atgcgtagag atgtggagga ataccgatgg cgaaggcagc 600

cccctgggat aactgacgtt catgcccgaa agcgtgggta gcaaacagga ttagataccc 660

tggtagtcca cgccctaaac gatgtcgatt agctgttggg cgcttagtag cgtagctaac 720

gcgtgaaatc gaccgcctgg ggagtacggt cgcaagatta aaactcaaag gaattgacgg 780

ggacccgcac aagcggtgga tgatgtggat taattcgatg caacgcgaag aaccttacct 840

ggtcttgaca tgcacaggtg ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt 900

taagtcccgc aacgagcgca acccttgtca ttagttgcca tcatgggcac tctaatgaga 960

ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg cccttatgac 1020

cagggcttca cacgtcatac aatggtcggc agagggtagc caagccgcga ggcggagcca 1080

atcccagccg atcgtagtcc ggatgcactc tgcaactcga gtgcagaagt cggaatcgct 1140

agtaatcgca ggtcagcata ctgcggtgaa tacgttcccg ggtcttgtac acaccgcccg 1200

tcacaccatg ggagtggggg ataccagaag caggtggcta ggccgcttgc cacg 1254

<210> 1342
<211> 1406
<212> DNA
<213> Neisseria sp. SMC-A9199

<400> 1342
gcaagtcgga cggcagcgag gaagtgcttg cacttctgtc ggcgagtggc gaacgggtga 60

gtaacatatc ggaacgtacc gagtagtggg ggataactaa tcgaaagatt agctaatacc 120

gcatacgtct tgagagagaa agcaggggac cttcgggcct tgcgctattc gagcggccga 180

tatctgatta gctagttggt ggggtaaagg cccaccaagg cgacgatcag tagcgggtct 240

gagaggatga tccgccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtggggaatt ttggacaatg ggcgcaagcc tgatccagcc atgccgcgtg tatgaagaag 360

gccttcgggt tgtaaagtac ttttgtcagg gaagaaaagg ccggtgttaa taccattggc 420

tcatgacggt acctgaagaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac 480

gtagggtgcg agcgttaatc ggaattactg ggcgtaaagc gagcgcagac ggtttgttaa 540

gcaggatgtg aaatccccgg gctcaacctg ggaactgcgt tctgaactgg caagctagag 600

tgtgtcagag gggggtagaa ttccacgtgt agcagtgaaa tgcgtagaga tgtggaggaa 660

taccgatggc gaaggcagcc ccctgggata acactgacgt tcatgctcga aagcgtgggt 720

agcaaacagg attagatacc ctggtagtcc acgccctaaa cgatgtcaat tagctgttgg 780

gcaacttgat tgcttagtag cgtagctaac gcgtgaaatt gaccgcctgg ggagtacggt 840

cgcaagatta aaactcaaag gaattgacgg ggacccgcac aagcggtgga tgatgtggat 900

taattcgatg caacgcgaag aaccttacct ggtcttgaca tgtacggaat cctccagaga 960

cggaggagtg ccttcgggag ccgtaacaca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtcattagtt gccatcattc 1080

agttgggcac tctaatgaga ctgccggtga caagccggag gaaggtgggg atgacgtcaa 1140

gtcctcatgg cccttatgac cagggcttca cacgtcatac aatggtcggt acagagggta 1200

gccaagccgc gaggtggagc caatctcaca aaaccgatcg tagtccggat tgcactctgc 1260

aactcgagtg catgaagtcg gaatcgctag taatcgcagg tcagcatact gcggtgaata 1320

cgttcccggg tcttgtacac accgcccgtc acaccatggg agtgggggat accagaagta 1380

ggtaggataa ccttcgggag tccgct 1406

<210> 1343
<211> 1363
<212> DNA
<213> Neisseria sp. TM10_1

<220>
<221> modified_base
<222> (1352)..(1352)
<223> a, c, t, g, unknown or other

<400> 1343
cacagagaag cttgcttctt gggtggcgag tggcgaacgg gtgagtaaca tatcggaacg 60

taccgagcag tgggggataa ctaatcgaaa gattagctaa taccgcatat cttctgagga 120

agaaagcagg ggaccatttg gccttgcgct gtttgagcgg ccgatatctg attagctagt 180

tggtggggta aaggcctacc aaggcgacga tcagtagcgg gtctgagagg atgatccgcc 240

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg aattttggac 300

aatgggcgca agcctgatcc agccatgccg cgtgtctgaa gaaggccttc gggttgtaaa 360

ggacttttgt cagggaagaa aagggcgggg ttaatacccc tgtctgatga cggtacctga 420

agaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt 480

aatcggaatt actgggcgta aagcgggcgc agacggttac ttaagcagga tgtgaaatcc 540

ccgggctcaa cctgggaact gcgttctgaa ctgggtgact agagtgtgtc agagggaggt 600

agaattccac gtgtagcagt gaaatgcgta gagatgtgga ggaataccga tggcgaaggc 660

agcctcctgg gataacactg acgttcatgc ccgaaagcgt gggtagcaaa caggattaga 720

taccctggta gtccacgccc taaacgatgt cgattagctg ttgggcagca tgactgctta 780

gtagcgaagc taacgcgtga aatcgaccgc ctggggagta cggtcgcaag attaaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggatgatgt ggattaattc gatgcaacgc 900

gaagaacctt acctggtctt gacatgtacg gaatcctcca gagacggagg agtgccttcg 960

ggagccgtaa cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttgtcatt agttgccatc attaagttgg gcactctaat 1080

gagactgccg gtgacaagcc ggaggaaggt ggggatgacg tcaagtcctc atggcccttа 1140

tgaccagggc ttcacacgtc atacaatggt cggtacagag ggtagccaag ccgcgaggcg 1200

gagccaatct cacaaaaccg atcgtagtcc ggattgcact ctgcaactcg agtgcatgaa 1260

gtcggaatcg ctagtaatcg caggtcagca tactgcggtg aatacgttcc cgggtcttgt 1320

acacaccgcc cgtcacacca tgggagtggg gngatacaga agt 1363

<210> 1344
<211> 1499
<212> DNA

<213> Neisseria sp. oral clone AP132

<400> 1344
agagtttgat atggctcaga ttgaacgctg gcggcatgct ttacacatgc aagtcggacg 60

gcagcgggga gtgcttgcac tctgccggcg agtggcgaac gggtgagtaa tgcatcggaa 120

cgtaccgagt aatgggggat aactgtccga aaggacagct aataccgcat acgccctgag 180

ggggaaagcg ggggatctta ggacctcgcg ttattcgagc ggccgatgtc tgattagcta 240

gttggtgggg taaaggccta ccaaggcgac gatcagtagc gggtctgaga ggacgatccg 300

ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaattttgg 360

acaatgggcg caagcctgat ccagccatgc cgcgtgtctg aagaaggcct tcgggttgta 420

aaggactttt gtcagggaag aaaaggcggg tgctaatacc atctgctgat gacggtacct 480

gaagaataag caccggctaa ctacgtgcca gcagccgcgg taatacgtag ggtgcgagcg 540

ttaatcggaa ttactgggcg taaagcgggc gcagacggtt acttaagcag gatgtgaaat 600

ccccgggctc aacctgggaa ctgcgttctg aactgggtga ctagagtgtg tcagagggag 660

gtagaattcc acgtgtagca gtgaaatgcg tagagatgtg gaggaatacc gatggcgaag 720

gcagcctcct gggataacgc tgacgttcat gcccgaaagc gtgggtagca aacaagatta 780

gataccctgg tagtccacgc cctaaacgat gtcgattagc tgctgggcag cttgactgct 840

tagtagcgaa gctaacgcgt gaaatcgacc gcctggggag tacggtcgca agattaaaac 900

tcaaaggaat tgacggggac ccgcacaagc ggtggatgat gtggattaat tcgatgcaac 960

gcgaagaacc ttacctggtc ttgacatgta cggaaccctc cagagacgga ggggtgcctt 1020

cgggagccgt aacacaggtg ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt 1080

taagtcccgc aacgagcgca acccttgtca ttagttgcca tcattaagtt gggcactcta 1140

atgagactgc cggtgacaag ccggaggaag gtggggatga cgtcaagtcc tcatggccct 1200

tatgaccagg gcttcacacg tcatacaatg gtcggtacag agggtagcca agccgcgagg 1260

tggagccaat ctcacaaaac cgatcgtagt ccggattgca ctctgcaact cgagtgcgtg 1320

aagtcggaat cgctagtaat cgcaggtcag catactgcgg tgaatacgtt cccgggtctt 1380

gtacacaccg cccgtcacac catgggagtg ggggatacca gaagtaggta gggtaaccgc 1440

aaggagcccg cttaccacgg tatgcttcat gactggggtg aagtcgtaac aagggtarc 1499

<210> 1345
<211> 1363
<212> DNA
<213> Neisseria sp. oral clone JC012

<400> 1345
gagtttgatt ctggctcaga ttgaacgcgg gcgccatgct ttacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa catattggaa cgtaccgagt aaaggggat aactatccga 120

aaggatagct aataccgcat acggaaagac gttattcgag cggccaatat ctgattagct 180

agttggtggg gtaaaggcct accaaggcga cgatcagtag cgggtctgag aggacgatcc 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaattttg 300

gacaatgggc gcaagcctga tccagccatg ccgtgtgtct gaagaaggcc ttcgggttgt 360

aaaggacttt tgttagggaa gatgacggta cctaaagaat aagcaccggc taactacgtg 420

ccagcagccg cggtaatacg tagggtgcga gcgttaatcg gaattactgg gcgtaaagcg 480

agcgcagacg gtttgttaag caggatgtga aatccccagg ctcaacttgg gaactgcgtt 540

ctgaactggc aagctagagt gtgtcagagg ggggtagaat tccacgtgta gcagtgaaat 600

gcgtagagat gtggaggaat accgatggcg aaggcagccc cctgggataa ctgacgttca 660

tgctcgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg ccctaaacga 720

tgtcaattag ctgttgggcg cttagtagcg tagctaacgc gtgaaattga ccgcctgggg 780

agtacggtcg caagattaaa actcaaagga attgacgggg acccgcacaa gcggtggatg 840

atgtggatta attcgatgca acgcgaagaa ccttacctgg tcttgacatg cacaggtgct 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccttgtcatt agttgccatc atgggcactc taatgagact gccggtgaca aaccggagga 1020

aggtggggat gacgtcaagt cctcatggcc cttatgacca gggcttcaca cgtcatacaa 1080

tggtcggcag agggtcgcca agccgcgagg tggagccaat ctcacccgat cgtagtccgg 1140

atgcactctg caactcgagt gcagaagtcg gaatcgctag taatcgcagg tcagcatact 1200

gcggtgaata cgttcccggg tcttgtacac accgcccgtc acaccatggg agtgggggat 1260

accagaagta ggtggctagg ccgcttacca cggtatgttt catgactggg gtgaagtcgt 1320

aacaaggtag ccgtagggga acctgcggct ggaacacctc ctt 1363

<210> 1346
<211> 1473
<212> DNA
<213> Neisseria sp. oral strain B33KA

<400> 1346
gattgaacgc tggcggcatg ctttacacat gcaagtcgga cggcagcaca gagaagcttg 60

cttcttgggt ggcgagtggc gaacgggtga gtaatgtatt ggaacgtacc gagtaatggg 120

ggataaccaa tcgaaagatt ggctaatacc gcatacgtcc tgaggggaa agcgggggat 180

cttcggacct cgcgttattc gagcggccaa tatctgatta gctggttggt ggggtaaagg 240

cctaccaagg cgacgatcag tagcgggtct gagaggatga tccgccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaatt ttggacaatg ggcgcaagcc 360

tgatccagcc atgccgcgtg tctgaagaag gccttcgggt tgtaaaggac ttttgtcagg 420

gaagaaaagg cttttgataa taccaggagc tgatgacggt acctgaagaa taagcaccgg 480

ctaactacgt gccagcagcc gcggtaatac gtagggtgcg agcgttaatc ggaattactg 540

ggcgtaaagc gggcgcagac ggtttgttaa gcaggatgtg aaatccccgg gctcaacccg 600

ggaactgcgt tctgaactgg caggctagag tgtgtcagag gggggtagaa ttccacgtgt 660

agcagtgaaa tgcgtagaga tgtggaggaa taccgatggc gaaggcagcc ccctgggata 720

acactgacgt tcatgcccga aagcgtgggt agcaaacagg attagatacc ctggtagtcc 780

acgccctaaa cgatgtcgat tagctgttgg gcagcttgac tgcttagtag cgtagctaac 840

gcgtgaaatc gaccgcctgg ggagtacggt cgcaagatta aaactcaaag gaattgacgg 900

ggacccgcac aagcggtgga tgatgtggat taattcgatg caacgcgaag aaccttacct 960

ggtcttgaca tgtacggaat cctccagaga cggaggagtg ccttcgggag ccgtaacaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt gtcattagtt gccatcatta agttgggcac tctaatgaga ctgccggtga 1140

caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg cccttatgac cagggcttca 1200

cacgtcatac aatggtcggt acagagggta gccaagccgc gaggcggagc caatcccaga 1260

aaaccgatcg tagtccggat tgcactctgc aactcgagtg catgaagtcg gaatcgctag 1320

taatcgcagg tcagcatact gcggtgaata cgttcccggg tcttgtacac accgcccgtc 1380

acaccatggg agtgggggat accagaagca ggtaggctaa ccgcaaggag gccgcttgcc 1440

acggtatgct tcatgactgg ggtgaagtcg taa 1473

<210> 1347
<211> 1545
<212> DNA
<213> Neisseria sp. oral taxon 014

<400> 1347
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcggacg gcagcggggt agtgcttgca ctactgccgg cgagtggcga acgggtgagt 120

aacatatcgg aacgtaccga gcagtggggg ataactaatc gaaagattag ctaataccgc 180

atatattctg aggaagaaag caggggacct ttgggccttg cgctgtttga gcggccgata 240

tctgattagc tggttggtgg ggtaaaggcc taccaaggcg acgatcagta gcgggtctga 300

gaggatgatc cgccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatttt ggacaatggg ggcaaccctg atccagccat gccgcgtgtc tgaagaaggc 420

cttcgggttg taaaggactt ttgtccggga agaaaagcgc gatgttaata ccattgcgtg 480

ctgacggtac cggaagaata agcaccggct aactacgtgc cagcagccgc ggtaatacgt 540

agggtgcgag cgttaatcgg aattactggg cgtaaagcgg gcgcagacgg ttacttaagc 600

aggatgtgaa atccccgggc tcaacctggg aattgcgttc tgaactgggt ggctagagtg 660

tgtcagaggg gggtagaatt ccacgtgtag cagtgaaatg cgtagagatg tggaggaata 720

ccgatggcga aggcagcccc ctgggatagc actgacgttc atgcccgaaa gcgtgggtag 780

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcgatta gctgttgggc 840

aacttgattg cttggtagcg aagctaacgc gtgaaatcga ccgcctgggg agtacggtcg 900

caagattaaa actcaaagga attgacgggg acccgcacaa gcggtggatg atgtggatta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatg tacggaacct tccggagacg 1020

gaagggtgcc ttcgggagcc gtaacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttgt cattagttgc catcatttgg 1140

ttgggcactc taatgagact gccggtgaca agccggagga aggtggggat gacgtcaagt 1200

cctcatggcc cttatgacca gggcttcaca cgtcatacaa tggtcggtac agagggtagc 1260

caagccgcga ggtggagcca atcccaaaaa accgatcgta gtccggattg cactctgcaa 1320

ctcgagtgca tgaagtcgga atcgctagta atcgcaggtc agcatactgc ggtgaatacg 1380

ttcccgggtc ttgtacacac cgcccgtcac accatgggag tgggggatac cagaagcagg 1440

taggctaacc gcaagggggc cgcttgccac ggtatgcttc atgactgggg tgaagtcgta 1500

acaaggtagc cgtaggggaa cctgcggctg gatcacctcc tttct 1545

<210> 1348
<211> 1549
<212> DNA
<213> Neisseria subflava

<400> 1348
tgaacataag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcggacgg cagcacagag aagcttgctt cttgggtggc gagtggcgaa cgggtgagta 120

atatatcgga acgtaccgag taatggggga taactaatcg aaagattagc taataccgca 180

tattctctga ggaggaaagc aggggacctt cgggccttgc gttattcgag cggccgatat 240

ctgattagct agttggtggg gtaaaggcct accaaggcga cgatcagtag cgggtctgag 300

aggatgatcc gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 360

gggaattttg gacaatgggc gcaagcctga tccagccatg ccgcgtgtct gaagaaggcc 420

ttcgggttgt aaaggacttt tgtcagggaa gaaaaggctg ttgctaatac cgacagctga 480

tgacggtacc tgaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggtgcgagc gttaatcgga attactgggc gtaaagcgag cgcagacggt tacttaagca 600

ggatgtgaaa tccccgggct caacctggga actgcgttct gaactgggtg actagagtgt 660

gtcagaggga ggtagaattc cacgtgtagc agtgaaatgc gtagagatgt ggaggaatac 720

cgatggcgaa ggcagcctcc tgggataaca ctgacgttca tgctcgaaag cgtgggtagc 780

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcaattag ctgttgggca 840

acttgattgc ttagtagcgt agctaacgcg tgaaattgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaagaac cttacctggt cttgacatgt acggaatcct ccagagacgg 1020

aggagtgcct tcgggaaccg taacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgcc atcatttagt 1140

tgggcactct aatgagactg ccggtgacaa gccggaggaa ggtggggatg acgtcaagtc 1200

ctcatggccc ttatgaccag ggcttcacac gtcatacaat ggtcggtaca gagggtagcc 1260

aagccgcgag gtggagccaa tctcacaaaa ccgatcgtag tccggattgc actctgcaac 1320

tcgagtgcat gaagtcggaa tcgctagtaa tcgcaggtca gcatactgcg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccatgggagt gggggatacc agaagtaggt 1440

agggtaaccg caaggagccc gcttaccacg gtatgcttca tgactggggt gaagtcgtaa 1500

caaggtagcc gtaggggaac ctgcggctgg atcacctcct ttctagaga 1549

<210> 1349
<211> 1495
<212> DNA
<213> Neorickettsia risticii

<400> 1349
atttgagagt ttgatcctgg ctcagaacga acgctagcgg taggcttaac acatgcaagt 60

cgaacggaat cagggctgct tgcagccttg gtcccgtggc agacgggtgc gtaacgcgtg 120

ggaacttgcc tggtagtagg gaataaccag tggaaacatt gggcaacacc ctatacgccc 180

tgaggggaa aatttattgc tatcagatag gcccgcgtta gattagctag ttggtggggt 240

aatggcctac caaggcgacg atctatagct ggtctgagag gatgatcagc cacactggaa 300

ctgagacacg gtccagactc ctacgggagg cagcagtgag gaatattgga caatgggcga 360

aagcctgatc cagccatacc gcatgagtga tgaaggccct tgggttgtaa agctctttta 420

gtggggaaga taatgacggt acccacagaa gaagtcccgg ctaactccgt gccagcagcc 480

gcggtaatac ggaggggct agcgttgttc ggaattactg ggcgtaaagg gtgcgtaggc 540

ggtcccgtaa gttaggtgtg aaatccttgg gcttaaccca agaactgcat ttaaaactgt 600

gggactcgaa cgtgagagag ggcaatggaa tttttggtgt aggggtgaaa tccgtagata 660

tcaagaggaa cgtcaggggc gaaagcgatt gcctggatca cagttgacgc tgaggcacga 720

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgatgagtgt 780

taaaagtggg ttattttatc tgctttgtag ctaacgcgtt aaacactccg cctggggact 840

acggtcgcaa gactaaaact caaaggaatt gacggggact cgcacaagcg gtggagtatg 900

tggtttaatt cgatgcaacg cgaaaaacct taccatacct tgacatgtgg attgtatccc 960

tctgaaggga gggagtcagt tcggctggat ccaacacagg tgttgcatgg ctgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctcat ccttagttgc 1080

cagcggttcg gccgggaact ttaaggaaac tgccagtgac aagctggagg aaggtgggga 1140

cgacgtcaag tcatcatggc ccttatggta tgggctacac acgtactaca atggcaacta 1200

caatgagcta gctacaccgt aaggtgacgc caatctctta aaggttgtct cagtacggat 1260

tgccttctgc aactcgaagg catgaagttg gaatcgctag taatcgcaga tcagcatgct 1320

gcggtgaata cgttctcggg tcttgtacac actgcccgtc aggccatggg agttcatctt 1380

actcgaagct agtgagctga ccgcaaggag gcagctatct acggtggggt gggtgactgg 1440

ggttaagtcg taacaaggta gccgtaggtg aacctgcggc tggattacct ccttt 1495

<210> 1350

<211> 1495
<212> DNA
<213> Neorickettsia sennetsu

<400> 1350
atttgagagt ttgatcctgg ctcagaacga acgctagcgg taggcttaac acatgcaagt 60

cgaacggaat caaagctgct tgcagccttg gtcccgtggc agacgggtgc gtaacgcgtg 120

ggaacttgcc tggtagtagg gaataaccag tggaaacatt gggcaacacc ctatacgccc 180

tgaggggaa aatttattgc tatcagatag gcccgcgtta gattagctag ttggtggggt 240

aatggcctac caaggcgacg atctatagct ggtctgagag gatgatcagc cacactggaa 300

ctgagacacg gtccagactc ctacgggagg cagcagtgag gaatattgga caatgggcga 360

aagcctgatc cagccatacc gcatgagtga tgaaggccct tgggttgtaa agctctttta 420

gtggggaaga tagtgacggt acccacagaa gaagtcccgg ctaactccgt gccagcagcc 480

gcggtaatac ggaggggct agcgttgttc ggaattactg ggcgtaaagg gtgcgtaggc 540

ggtcccgtaa gttaggtgtg aaatccttgg gcttaaccca ggaactgcat ttaaaactgc 600

gggactcgaa cgtgagagag ggcaatggaa tttttggtgt aggggtgaaa tccgtagata 660

tcaagaggaa cgtcaggggc gaaagcgatt gcctggatca cagttgacgc tgaggcacga 720

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgatgagtgt 780

taaaagtggg ttattttatc tgctttgtag ctaacgcgtt aaacactccg cctggggact 840

acggtcgcaa gactaaaact caaaggaatt gacggggact cgcacaagcg gtggagtatg 900

tggtttaatt cgatgcaacg cgaaaaacct taccatacct tgacatgtgg atcgtatccc 960

tctgaaggga gggagtcagt tcggctggat ccaacacagg tgttgcatgg ctgtcgtcag 1020

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctcat ccttagttgc 1080

cagcggttcg gccgggaact ttaaggaaac tgccagtgac aagctggagg aaggtgggga 1140

cgacgtcaag tcatcatggc ccttatggta tgggctacac acgtactaca atggcaacta 1200

caatgggcta gctacaccgt aaggtgatgc aaatctccta aaagttgtct cagtacggat 1260

tgccttctgc aactcgaagg catgaagttg gaatcgctag taatcgcaga tcagcatgct 1320

gcggtgaata cgttctcggg tcttgtacac actgcccgtc aggccatggg agttcatctt 1380

actcgaagct agtgagctga ccgcaaggag gcagctatct acggtggggt gggtgactgg 1440

ggttaagtcg taacaaggta gccgtaggtg aacctgcggc tggattacct ccttt 1495

<210> 1351
<211> 1530
<212> DNA
<213> Nocardia brasiliensis

<400> 1351
tcttcaacgg agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg 60

caagtcgagc ggtaaggccc ttcggggtac acgagcggcg aacgggtgag taacacgtgg 120

gtgatctgcc tcgcacttcg ggataagcct gggaaactgg gtctaatacc ggatatgacc 180

tttcagtgca tgctgttggg tggaaagatt tatcggtgcg agatgggccc gcggcctatc 240

agcttgttgg cggggtaacg gcccaccaag gcgacgacgg gtagccgacc tgagagggtg 300

accggccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

attgcacaat gggcggaagc ctgatgcagc gacgccgcgt gagggatgac ggccttcggg 420

ttgtaaacct ctttcgacag ggacgaagcg caagtgacgg tacctgtaga agaagcaccg 480

gccaactacg tgccagcagc cgcggtaata cgtagggtgc gagcgttgtc cggaattact 540

gggcgtaaag agcttgtagg cggtttgtcg cgtcgtccgt gaaaacttgg ggctcaaccc 600

caagcttgcg ggcgatacgg gcagacttga gtacttcagg ggagactgga attcctggtg 660

tagcggtgaa atgcgcagat atcaggagga acaccggtgg cgaaggcggg tctctgggaa 720

gtaactgacg ctgagaagcg aaagcgtggg tagcgaacag gattagatac cctggtagtc 780

cacgccgtaa acggtgggta ctaggtgtgg gtttccttcc acgggatccg tgccgtagct 840

aacgcattaa gtaccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga 900

cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg aagaacctta 960

cctgggtttg acatacaccg gaaacctgca gagatgtagg ccccttgtg gtcggtgtac 1020

aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct tgtcctgtgt tgccagcgga ttatgccggg gactcgcagg agactgccgg 1140

ggtcaactcg gaggaaggtg gggacgacgt caagtcatca tgcccttat gtccagggct 1200

tcacacatgc tacaatggcc ggtacagagg gctgcgatac cgtgaggtgg agcgaatccc 1260

ttaaagccgg tctcagttcg gatcggggtc tgcaactcga ccccgtgaag ttggagtcgc 1320

tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcacgtca tgaaagtcgg taacacccga agccggtggc ctaacccctt gtgggaggga 1440

gccgtcgaag gtgggattgg cgattgggac gaagtcgtaa caaggtagcc gtaccggaag 1500

gtgcggctgg atcacctcct ttctaaggag 1530

<210> 1352
<211> 1434
<212> DNA
<213> Nocardia cyriacigeorgica

<400> 1352
ttaacacatg caagtcgagc ggtaaggccc ttcggggtac acgagcggcg aacgggtgag 60

taacacgtgg gtgatctgcc tcgcactctg ggataagcct gggaaactgg gtctaatacc 120

ggatatgacc ttacatcgca tggtgtttgg tggaaagatt tatcggtgcg agatgggccc 180

gcggcctatc agcttgttgg tggggtaatg gcctaccaag gcgacgacgg gtagccggcc 240

tgagagggcg accggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtggggaat attgcacaat gggcgaaagc ctgatgcagc gacgccgcgt gagggatgac 360

ggccttcggg ttgtaaacct ctttcgacag ggacgaagcg caagtgacgg tacctgtaga 420

agaagcaccg gccaactacg tgccagcagc cgcggtaata cgtagggtgc gagcgttgtc 480

cggaattact gggcgtaaag agcttgtagg cggcttgtcg cgtcgatcgt gaaaacttgg 540

ggctcaaccc caagcttgcg gtcgatacgg gcaggcttga gtacttcagg ggagactgga 600

attcctggtg tagcggtgaa atgcgcagat atcaggagga acaccggtgg cgaaggcggg 660

tctctgggaa gtaactgacg ctgagaagcg aaagcgtggg tagcgaacag gattagatac 720

cctggtagtc cacgccgtaa acggtgggta ctaggtgtgg gtttccttcc acgggatccg 780

tgccgtagct aacgcattaa gtaccccgcc tggggagtac ggccgcaagg ctaaaactca 840

aaggaattga cgggggcccg cacaagcggc ggagcatgtg gattaattcg atgcaacgcg 900

aagaacctta cctgggtttg acatacaccg gaaacctgca gagatgtagg ccccttgtg 960

gtcggtgtac aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaaccct tatcttatgt tgccagcgcg taatggcggg gactcgtgag 1080

agactgccgg ggtcaactcg gaggaaggtg gggacgacgt caagtcatca tgccccttat 1140

gtccagggct tcacacatgc tacaatggcc ggtacagagg gctgcgatac cgtgaggtgg 1200

agcgaatccc ttaaagccgg tctcagttcg gatcggggtc tgcaactcga ccccgtgaag 1260

ttggagtcgc tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacgtca tgaaagtcgg taacacccga agccggtggc ctaacccctt 1380

gtgggaggga gccgtcgaag gtgggatcgg cgattgggac gaagtcgtaa caag 1434

<210> 1353
<211> 1522
<212> DNA
<213> Nocardia farcinica

<400> 1353
cttcaacgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgagcg gtaaggccct tcggggtaca cgagcggcga acgggtgagt aacacgtggg 120

tgatctgccc tgtacttcgg gataagcctg ggaaactggg tctaataccg gatatgacct 180

tacatcgcat ggtgtttggt ggaaagattt atcggtacag gatgggcccg cggcctatca 240

gcttgttggt ggggtaatgg cctaccaagg cgacgacggg tagccggcct gagagggcga 300

ccggccacac tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata 360

ttgcacaatg ggcgaaagcc tgatgcagcg acgccgcgtg agggatgacg gccttcgggt 420

tgtaaacctc tttcgacagg gacgaagcgc aagtgacggt acctgtagaa gaagcaccgg 480

ccaactacgt gccagcagcc gcggtaatac gtagggtgcg agcgttgtcc ggaattactg 540

ggcgtaaaga gcttgtaggc ggtttgtcgc gtcgtccgtg aaaacttggg gctcaactcc 600

aagcttgcgg gcgatacggg cagacttgag tactgcaggg gagactggaa ttcctggtgt 660

agcggtgaaa tgcgcagata tcaggaggaa caccggtggc gaaggcgggt ctctgggcag 720

taactgacgc tgagaagcga aagcgtgggt agcgaacagg attagatacc ctggtagtcc 780

acgccgtaaa cggtgggcgc taggtgtggg tttccttcca cgggatccgt gccgtagcta 840

acgcattaag cgccccgcct ggggagtacg gccgcaaggc taaaactcaa aggaattgac 900

gggggcccgc acaagcggcg gagcatgtgg attaattcga tgcaacgcga agaaccttac 960

ctgggtttga catacaccgg aaacctgcag agatgtaggc ccccttgtgg tcggtgtaca 1020

ggtggtgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccttg tcctgtgttg ccagcgcgtt atggcgggga ctcgcaggag actgccgggg 1140

tcaactcgga ggaaggtggg gacgacgtca agtcatcatg ccccttatgt ccagggcttc 1200

acacatgcta caatggccgg tacagagggc tgcgataccg tgaggtggag cgaatccctt 1260

aaagccggtc tcagttcgga tcggggtctg caactcgacc ccgtgaagtt ggagtcgcta 1320

gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcacgtcatg aaagtcggta acacccgaag ccggtggcct aacccccttgt gggagggagc 1440

cgtcgaaggt gggatcggcg attgggacga agtcgtaaca aggtagccgt accggaaggt 1500

gcggctggat cacctccttt ct 1522

<210> 1354
<211> 1328
<212> DNA
<213> Nocardia puris

<400> 1354
aacacatgca agtcgagcga gcggcgaacg ggtgagtaac acgtgggtga tctgccctgc 60

actctgggat aagcctggga aactgggtct aataccggat atggaaagtc ggtgcaggat 120

gggcccgcgg cctatcagct tgttggtggg gtaatggcct accaaggcga cgacgggtag 180

ccggcctgag agggcgaccg gccacactgg gactgagaca cggcccagac tcctacggga 240

ggcagcagtg gggaatattg cacaatgggc ggaagcctga tgcagcgacg ccgcgtgagg 300

gatgacggcc ttcgggttgt aaacctcttt cgacagggac gatgacggta cctgtagaag 360

aagcaccggc caactacgtg ccagcagccg cggtaatacg tagggtgcga gcgttgtccg 420

gaattactgg gcgtaaagag cttgtaggcg gcttgtcgcg tcgatcgtga aaacttgggg 480

ctcaacccca agcttgcggt cgatacgggc aggcttgagt actgcagggg agactggaat 540

tcctggtgta gcggtgaaat gcgcagatat caggaggaac accggtggcg aaggcgggtc 600

tctgggcaga ctgacgctga gaagcgaaag cgtgggtagc gaacaggatt agataccctg 660

gtagtccacg ccgtaaacgg tgggcgctag gtgtgggttg atccgtgccg tagctaacgc 720

attaagcgcc ccgcctgggg agtacggccg caggctaaaa ctcaaaggaa ttgacggggg 780

cccgcacaag cggcggagca tgtggattaa ttcgatgcaa cgcgaagaac cttacctggg 840

tttgacatat acaggtggtg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa 900

gtcccgcaac gagcgcaacc cttgtcctgt gttgccagca attggggact cgcaggagac 960

tgccggggtc aactcggagg aaggtgggga cgacgtcaag tcatcatgcc ccttatgtcc 1020

agggcttcac acatgctaca atggccggca gagggctgcg ataccgtgag gtggagcgaa 1080

tcccttccgg tctcagttcg gacggggtct gcaactcgac cccggaagtt ggagtcgcta 1140

gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1200

tcacgtcatg aaagtcggta acacccgaag ccggtgccca gggagccgtc gaaggtggga 1260

tcggcgattg ggacgaagtc gtaacaaggt agccgtaccg gaaggtgcgg ctggatcacc 1320

tcctttct 1328

<210> 1355
<211> 1375
<212> DNA
<213> Nocardia sp. 01-Je-025

<400> 1355
cggtaaggcc cttcggggta cacgagcggc gaacgggtga gtaacacgtg ggtgatctgc 60

ctcgcacttc gggataagcc tgggaaactg ggtctaatac cggatatgac cgactagtgc 120

atgctggttg gtggaaagat ttatcggtgc gagatgggcc cgcggcctat cagcttgttg 180

gtgaggtaac ggctcaccaa ggcgacgacg ggtagccgac ctgagagggt gaccggccac 240

actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggcgaaag cctgatgcag cgacgccgcg tggaggatga cggccttcgg gttgtaaact 360

cctttcgaca gggacgaagc gaaagtgacg gtacctgtag aagaagcacc gggccaacta 420

cgtgccagca gccgcggtaa tacgtagggt gcgagcgttg tccggaatta ctgggcgtaa 480

agagcttgta ggcggtctgt cgcgtcttct gtgaaaactt ggggctcaac cttaagcttg 540

caggcgatac gggcagacta gagtacttca ggggagactg gaattcctgg tgtagcggtg 600

aaatgcgcag atatcaggag gaacaccggt ggcgaaggcg ggtctctggg aagtaactga 660

cgctgagaag cgaaagcatg ggtagcaaac aggattagat accctggtag tccatgccgt 720

aaacggtggg tactaggtgt gggtttcctt ccacgggatc cgtgccgyag ctaacgcatt 780

aagtaccccg cctggggagt acggccgcaa ggctaaaact caaagaaatt gacgggggcc 840

cgcacaagcg gcggagcatg tggattaatt cgatgcaacg cgaagaacct tacctgggtt 900

tgacatacac cggaaacctg cagagatgta ggccccttg tggtcggtgt acaggtggtg 960

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1020

cttatcttat gttgccagcg cgtaatggcg gggactcgtg agagactgcc ggggtcaact 1080

cggaggaagg tggggacgac gtcaagtcat catgcccctt atgtccaggg cttcacacat 1140

gctacaatgg ccagtacaga gggctgcgag accgcgaggt ggagcgaatc ccttaaagct 1200

ggtctcagtt cggatcgggg tctgcaactc gaccccgtga agttggagtc gctagtaatc 1260

gcagatcagc aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacgt 1320

catgaaagtc ggtaacaccc gaagccggtg gcctaacccc ttgtgggagg gagcc 1375

<210> 1356
<211> 1528
<212> DNA
<213> Nocardiopsis dassonvillei

<400> 1356
tttatggaga gtttgatcct ggctcaggac gaacgctggc ggcgtgctta acacatgcaa 60

gtcgagcggt aaggcccttc ggggtacacg agcggcgaac gggtgagtaa cacgtgagca 120

acctgcccct gactctggga taagcggtgg aaacgccgtc taataccgga tacgacccgc 180

cacctcatgg tggagggtgg aaagtttttc ggtcagggat gggctcgcgg cctatcagct 240

tgttggtggg gtaacggcct accaaggcga ttacgggtag ccggcctgag agggcgaccg 300

gccacactgg gactgagaca cggcccagac tcctgcggga ggcagcagtg gggaatattg 360

cgcaatgggc gaaagcctga cgcagcgacg ccgcgtgggg gatgacggcc ttcgggttgt 420

aaacctcttt taccaccaac gcaggcttcc agttctctgg aggttgacgg taggtgggga 480

ataaggaccg gctaactacg tgccagcagc cgcggtaata cgtagggtcc gagcgttgtc 540

cggaattatt gggcgtaaag agctcgtagg cggcgtgtcg cgtctgctgt gaaagaccgg 600

ggcttaactc cggttctgca gtggatacgg gcatgctaga ggtaggtagg ggagactgga 660

attcctggtg tagcggtgaa atgcgcagat atcaggagga acaccggtgg cgaaggcggg 720

tctctgggcc ttacctgacg ctgaggagcg aaagcatggg gagcgaacag gattagatac 780

cctggtagtc catgccgtaa acgttgggcg ctaggtgtgg ggactttcca cggtttccgc 840

gccgtagcta acgcattaag cgccccgcct ggggagtacg gccgcaggct aaaactcaag 900

gaattgacgg gggcccgcac aagcggcgga gcattgttgc ttaattcgac gcagcgcgaa 960

gaaccttacc aaggtttgac atcacccgtg gactcgcaga gatgtgaggt catttagttg 1020

gcgggtgaca ggtggggcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttagtcc 1080

cgcaacgagc gcaatccttg ttcatgttgt cagcatgtat ggtggggact cttgggagac 1140

tggccggggt caactcggag aagggtgggg atgacgtcag tctcatgccc cttatgtctg 1200

ggctgcaaac atgctacaat ggccggtaca atgggcgtgc gatacgtaag gtggagcgaa 1260

tccctaaaag ccggtctcag ttcggattgg ggtctgcaac tcgaccccat gaaggtggag 1320

tcgctagtaa tcgcggatca gcaacgccgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac gtcatgaaag tcggcaacac ccgaaacttg cggcctaacc ccttgtggga 1440

gggagtgagt gaaggtgggg ctggcgattg ggacgaagtc gtaacaaggt agccgtaccg 1500

gaaggtgcgg ctggatcacc tcctttct 1528

<210> 1357
<211> 1486
<212> DNA
<213> Novosphingobium aromaticivorans

<400> 1357
aacttgagag tttgatcctg gctcagaacg aacgctggcg gcatgcctaa cacatgcaag 60

tcgaacgaac ccttcggggt tagtggcgca cgggtgcgta acgcgtggga atctgccctt 120

tgcttcggaa taacagttag aaatgactgc taataccgga tgatgtcttc ggaccaaaga 180

tttatcggca agggatgagc ccgcgtagga ttaggtagtt ggtggggtaa aggcctacca 240

agccgacgat ccttagctgg tctgagagga tgatcagcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtgggga atattggaca atgggcgcaa gcctgatcca 360

gcaatgccgc gtgagtgatg aaggccttcg ggtcgtaaag ctcttttacc agggatgata 420

atgacagtac ctggagaata agctccggct aactccgtgc cagcagccgc ggtaatacgg 480

agggagctag cgttgttcgg aattactggg cgtaaagcgc acgtaggcgg ctactcaagt 540

cagaggtgaa agcccggggc tcaaccccgg aactgccttt gaaactaggt agctggaatc 600

ttggagaggt cagtggaatt ccgagtgtag aggtgaaatt cgtagatatt cggaagaaca 660

ccagtggcga aggcgactga ctggacaagt attgacgctg aggtgcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gccgtaaacg atgataacta gctgtccggt 780

cacttggtga ttgggtggcg cagctaacgc attaagttat ccgcctgggg agtacggtcg 840

caagattaaa actcaaagga attgacgggg gcctgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgcagaa ccttaccagc gtttgacatc ccgcgctact tccagagatg 960

gaaggttccc ttcggggacg cggtgacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caaccctcgt ccttagttgc catcatttag 1080

ttgggcactc taaggaaacc gccggtgata agccggagga aggtggggat gacgtcaagt 1140

cctcatggcc cttacacgct gggctacaca cgtgctacaa tggcggtgac agtgggcagc 1200

aagcacgcga gtgtgagcta atctccaaaa gccgtctcag ttcggattgt tctctgcaac 1260

tcgagagcat gaaggcggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1320

tcccaggcct tgtacacacc gcccgtcaca ccatgggagt tgggttcacc cgaaggcgtt 1380

gcgctaactc gcaagagagg caggcgacca cggtgggctt agcgactggg gtgaagtcgt 1440

aacaaggtag ccgtagggga acctgcggct ggatcacctc ctttct 1486

<210> 1358
<211> 1529
<212> DNA
<213> Oceanobacillus caeni

<400> 1358
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gctggaagct aatttcatcc cttcgggatg aaattagtgg aaagagcggc ggacgggtga 120

gtaacacgtg ggcaacctac ctataagact gggataactc gcggaaacgt gagctaatac 180

cggataatac tttttattgc ataataagga gtttgaaagg cggcgtaagc tgtcacttat 240

agatgggccc gcggcgcatt agctagttgg tgaggtaaag gctcaccaag gcaacgatgc 300

gtagccgacc tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac 360

gggaggcagc agtagggaat cttccgcaat ggacgaaagt ctgacggaac aacgccgcgt 420

gagtgaagaa ggttttcgga tcgtaaaact ctgttgttag ggaagaacaa gtcaggtagt 480

aactgacctg accttgacgg tacctaacca gaaagccacg gctaactacg tgccagcagc 540

cgcggtaata cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag cgctcgcagg 600

cggtctttta agtctgatgt gaaagcccac ggcttaaccg tggagggtca ttggaaactg 660

gaggacttga gtgcagaaga ggagagtgga attccatgtg tagcggtgaa atgcgtagag 720

atatggagga acaccagtgg cgaaggcgac tctctggtct gtaactgacg ctgaggagcg 780

aaagcgtggg tagcgaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg 840

ctaggtgtta gggggtttcc gcccccttagt gctgaagtta acgcattaag cactccgcct 900

ggggagtacg gccgcaaggc tgaaactcaa aagaattgac ggggacccgc acaagcggtg 960

gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga catcctttcg 1020

acctccctag agatagggat ttcccttcgg ggacgaaagt gacaggtggt gcatggttgt 1080

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgatctt 1140

agttgccagc attaagttgg gcactctaag gtgactgccg gtgacaaacc ggaggaaggt 1200

ggggatgacg tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatgga 1260

tggtacaaag ggcagcgaaa ccgcaaggtc aagcaaatcc cataaaacca ttctcagttc 1320

ggattgtagg ctgcaactcg cctacatgaa gccggaatcg ctagtaatcg cggatcagca 1380

tgccgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcacacca cgagagttgg 1440

taacacccga agtcggtgag gtaacctttt ggagccagcc gccgaaggtg ggaccaatga 1500

ttggggtgaa gtcgtaacaa ggtaaccca 1529

<210> 1359
<211> 1347
<212> DNA
<213> Oceanobacillus sp. Ndiop

<400> 1359
tcctggcaag aagatgaaag gcggctttta gctgtcactt acagatgggc ccgcggcgca 60

ttagctagtt ggtgaggtaa cggctcacca aggcgacgat gcgtagccga cctgagaggg 120

tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga 180

atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg aaggttttcg 240

gatcgtaaaa ctctgttgtc agggaagaac aagtgcgaga gtaactgctc gcaccttgac 300

ggtacctgac cagaaagcca cggctaacta cgtgccagca gccgcggtaa tacgtaggtg 360

gcaagcgttg tccggaatta ttgggcgtaa agcgctcgca ggcggtcttt taagtctgat 420

gtgaaagccc acggcttaac cgtggagggt cattggaaac tggaggactt gagtacagaa 480

gaggagagtg gaattccacg tgtagcggtg aaatgcgtag agatgtggag gaacaccagt 540

ggcgaaggcg actctctggt ctgtaactga cgctgaggag cgaaagcgtg gggagcgaac 600

aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt tagggggttt 660

ccgcccctta gtgctgaagt taacgcatta agcactccgc ctggggagta cggccgcaag 720

gctgaaactc aaaagaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 780

gaagcaacgc gaagaacctt accaggtctt gacatcctct gaccacccta gagataggga 840

tttcccttcg gggacagagt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 900

tgttgggtta agtcccgcaa cgagcgcaac ccttgatctt agttgccagc attcagttgg 960

gcactctaag gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc 1020

atgcccctta tgacctgggc tacacacgtg ctacaatgga tggaacaaag ggaagcgaaa 1080

accgcgaggt caagcaaatc ccataaaacc attctcagtt cggattgcag gctgcaactc 1140

gcctgcatga agccggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1200

ccgggccttg tacacaccgc ccgtcacacc acgagagttg gtaacacccg aagtcggtga 1260

ggtaaccttt tggagccagc cgccgaaggt gggactaatg attggggtga agtcgtaaca 1320

aggtagccgt atcggaaggt gcggctg 1347

<210> 1360
<211> 1487
<212> DNA
<213> Ochrobactrum anthropi

<400> 1360
ttcaacttga gagtttgatc ctggctcaga acgaacgctg gcggcaggct taacacatgc 60

aagtcgagcg ccccgcaagg ggagcggcag acgggtgagt aacgcgtggg aacgtacctt 120

ttgctacgga ataactcagg gaaacttgtg ctaataccgt atgtgccctt cgggggaaag 180

atttatcggc aaaggatcgg cccgcgttgg attagctagt tggtgaggta aaggctcacc 240

aaggcgacga tccatagctg gtctgagagg atgatcagcc acactgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatattggac aatgggcgca agcctgatcc 360

agccatgccg cgtgagtgat gaaggcccta gggttgtaaa gctctttcac cggtgaagat 420

aatgacggta accggagaag aagccccggc taacttcgtg ccagcagccg cggtaatacg 480

aaggggcta gcgttgttcg gatttactgg gcgtaaagcg cacgtaggcg gacttttaag 540

tcaggggtga aatcccgggg ctcaaccccg gaactgcctt tgatactgga agtcttgagt 600

atggtagagg tgagtggaat tccgagtgta gaggtgaaat tcgtagatat tcggaggaac 660

accagtggcg aaggcggctc actggaccat tactgacgct gaggtgcgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatgtt agccgttggg 780

gagtttactc ttcggtggcg cagctaacgc attaaacatt ccgcctgggg agtacggtcg 840

caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgcagaa ccttaccagc ccttgacata ccggtcgcgg acacagagat 960

gtgtctttca gttcggctgg accggataca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gcccttagtt gccagcattt 1080

agttgggcac tctaagggga ctgccggtga taagccgaga ggaaggtggg gatgacgtca 1140

agtcctcatg gcccttacgg gctgggctac acacgtgcta caatggtggt gacagtgggc 1200

agcgagcacg cgagtgtgag ctaatctcca aaagccatct cagttcggat tgcactctgc 1260

aactcgagtg catgaagttg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata 1320

cgttcccggg ccttgtacac accgcccgtc acaccatggg agttggtttt acccgaaggc 1380

gctgtgctaa ccgcaaggag gcaggcgacc acggtagggt cagcgactgg ggtgaagtcg 1440

taacaaggta gccgtagggg aacctgcggc tggatcacct cctttct 1487

<210> 1361
<211> 1493
<212> DNA
<213> Ochrobactrum intermedium

<400> 1361
aacttgagag tttgatcctg gctcagaacg aacgctggcg gcaggcttaa cacatgcaag 60

tcgagcgccc cgcaagggga gcggcagacg ggtgagtaac gcgtgggaac gtaccatttg 120

ctacggaata actcagggaa acttgtgcta ataccgtatg agcccgaaag gggaaagatt 180

tatcggcaaa tgatcggccc gcgttggatt agctagttgg tggggtaaag gcctaccaag 240

gcgacgatcc atagctggtc tgagaggatg atcagccaca ctgggactga gacacggccc 300

agactcctac gggaggcagc agtggggaat attggacaat gggcgcaagc ctgatccagc 360

catgccgcgt gagtgatgaa ggccctaggg ttgtaaagct ctttcaccgg tgaagataat 420

gacggtaacc ggagaagaag ccccggctaa cttcgtgcca gcagccgcgg taatacgaag 480

ggggctagcg ttgttcggat ttactgggcg taaagcgcac gtaggcgggc taataagtca 540

ggggtgaaat cccggggctc aaccccggaa ctgcctttga tactgttagt cttgagtatg 600

gtagaggtga gtggaattcc gagtgtagag gtgaaattcg tagatattcg gaggaacacc 660

agtggcgaag gcggctcact ggaccattac tgacgctgag gtgcgaaagc gtggggagca 720

aacaggatta gataccctgg tagtccacgc cgtaaacgat gaatgttagc cgttggggag 780

tttactcttc ggtggcgcag ctaacgcatt aaacattccg cctggggagt acggtcgcaa 840

gattaaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgaagcaacg cgcagaacct taccagccct tgacatcccg atcgcggtta gtggagacac 960

tatccttcag ttcggctgga tcggagacag gtgctgcatg gctgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg cccttagttg ccagcattca 1080

gttgggcact ctaaggggac tgccggtgat aagccgagag gaaggtgggg atgacgtcaa 1140

gtcctcatgg cccttacggg ctgggctaca cacgtgctac aatggtggtg acagtgggca 1200

gcgagcacgc gagtgtgagc taatctccaa aagccatctc agttcggatt gcactctgca 1260

actcgagtgc atgaagttgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca caccatggga gttggtttta cccgaaggcg 1380

ctgtgctaac cgcaaggagg caggcgacca cggtagggtc agcgactggg gtgaagtcgt 1440

aacaaggtag ccgtagggga acctgcggct ggatcacctc ctttctaagg aag 1493

<210> 1362
<211> 1396
<212> DNA

<213> Ochrobactrum pseudintermedium

<400> 1362
gagagtttga tcctggctca gaacgaacgc tggcggcagg cttaacacat gcaagtcgag 60

cgcgtagcaa tacgagcggc agacgggtga gtaacgcgtg ggaatctacc catcactagg 120

gaataactca gggaaacttg tgctaatacc ctatacgacc gagaggtgaa agatttatcg 180

gtgatggatg agcccgcgtt ggattagcta gttggtgggg taaaggccta ccaaggcgac 240

gatccatagc tggtctgaga ggatgatcag ccacactggg actgagacac ggcccagact 300

cctacgggag gcagcagtgg ggaatattgg acaatgggcg caagcctgat ccagccatgc 360

cgcgtgagtg atgaaggccc tagggttgta aagctctttc accggtgaag ataatgacgg 420

taaccggaga agaagccccg gctaacttcg tgccagcagc cgcggtaata cgaaggggc 480

tagcgttgtt cggatttact gggcgtaaag cgcacgtagg cgggctaata agtcaggggt 540

gaaatcccgg ggctcaaccc cggaactgcc tttgatactg ttagtcttga gtatggaaga 600

ggtgagtgga attccgagtg tagaggtgaa atttgtagat attcggagga acaccagtgg 660

cgaaggcggc tcactggtcc attactgacg ctgaggtgcg aaagcgtggg gagcaaacag 720

gattagatac cctggtagtc cacgccgtaa acgatgaatg ttagccgttg gggagtttac 780

tcttcggtgg cgcagctaac gcattaaaca ttccgcctgg ggagtacggt cgcaagatta 840

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taatttgaag 900

caacgcgcag aaccttacca gcccttgaca tcccgatcgc ggttagtgga gacactttcc 960

ttcagttcgg ctggatcgga gacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac cctcgccctt agttgccagc attcagttgg 1080

gcactctaag gggactgccg gtgataagcc gagaggaagg tggggatgac gtcaagtcct 1140

catggccctt acgggctggg ctacacacgt gctacaatgg tggtgacagt gggcagcgag 1200

cacgcgagtg tgagctaatc tccaaaagcc atctcagttc ggattgcact ctgcaactcg 1260

agtgcatgaa gttggaatcg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagttgg ttttacccga aggcgctgtg 1380

ctaaccgcaa ggaggc 1396

<210> 1363
<211> 1317
<212> DNA
<213> Odoribacter laneus

<400> 1363
gatgaacgct agcgacaggc ttaacacatg caagtcgagg gaccggcgca cgggtgagta 60

acgcgtatgc aacctgcctt tgacagaggg atagcccatg gaaacgtgga ttaatacctc 120

atagttaaaa gtggtcaaag atgggcatgc gtcctattag gcagttggcg gggtaacggc 180

ccaccaaacc gatgataggt aggggttctg agaggaaggt cccccacact ggtactgaga 240

cacggaccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg tcgagagact 300

gaaccagcca agtcgcgtga gggatgactg cctatgggtt gtaaacctct tttctactgg 360

gagatgacag tacagtagga ataagcatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggatgc gagcgttatc cggatttatt gggtttaaag ggtgcgtagg cggctttata 480

agttagtggt aaaatttcgg agcttcactc cggtccgcca ttaaaactgt agagctagag 540

aatggacgag gtaggcggaa taagttaagt agcggtgaaa tgcatagata taacttagaa 600

ctccgatagc gaaggcagct taccagacca actgacgctg atgcacgaga gcgtgggtag 660

cgaacaggat tagataccct ggtagtccac gccgtaaacg atgctcaccg gcccttagcg 720

agttaggggt taattgaaag aattaagtga gccacctggg gagtacgtcg gcaacgatga 780

aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcgatga 840

tacgcgagga accttacctg ggtttaaatg tacaaggtgc tgcatggttg tcgtcagctc 900

gtgccgtgag gtgtcgggtt aagtcccata acgagcgcaa cccttaccgt tagttgctaa 960

catatgagca ctctagcggg actgccaccg taaggtggag gaaggggggg atgacgtcaa 1020

atcagcacgg cccttacatc cagggcgaca cacgtgttac aatggccatc agcgggtagc 1080

taccgggtga ccggatgcaa atctcgatgg tctaagttcg gatggagtct gcaacccgac 1140

tccagaagtt ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcaagccatg gaagctggga gtacctgaag tccgtatcgg 1260

cctagggtaa taccggtaac tggggctaag tcgwaacaag gtagccgtac cggaagg 1317

<210> 1364
<211> 1368
<212> DNA
<213> Odoribacter splanchnicus

<400> 1364
tcgaggggca gcatgaggta gcaatacctt gatggcgacc ggcgcacggg tgagtaacgc 60

gtatgcaacc tgcctgatac cggggtatag cccatggaaa cgtggattaa caccccatag 120

tacttttatc ctgcctggga tgggagttaa atgtttaagg tatcggatgg gcatgcgtcc 180

tattagttag ttggcggggt aacagcccac caagacgatg ataggtaggg gttctgagag 240

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 300

gaatattggt caatggacgt aagtctgaac cagccaagtc gcgtgaggga agactgccct 360

atgggttgta aacctctttt ataagggaag aataagttct actgtaatga tgcctgtact 420

gataagcatc ggctatctgc cagcagccgc ggtaatacgg aggatgcgag cgttatccgg 480

atttattggg tttaaagggt gcgtaggcgg tttattaagt tagtggttaa atatttgagc 540

taaactcaat tgtgccatta atactggtaa actggagtac agacgaggta ggcggaataa 600

gttaagtagc ggtgaaatgc atagatataa cttaaactcc gatagcgaag gcagcttacc 660

agactgtaac tgacgtgatg cacgagagcg tgggtagcga acaggattag ataccctggt 720

agtccacgcc gtaaacgatg ctcactggtt ctgtgcgata tattgtacgg gattaagcga 780

aagtattaag tgagccacct ggggagtacg tcggcaacga tgaaactcaa aggaattgac 840

ggggggcccgc acaagcggag gaacatgtgg tttaattcga tgatacgcga ggaaccttac 900

ctgggtttaa atgggaaatg ccgtatttgg aaacagatat tctcttcgga gcgtttttca 960

aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt cgggttaagt cccataacga 1020

gcgcaaccct taccgttagt tgctagcatg taatgatgag cactctaacg ggactgccac 1080

cgtaaggtga gaggaaggcg gggatgacgt caaatcagca cggcccttac acccagggct 1140

acacacgtgt tacaatggcc ggtacagagg gccgctacca ggtgactgga tgccaatctc 1200

aaaagccggt cgtagttcgg attggagtct gtaacccgac tccatgaagt tggattcgct 1260

agtaatcgcg catcagccat ggcgcggtga atacgttccc gggccttgta cacaccgccc 1320

gtcaagccat ggaagccggg ggtgcctgaa gtccgtaacc gcgaggat 1368

<210> 1365
<211> 1398
<212> DNA
<213> Okadaella gastrococcus

<400> 1365
tgaagcttgg tgcttgcacc gagcggatga gttgcgaacg ggtgagtaac gcgtaggtaa 60

cctgcctctt agcgggggat aactattgga aacgatagct aataccgcat aaaagacgat 120

atcgcatgat attgatttga aaggtgcaat tgcatcacta agagatggac ctgcgttgta 180

ttagctagtt ggtgaggtaa cggctcacca aggcgacgat acatagccga cctgagaggg 240

tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga 300

atcttcggca atgggggcaa ccctgaccga gcaacgccgc gtgagtgaag aaggttttcg 360

gatcgtaaag ctctgttgta agagaagaac gagtgtgaga gtggaaagtt cacactgtga 420

cggtaactta ccagaaaggg acggctaact acgtgccagc agccgcggta atacgtaggt 480

cccgagcgtt atccggattt attgggcgta aagcgagcgc aggcggttag ataagtctga 540

agttaaaggc tgtggcttaa ccatagtacg ctttggaaac tgtttaactt gagtgcagaa 600

ggggagagtg gaattccatg tgtagcggtg aaatgcgtag atatatggag gaacaccggt 660

ggcgaaagcg gctctctggt ctgtaactga cgctgaggct cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt tgggtccttt 780

ccgggactca gtgccgcagc taacgcatta agcactccgc ctggggagta cgaccgcaag 840

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggaacatgt ggtttaattc 900

gaagcaacgc gaagaacctt accaggtctt gacatccctc tgaccgctct agagatagag 960

ttttccttcg ggacagaggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt agttgccatc attgagttgg 1080

gcactctagc gagactgccg gtaataaacc ggaggaaggt ggggatgacg tcaaatcatc 1140

atgcccctta tgacctgggc tacacacgtg ctacaatggc tggtacaacg agtcgcgagt 1200

cggtgacggc aagctaatct cttaaagcca gtctcagttc ggattgtagg ctgcaactcg 1260

cctacatgaa gtcggaatcg ctagtaatcg cggatcagca cgccgcggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca cgagagtttg taacacccga agtcggtgag 1380

gtaaccgtaa ggagccag 1398

<210> 1366
<211> 1489
<212> DNA
<213> Oligella ureolytica

<400> 1366
attgaacgct agcgggatgc tttacacatg caagtcgaac ggcagcacag aggaacttgt 60

tccttgggtg gcgagtggcg gacgggtgag taatgtatcg gaacgtgccc agtagtgggg 120

gataactacg cgaaagcgtg gctaataccg catattctct acggaggaaa gggggggatc 180

atttgacctc tcgctattgg agcggccgat attagattag ctagttggtg gggtaacggc 240

ctaccaaggc agtgatctat agctggtttg agaggacgac cagccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tggggaattt tcgacaatgg ggggaaccct 360

gatcgagcca tcccgcgtgt gggacgaagg ccttcgggtt gtaaaccact tttctcaacg 420

aagaaaagtc ttaggctaat accttaagat gctgacggta gttgaggaat aagcaccggc 480

taactatgtg ccagcagccg cggtaataca tagggtgcaa gcgttaatcg gaattactgg 540

gcgtaaaggg tgcgcaggcg gcttggaaag aacggtgtga aatcccgggg ctcaacctcg 600

gaactgcact attaactatc aagctagagt atgtcagagg ggggtggaat tccgcgtgta 660

gcagtgaaat gcgtagatat gcggaggaac accaatggcg aaggcagccc cctgggataa 720

tactgacgct caggcacgaa agcgtgggta gcaaacagga ttagataccc tggtagtcca 780

cgccctaaac gatgtcaact agctgttggg ccggttacgg cttagtagcg cagctaacgc 840

gtgaagttga ccgcctgggg actacggtcg caagactaaa actcaaagga attgacgggg 900

acccgcacaa gcggtggatg atgtggatta attcgatgca acgcgaaaaa ccttacctac 960

ccttgacatg cctggaagct ttaagagatt aaagtgtgct cgcaagagaa ccggtgcaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt gtcattagtt gctacgtaag agcactctag tgagactgcc ggtgacaaac 1140

cggaggaagg tggggatgac gtcaagtcct catggccctt atgggtaggg cttcacacgt 1200

catacaatgg tcgggacaga gggttgccaa gccgcgaggt ggagctaatc tcttaaaccc 1260

gatcgtagtc cggattgcag gctgcaactc gcctgcatga agtcggaatc gctagtaatc 1320

gcagatcaga atgctgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc 1380

atgggagtgg gttttaccag aagtagttag tctaaccgca agggggacga ttaccacggt 1440

aggattcatg actggggtga agtcgtaaca aggtagccgt accggaagg 1489

<210> 1367
<211> 1486
<212> DNA
<213> Oligella urethralis

<400> 1367
ttgatcctgg ctcagattga acgctagcgg gatgctttac acatgcaagt cgaacggcag 60

catgagagag cttgctctct tgatggcgag tggcggacgg gtgagtaatg tatcggaacg 120

tgcccggtag tgggggataa ctacgcgaaa gcgtagctaa taccgcatat tctctacgga 180

ggaaagaggg ggatcgtaag acctcttgct accggagcgg ccgatatcag attagctagt 240

tggtggggta acggcctacc aaggcggtga tctgtagctg gtttgagagg acgaccagcc 300

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg aattttcgac 360

aatgggggga accctgatcg agccatctcg cgtgtgggac gaaggccttc gggttgtaaa 420

ccacttttct caacgaagaa aagtcttagg ctaatacctt aagatgctga cggtagttga 480

ggaataagca ccggctaact acgtgccagc agccgcggta atacgtaggg tgcgagcgtt 540

aatcggaatt actgggcgta aagggtgcgc aggcggcttg gaaagaacgg tgtgaaatcc 600

cggggctcaa cctcggaact gcactattaa ctgccaagct agagtatgtc agagggggt 660

ggaattccgc gtgtagcagt gaaatgcgta gatatgcgga ggaacaccga tggcgaaggc 720

agccccctgg gatggtactg acgctcaggc acgaaagcgt gggtagcgaa caggattaga 780

taccctggta gtccacgccc taaacgatgt caactagctg ttgggccggt tacggcttag 840

tagcgcagct aacgcgtgaa gttgaccgcc tggggactac ggtcgcaaga ctaaaactca 900

aaggaattga cggggacccg cacaagcggt ggatgatgtg gattaattcg atgcaacgcg 960

aaaaacctta cctacccttg acatgcccgg aagcttcaag agattggagt gtgctcgcaa 1020

gagaaccgga gcacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa cccttgtcat tagttgctac gaaagggcac tctaatgaga 1140

ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcctcatgg cccttatggg 1200

tagggcttca cacgtcatac aatggtcagg acagcgggtt gccaagccgc gaggtggagc 1260

taatctctta aacctgatcg tagtccggat tgcaggctgc aactcgcctg catgaagtcg 1320

gaatcgctag taatcgcaga tcagaatgct gcggtgaata cgttcccggg tcttgtacac 1380

accgcccgtc acaccatggg agtgggtttt accagaagta gttagcctaa ccgcaaggag 1440

ggcgattacc acggtaggat tcatgactgg ggtgaagtcg taacaa 1486

<210> 1368
<211> 1327
<212> DNA
<213> Olsenella genomosp. C1

<400> 1368
gatgaacgct ggcggcgcgc ctaacacatg caagtcgaac gagtggcgaa cggctgagta 60

acacgtgggc aatctgccct ttgcatcggg acagcctcgg gaaaccgtgg ttaataccgg 120

atactgaaag gcggcaaggg atgggcccgc gccctgttag cttgttggtg gggtaaaagc 180

ctaccaaggc aatgatgggt agccgggttg agagaccgac cggccagatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag tggggaatct tgcacaatgg gcgaaagcct 300

gatgcagcga cgccgcgtgc gggatgaagg ccttcgggtt gtaaaccgct ttcagcaggg 360

acgatgacgg tacctgcaga agaagccccg gctaactatg tgccagcagc cgcggtaata 420

cgtagggagc aagcgttatc cggattcatt gggcgtaaag cgcgcgtagg ctgcccagta 480

ggtcgagagt taaatccggg ggctcaaccc ccgtccgctc ccgataccgc tgggttcgag 540

tctggtaggg gaaggtggaa ttcccagtgt agcggtggaa tgcgcagata ttgggaagaa 600

caccggtggc gaaggcggcc ttctgggcca actgacgctg aggcgcgaaa gctaggggag 660

cgaacaggat tagataccct ggtagtccta gccgtaaacg atgggcacta ggtgtgggga 720

tttccgtgcc gacgctaacg cattaagtgc cccgcctggg gagtacggcc gcaaggctaa 780

aactcaaagg aattgacggg ggcccgcaca agcagcggag catgtggctt aattcgaagc 840

aacgcgaaga accttaccag ggcttgacac tacaggtggt gcatggctgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcgtcgca tgttgccagc 960

ggccgggcac ccatgcgaga ccgccggcgt taagccggag gaaggtgggg acgacgtcaa 1020

gtcatcatgc cctctatgtc ctgggctgca cacgtgctac aatggccggc agcggggtgc 1080

cactgcgcga gcacaagcga atccctccgg tcccagttcg gatggaggct gcaacccgcc 1140

tccagaagtc ggagttgcta gtaatcgcgg atcagcacgc cgcggtgaat gcgttcccgg 1200

gccttgtaca caccgcccgt cacaccaccc gagtcgtctg cacccgaagt cgtcgcctag 1260

ggaggcgccg aaggtgtgga aggtaagggg ggtgaagtcg taacaaggta accgtaagag 1320

aacctgc 1327

<210> 1369
<211> 1428
<212> DNA
<213> Olsenella profusa

<400> 1369
gatgaacgct ggcggcgcgc ctaacacatg caagtcgaac ggttaaagca tcttcggatg 60

tgcataaagt ggcgaacggc tgagtaacac gtgggcaacc tgcccctcgc atcgggacag 120

cctcgggaaa ccgtggttaa taccggatac tccgccaccc ccgcatgggg gaggcgggaa 180

agcccagacg gcgagggatg ggcccgcggc ctgttagctt gttggtgggg cagtggccca 240

ccaaggcgat gatgggtagc cgggttgaga gaccgaccgg ccagattggg actgagacac 300

ggcccagact cctacgggag gcagcagtgg ggaatcttgc acaatgggcg aaagcctgat 360

gcagcgacgc cgcgtgcggg acgaaggcct tcgggtcgta aaccgctttc agcagggacg 420

aggccgcaag gtgacggtac ctgcagaaga agccccggct aactacgtgc cagcagccgc 480

ggtaatacgt aggggcgag cgttatccgg attcattggg cgtaaagcgc gcgtaggcgg 540

cctgctaggt cgggagtcaa atccgggggc tcaacccccg tccgctcccg ataccggctg 600

gcttgagtct ggtaggggaa ggtggaattc ccagtgtagc ggtggaatgc gcagatattg 660

ggaagaacac cggtggcgaa ggcggccttc tgggccacga ctgacgctga ggcgcgaaag 720

ctaggggagc gaacaggatt agataccctg gtagtcctag ccgtaaacga tggacactag 780

gtgtgggcgg attgtccgtc cgtgccgcag ccaacgcatt aagtgtcccg cctggggagt 840

acggccgcaa ggctaaaact caaaggaatt gacgggggcc cgcacaagca gcggagcatg 900

tggcttaatt cgaagcaacg cgaagaacct taccagggct tgacatctag gtgaagcggc 960

ggagacgccg tggccgagag gagcctagac aggtggtgca tggctgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct cgtcgcatgt tgccagcggt 1080

tcggccgggc acccatgcga gaccgccggc gtcaagccgg aggaaggtgg ggacgacgtc 1140

aagtcatcat gcccccttatg tcctgggctg cacacgtgct acaatggccg gcacaatggg 1200

ctgccaccgc gcgagcggga gcgaatcccc aaagccggcc ccagttcgga ctggaggctg 1260

caacccgcct ccacgaagtc ggagttgcta gtaatcgcgg atcagcacgc cgcggtgaat 1320

gcgttcccgg gccttgtaca caccgcccgt cacaccaccc gagtcgtctg cacccgaagt 1380

cgtcggccca acccgcaagg gagggaggcg ccgaaggtgt ggaaggta 1428

<210> 1370
<211> 1489
<212> DNA
<213> Olsenella sp. F0004

<400> 1370
gagtttgatc ctggctcagg atgaacgctg gcggcgcgcc taacacatgc aagtcgaacg 60

gttaaagccc cttcgggggt gcatagagtg gcgaacggct gagtaacacg tgggcaacct 120

gccccccgca ccgggacagc ctcgggaaac cgtggttaat accggatact ccgccacccc 180

cgcatggggg cggcgggaaa gcccaggcgg agggggatgg gcccgcggcc tgttagctcg 240

ttggcggggt aacggcccac caaggcgatg atgggtagcc gggttgagag accgaccggc 300

cagattggga ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatcttgca 360

caatgggcga aagcctgatg cagcgacgcc gcgtgcggga cgaaggcctt cgggtcgtaa 420

accgctttca gcagggacga ggccgaaagg tgacggtacc tgcagaagaa gccccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggggcgagc gttatccgga ttcattgggc 540

gtaaagcgcg cgcaggcggc ctgctcggtc gggagtcaaa tccgggggct caacccccgc 600

ccgctcccga taccggcggg cttgagtctg gtaggggaag gcggaattcc cagtgtagcg 660

gtggaatgcg cagatattgg gaagaacacc ggtggcgaag gcggccttct gggccacgac 720

tgacgctgag gcgcgaaagc taggggagcg aacaggatta gataccctgg tagtcctagc 780

cgtaaacgat ggacactagg tgtgggggga ggatccctcc gtgccgcagc caacgcatta 840

agtgtcccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg acgggggccc 900

gcacaagcag cggagcatgt ggcttaattc gaagcaacgc gaagaacctt accagggctt 960

gacatgcggg tgaagcggcg gagacgccgt ggccgagagg agcccgcaca ggtggtgcat 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccc 1080

gtcgcatgtt gccagcggtt aggccgggca cccatgcgag accgccggcg tcaagccgga 1140

ggaaggtggg gacgacgtca agtcatcatg ccccttatgt cctgggctgc acacgtgcta 1200

caatggccgg cacagcgggc cgccaccgcg cgagcgggag cgaatcccca aagccggccc 1260

cagttcggat tggaggctgc aacccgcctc catgaagtcg gagttgctag taatcgcgga 1320

tcagcacgcc gcggtgaatg cgttcccggg ccttgtacac accgcccgtc acaccacccg 1380

agtcgtctgc acccgaagtc gccggcccaa cccgcgaggg ggggaggcgc cgaaggtgtg 1440

gagggtaagg ggggtgaagt cgtaacaagg tagccgtacc ggaaggtgc 1489

<210> 1371
<211> 1503
<212> DNA
<213> Olsenella sp. oral taxon 809

<400> 1371
agagttcgat cctggctcag gatgaacgct ggcggcgcgc ctaacacatg caagtcgaac 60

ggttaagacg ccttcgggcg tgtataaagt ggcgaacggc tgagtaacac gtgggcaacc 120

tgcccctcgc accgggacag cctcgggaaa ccgtggttaa taccggatac tccgcgcacc 180

ccgcatgggg cgcgcgggaa agcccagacg gcgagggatg ggcccgcggc ctgttagcta 240

gttggcgggg caacggccca ccaaggcgat gatgggtagc cgggttgaga gaccgaccgg 300

ccagattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatcttgc 360

acaatgggcg aaagcctgat gcagcgacgc cgcgtgcggg acgaaggcct tcgggtcgta 420

aaccgctttc agcagggacg aggccgcaag gtgacggtac ctgcagaaga agccccggct 480

aactacgtgc cagcagccgc ggtaatacgt aggggggcgag cgttatccgg attcattggg 540

cgtaaagcgc gcgtaggcgg cctgttaggt cgggagttaa atccgggggc tcaacccccg 600

tccgctcccg ataccggcgg gcttgagtct ggtaggggaa ggcggaattc ccagtgtagc 660

ggtggaatgc gcagatattg ggaagaacac cggtggcgaa ggcggccttc tgggccacga 720

ctgacgctga ggcgcgaaag ctaggggagc gaacaggatt agataccctg gtagtcctag 780

ccgtaaacga tggacactag gtgtgggggg acgatccctc cgtgccgcag ccaacgcatt 840

aagtgtcccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc 900

cgcacaagca gcggagcatg tggcttaatt cgaagcaacg cgaagaacct taccagggct 960

tgacatctag gtgaagcggc ggagacgccg tggccgagag gagcctagac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

cgtcgcatgt tgccagcggt ccggccgggc acccatgcga gaccgccggc gtcaagccgg 1140

aggaaggtgg ggacgacgtc aagtcatcat gccccttatg tcctgggctg cacacgtgct 1200

acaatggccg gcacaatggg ctgccaccgc gcgagcggga gcgaatcccc aaagccggcc 1260

ccagttcgga ctggaggctg caacccgcct ccacgaagtc ggagttgcta gtaatcgcgg 1320

atcagcacgc cgcggtgaat gcgttcccgg gccttgtaca caccgcccgt cacaccaccc 1380

gagtcgtctg cacccgaagt cgtcggccca acccgcgagg gggggaggcg ccgaaggtgt 1440

ggagggtaag gggggtgaag tcgtaacaag gtagccgtac cggaaggtgc ggctggatca 1500

cct 1503

<210> 1372
<211> 1503
<212> DNA
<213> Olsenella uli

<400> 1372
agagttcgat cctggctcag gatgaacgct ggcggcgcgc ctaacacatg caagtcgaac 60

ggttaaagcc ccttcggggg tgcataaagt ggcgaacggc tgagtaacac gtgggcaacc 120

tgcccctcgc accgggacag cctcgggaaa ccgtggttaa taccggatac tcccgcaccc 180

ccgcatgggg gcgcggggaa agcccagacg gcgagggatg ggcccgcggc ctgttagctc 240

gttggcgggg taacggccca ccaaggcgat gatgggtagc cgggttgaga gaccgaccgg 300

ccagattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatcttgc 360

gcaatgggcg gaagcctgac gcagcgacgc cgcgtgcggg aaggaggcct tcgggtcgta 420

aaccgctttc agcagggacg aggccgcgag gtgacggtac ctgcagaaga agccccggct 480

aactacgtgc cagcagccgc ggtaatacgt aggggcaag cgttatccgg attcattggg 540

cgtaaagcgc gcgtaggcgg cctgttaggt cgggagtcaa atccgggggc tcaacccccg 600

cccgctcccg ataccggcgg gcttgagtct ggcaggggaa ggcggaattc caagtgtagc 660

ggtggaatgc gcagatattt ggaagaacac cggtggcgaa ggcggccttc tgggccacga 720

ctgacgctga ggcgcgaaag ctaggggagc gaacaggatt agataccctg gtagtcctag 780

ccgtaaacga tggacactag gtgtgggggg acgatccctc cgtgccgcag ccaacgcatt 840

aagtgtcccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc 900

cgcacaagca gcggagcatg tggcttaatt cgaagcaacg cgaagaacct taccagggct 960

tgacatccag gtgaagcggc ggaaacgccg tggccggaag gagcctggac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 1080

cgtcgcatgt tgccagcggt ccggccgggc acccatgcga gaccgccggc gtcaagccgg 1140

aggaaggtgg ggacgacgtc aagtcatcat gccccttatg ccctgggctg cacacgtgct 1200

acaatggccg gcacagcggg ccgccaccgc gcgagcggga gcgaatcccc aaagccggcc 1260

ccagttcgga ctggaggctg caacccgcct ccacgaagtc ggagttgcta gtaatcgcgg 1320

atcagcacgc cgcggtgaat gcgttcccgg gccttgtaca caccgcccgt cacaccaccc 1380

gagtcgtctg cacccgaagt cgtcggccca acccgcgagg gggggaggcg ccgaaggtgt 1440

ggagggtaag gggggtgaag tcgtaacaag gtagccgtac cggaaggtgc ggctggatca 1500

cct 1503

<210> 1373
<211> 1551
<212> DNA
<213> Opitutus terrae

<400> 1373
agagtttgat cctggctcag aatgaacgct ggcggcgtgg ttaagacatg caagtcgaac 60

ggtttttccg gtgtagcaat acatcggaaa gacagtggcg aacgggtgcg taacacgtga 120

acaatctacc tccaaatggg gaatagctcg gcgaaagccg gattaatacc gcatgtggtt 180

gcttctcgca tgagaggtat accaaagtcg gggaccgcaa ggcctgacgt taggagagga 240

gttcgcggcc tatcagctag ttggcgaggt aacggctcac caaggcaaag acgggtagct 300

ggtctgagag gatgatcagc cacactggaa ctgagacacg gtccagacac ctacgggtgg 360

cagcagtttc gaatcattca caatgggcga aagcctgatg gtgcgacgcc gcgtgaggga 420

tgaaggtctt cggattgtaa acctctgtca ccggggaaga aacgctttat attaatcgta 480

taaagcctga cttaacccgg agaggaagca gtggctaact ctgtgccagc agccgcggta 540

atacagagac tgcgagcgtt attcggattc actgggcgta aagggtgcgc aggcggccgg 600

gtgtgtgggg cgtgaaagcc tggagcttaa ctccagaatt gcgcctcaaa ctacacggct 660

agagcattgg agagggtagc ggaattcacg gtgtagcagt gaaatgcgta gatatcgtga 720

ggaacaccag aggcgaaggc ggctacctgg acaattgctg acgctcaggc acgaaagcgt 780

ggggagcaaa agggattaga tacccctgta gtccacgccc taaacggtgc acactaggtc 840

ttggcggatt cgacccctcc agggccccag ctaacgcgtt aagtgtgccg cctgaggact 900

acggccgcaa ggctaaaact caaaggaatt gacgggggcc cgcacaagcg gtggagtatg 960

tggctcaatt cgatgcaacg cgaagaacct taccaagcct tgacatgcat tggacaggcg 1020

ctgaaaggcg ccctcccttc ggggccggtg cacaggtgct gcatggctgt cgtcagctcg 1080

tgtcgtgaga tgttgcgtta agtcgcgcaa cgagcgcaac ccctgtcctt agttgccatc 1140

attcagttgg gcactctagg gagacaaacc ctctttgagg gtgggaaggt ggggatgacg 1200

tcaagtcagg atggcccttа cggcttgggc tgcacacgta ctacaatgcc cggtacagag 1260

ggacgcaata ccgcgaggtg gagcaaatcc tcaaaaccgg gcccagttca gattgtagtc 1320

tgcaactcga ctacatgaag ttggaatcgc tagtaatggc gcatcagcta cggcgccgtg 1380

aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagccgg tttcgcccga 1440

agtgcgtttg ccaaccagca atggaggcgg cgccctaagg tgaggctggt gattgggacg 1500

aagtcgtaac aaggtagccg taggggaacc tgcggctgga tcacctcctt t 1551

<210> 1374
<211> 1443
<212> DNA
<213> Oribacterium sinus

<400> 1374
ggaaagcttc ggccggaaga tacgttatct agtggcggac gggtgagtaa cacgtgggta 60

acctgcctta tggaggggga taacagagag aaatcactgc taataccgca taagcacaca 120

gtaccgcatg gtacagggtg aaaagattta tcgccataag atggacccgc gtctgattag 180

ccagttggca gggtaaaagc ctaccaaagc aacgatcagt agccgatctg agaggatgac 240

cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag tggggaatat 300

tgcacaatgg gggaaaccct gatgcagcga cgccgcgtga gtgaagaagt atttcggtat 360

gtaaagctct atcagcaggg aagataatga cagtacctga ctaagaagcc ccggctaact 420

acgtgccagc agccgcggta atacgtaggg ggcaagcgtt atccggattt actgggtgta 480

aagggagcgt agacggaatg gcaagtctga agtgaaatac ccgggctcaa cctgggaact 540

gctttggaaa ctgttgttct agagtgttgg agaggtaagt ggaattcctg gtgtagcggt 600

gaaatgcgta gatatcagga agaacaccgg aggcgaaggc ggcttactgg acaataactg 660

acgttgaggc tcgaaagcgt ggggatcaaa caggattaga taccctggta gtccacgctg 720

taaacgatga atactaggtg tcggggtgca agcatctcg gtgccgtcgc taacgcaata 780

agtattccac ctggggagta cgttcgcaag aatgaaactc aaaggaattg acggggaccc 840

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaagtctt 900

gagatcccat tgacagagta tgtaatgtac tttcccttcg gggcaatggt gacaggtggt 960

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1020

ccctatagtt agtagccagc agtaagatgg gcactctaac tagactgcca gggataacct 1080

ggaggaaggc ggggatgacg tcaaatcatc atgcccctta tgacttgggc tacacacgtg 1140

ctacaatggc gtaaacaaag ggaagcaaga gggtgacctt aagcaaatct caaaaataac 1200

gtctcagttc ggactgtagt ctgcaacccg actacacgaa gctggaatcg ctagtaatcg 1260

cagatcagca tgctgcggtg aatacgttcc cgggtcttgt acacaccgcc cgtcacacca 1320

tgggagttgg taatgcccga agtcagtgtc ccaagaaagg gagctgccga aggcaggact 1380

gatgactggg gtgaagtcgt aacaaggtag ccgtatcgga aggtgcggct ggatcacctc 1440

ctt 1443

<210> 1375
<211> 1378
<212> DNA
<213> Oribacterium sp. ACB1

<400> 1375
gatatgttat ctagtggcgg acgggtgagt aacacgtggg taacctgcct tatggagggg 60

gataacagag agaaatcact gctaataccg cataagcaca cattgccgca tggcagagtg 120

tgaaaagatt tatcgccata agatggaccc gcgtctgatt agccagttgg cagggtaaaa 180

gcctaccaaa gcaacgatca gtagccgatc tgagaggatg accggccaca ttgggactga 240

gacacggccc aaactcctac gggaggcagc agtggggaat attgcacaat gggggaaacc 300

ctgatgcagc gacgccgcgt gagtgaagaa gtatttcggt atgtaaagct ctatcagcag 360

ggaagataat gacagtacct gactaagaag ccccggctaa ctacgtgcca gcagccgcgg 420

taatacgtag ggggcaagcg ttatccggat ttactgggtg taaagggagc gtagacggaa 480

tggcaagtct gaagtgaaaa ccccgggctc aacctgggga ctgctttgga aactgttgtt 540

ctagagtgtt ggagaggtaa gtggaattcc tggtgtagcg gtgaaatgcg tagatatcag 600

gaagaacacc ggaggcgaag gcggcttact ggacaataac tgacgttgag gctcgaaagc 660

gtggggatca aacaggatta gataccctgg tagtccacgc tgtaaacgat gaatactagg 720

tgtcggggtg caaagcatct cggtgccgtc gctaacgcaa taagtattcc acctggggag 780

tacgttcgca agaatgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat 840

gtggtttaat tcgaagcaac gcgaagaacc ttaccaagtc ttgagatccc attgacagag 900

tgtgtaatgc actttccctt cggggcaatg gtgacaggtg gtgcatggtt gtcgtcagct 960

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctatag ttagtagcca 1020

gcagtaagat gggcactcta actagactgc cagggataac ctggaggaag gcggggatga 1080

cgtcaaatca tcatgcccct tatgacttgg gctacacacg tgctacaatg gcgtaaacaa 1140

agggaagcaa gagggtgacc ttaagcaaat ctcaaaaata acgtctcagt tcggactgta 1200

gtctgcaacc cgactacacg aagctggaat cgctagtaat cgcagatcag catgctgcgg 1260

tgaatacgtt cccgggtctt gtacacaccg cccgtcacac catgggagtt ggtaatgccc 1320

gaagtcagtg ttccaaaaga ggaagctgcc gaaaggcagg actgatgact ggggtgaa 1378

<210> 1376
<211> 1436
<212> DNA
<213> Oribacterium sp. ACB7

<220>
<221> modified_base
<222> (45)..(45)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (164)..(164)
<223> a, c, t, g, unknown or other

<400> 1376
gcggcgtgcc taacacatgc aagtcgaacg agatgcgtat tgganagctt cggccggaag 60

atgcgttatc tagtggcgga cgggtgagta acacgtgggt aacctgcctt atggaggggg 120

ataacagaga gaaatcactg ctaataccgc ataagcacac agtnccgcat ggcagagtgt 180

gaaaagattt atcgccataa gatggacccg cgtctgatta gccagttggc agggtaaaag 240

cctaccaaag caacgatcag tagccgatct gagaggatga ccggccacat tgggactgag 300

acacggccca aactcctacg ggaggcagca gtggggaata ttgcacaatg ggggaaaccc 360

tgatgcagcg acgccgcgtg agtgaagaag tatttcggta tgtaaagctc tatcagcagg 420

gaagataatg acagtacctg actaagaagc cccggctaac tacgtgccag cagccgcggt 480

aatacgtagg gggcaagcgt tatccggatt tactgggtgt aaagggagcg tagacggagt 540

ggcaagtctg aagtgaaaac cctgggctta acctggggac tgctttggaa actgttaatc 600

tagagtgttg gagaggtaag tggaattcct ggtgtagcgg tgaaatgcgt agatatcagg 660

aagaacaccg gaggcgaagg cggcttactg gacaataact gacgttgagg ctcgaaagcg 720

tggggatcaa acaggattag ataccctggt agtccacgct gtaaacgatg aatactaggt 780

gtcggggagc aaagcttctc ggtgccgtcg ctaacgcaat aagtattcca cctggggagt 840

acgttcgcaa gaatgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 900

tggtttaatt cgaagcaacg cgaagaacct taccaagtct tgagatccca ttgacagagt 960

gtgtaatgca ttttcccttc ggggcaatgg tgacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatagt tagtagccag 1080

cagtaagatg ggcactctaa ctagactgcc agggataacc tggaggaagg cggggatgac 1140

gtcaaatcat catgcccctt atgacttggg ctacacacgt gctacaatgg cgtaaacaaa 1200

gggaagcaag agggtgacct taagcaaatc tcaaaaataa cgtctcagtt cggactgtag 1260

tctgcaaccc gactacacga agctggaatc gctagtaatc gcagatcagc atgctgcggt 1320

gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc atgggagttg gtaatgcccg 1380

aagtcagtgt cccaagagag ggagctgccg aaggcaggac tgatgactgg ggtgaa 1436

<210> 1377
<211> 1372
<212> DNA
<213> Oribacterium sp. CM12

<400> 1377
gctcaggatg aacgctggcg gcgtgcctaa cacatgcaag tcgaacgaga tgcttatcgg 60

aaagcttcgg ccggaagata cgttatctag tggcggacgg gtgagtaaca cgtgggtaac 120

ctgccttatg gaggggggata acagagagaa atcactgcta ataccgcata agcacacagt 180

accgcatggt acagggtgaa aagatttatc gccataagat ggacccgcgt ctgattagcc 240

agttggcagg gtaaaagcct accaaagcaa cgatcagtag ccgatctgag aggatgaccg 300

gccacattgg gactgagaca cggcccaaac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggg gaaaccctga tgcagcgacg ccgcgtgagt gaagaagtat ttcggtatgt 420

aaagctctat cagcagggaa gataatgaca gtacctgact aagaagcccc ggctaactac 480

gtgccagcag ccgcggtaat acgtaggggg caagcgttat ccggatttac tgggtgtaaa 540

gggagcgtag acggaatggc aagtctgaag tgaaataccc gggctcaacc tgggaactgc 600

tttggaaact gttgttctag agtgttggag aggtaagtgg aattcctggt gtagcggtga 660

aatgcgtaga tatcaggaag aacaccggag gcgaaggcgg cttactggac aataactgac 720

gttgaggctc gaaagcgtgg ggatcaaaca ggattagata ccctggtagt ccacgctgta 780

aacgatgaat actaggtgtc ggggtgcaaa gtatctcggt gccgtcgcta acgcaataag 840

tattccacct ggggagtacg ttcgcaagaa tgaaactcaa aggaattgac ggggacccgc 900

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac caagtcttga 960

gatcccattg acagagtatg taatgtactt tcccttcggg gcaatggtga caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ctatagttag tagccagcag taagatgggc actctaacta gactgccagg gataacctgg 1140

aggaaggcgg ggatgacgtc aaatcatcat gcccccttatg acttgggcta cacacgtgct 1200

acaatggcgt aaacaaaggg aagcaagagg gtgaccttaa gcaaatctca aaaataacgt 1260

ctcagttcgg actgtagtct gcaacccgac tacacgaagc tggaatcgct agtaatcgca 1320

gatcagcatg ctgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tc 1372

<210> 1378
<211> 1425
<212> DNA
<213> Oribacterium sp. ICM51

<400> 1378
caggatgaac gctggcggcg tgcctaacac atgcaagtcg aacgagatgc gtatcggaaa 60

gcttcggccg gaagatacgt tatctagtgg cggacgggtg agtaacacgt gggtaacctg 120

ccttatggag ggggataaca gagagaaatc actgctaata ccgcataagc acacagtacc 180

gcatggtaca gggtgaaaag atttatcgcc ataagatgga cccgcgtctg attagccagt 240

tggcagggta aaagcctacc aaagcaacga tcagtagccg atctgagagg atgaccggcc 300

acattgggac tgagacacgg cccaaactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggggaa accctgatgc agcgacgccg cgtgagtgaa gaagtatttc ggtatgtaaa 420

gctctatcag cagggaagat aatgacagta cctgactaag aagccccggc taactacgtg 480

ccagcagccg cggtaatacg taggggggcaa gcgttatccg gatttactgg gtgtaaaggg 540

agcgtagacg gaatggcaag tctgaagtga aatacccggg ctcaacctgg gaactgcttt 600

ggaaactgtt gttctagagt gttggagagg taagtggaat tcctggtgta gcggtgaaat 660

gcgtagatat caggaagaac accggaggcg aaggcggctt actggacaat aactgacgtt 720

gaggctcgaa agcgtgggga tcaaacagga ttagataccc tggtagtcca cgctgtaaac 780

gatgaatact aggtgtcggg gtgcaaagca tctcggtgcc gtcgctaacg caataagtat 840

tccacctggg gagtacgttc gcaagaatga aactcaaagg aattgacggg gacccgcaca 900

agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccaa gtcttgagat 960

cccattgaca gagtatgtaa tgtactttcc cttcggggca atggtgacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta 1080

tagttagtag ccagcagtaa gatgggcact ctaactagac tgccagggat aacctggagg 1140

aaggcgggga tgacgtcaaa tcatcatgcc ccttatgact tgggctacac acgtgctaca 1200

atggcgtaaa caaagggaag caagagggtg accttaagca aatctcaaaa ataacgtctc 1260

agttcggact gtagtctgca acccgactac acgaagctgg aatcgctagt aatcgcagat 1320

cagcatgctg cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccatggga 1380

gttggtaatg cccgaagtca gtgtcccaag aaagggagct gccga 1425

<210> 1379

<211> 1259
<212> DNA
<213> Oribacterium sp. OBRC12

<400> 1379
tcaggatgaa cgctggcggc gtgcctaaca catgcaagtc gaacgagtgg cggacgggtg 60

agtaacacgt gggtaacctg ccttatggag ggggataaca gagagaaatc actgctaata 120

ccgcataaga aaagtcgcca taagatggac ccgcgtctga ttagccagtt ggcagggtaa 180

aagcctacca aagcaacgat cagtagccga tctgagagga tgaccggcca cattgggact 240

gagacacggc ccaaactcct acgggaggca gcagtgggga atattgcaca atgggggaaa 300

ccctgatgca gcgacgccgc gtgagtgaag aagtatttcg gtatgtaaag ctctatcagc 360

agggaagatg acagtacctg actaagaagc cccggctaac tacgtgccag cagccgcggt 420

aatacgtagg gggcaagcgt tatccggatt tactgggtgt aaagggagcg tagacggaat 480

ggcaagtctg aagtgaaata cccgggctca acctgggaac tgctttggaa actgttgttc 540

tagagtgttg gagaggtaag tggaattcct ggtgtagcgg tgaaatgcgt agatatcagg 600

aagaacaccg gaggcgaagg cggcttactg gacaaactga cgttgaggct cgaaagcgtg 660

gggatcaaac aggattagat accctggtag tccacgctgt aaacgatgaa tactaggtgt 720

cggggtctcg gtgccgtcgc taacgcaata agtattccac ctggggagta cgttcgcaag 780

aatgaaactc aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc 840

gaagcaacgc gaagaacctt accaagtctt gagatcgaca ggtggtgcat ggttgtcgtc 900

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct atagttagta 960

gccagcatgg gcactctaac tagactgcca gggataacct ggaggaaggc ggggatgacg 1020

tcaaatcatc atgcccctta tgacttgggc tacacacgtg ctacaatggc gtacaaaggg 1080

aagcaagagg gtgaccttaa gcaaatctca aaacgtctca gttcggatgt agtctgcaac 1140

ccgactacag aagctggaat cgctagtaat cgcagatcag catgctgcgg tgaatacgtt 1200

cccgggtctt gtacacaccg cccgtcacac catgggagtt ggtaatgccc gaagtcagt 1259

<210> 1380
<211> 1523
<212> DNA
<213> Oribacterium sp. oral taxon 078

<400> 1380
aatgagagtt cgatcctggc tcaggatgaa cgctggcggc gtgcctaaca catgcaagtc 60

gaacggagtc agcctttaa gaccttcggg tcaaagaggg gaagactgag tggcggacgg 120

gtgagtaaca cgtgggcaac ctggctcata gaggggata acagagagaa atttctgcta 180

ataccgcata agcacacact gccacatggc agagggtgaa aagagaatcg ctatgagatg 240

gacccgcgtc tgattagcca gttggcaggg taagagccta ccaaagcgac gatcagtagc 300

cgatctgaga ggatgaacgg ccacattggg actgagacac ggcccaaact cctacgggag 360

gcagcagtgg gggatattgc acaatggggg gaaccctgat gcagcgacgc cgcgtgagtg 420

aagaagtatt tcggtatgta aagctctatc agcagggaag ataatgacag tacctgaata 480

agaagccccg gctaactacg tgccagcagc cgcggtaata cgtagggggc aagcgttatc 540

cggatttact gggtgtaaag ggagcgtaga cggaatggca agtctgaagt gaaatgcccg 600

ggctcaaccc gggaactgct ttggaaactg tcgatctgga gtgttggaga ggtaagtgga 660

attcctggtg tagcggtgaa atgcgtagag atcaggaaga acaccggagg cgaaggcggc 720

ttactggaca aagactgacg ttgaggctcg aaagcgtggg aagcaaacag gattagatac 780

cctggtagtc cacgccgtaa acgatgaata ctaggtgtcg gtctccgaag gagatcggtg 840

ccgacgcaaa cgcaataagt attccacctg gggagtacgt tcgcaagaat gaaactcaaa 900

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 960

gaaccttacc aggtcttgag atcccgatga cagaagatgt aatgcctttt cccttcgggg 1020

cattggagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tatcgtcagt agccagcagt aagatgggca ctctgatgag 1140

actgccgggg ataacccgga ggaaggcggg gatgacgtca aatcatcatg ccccttatga 1200

cctgggcgac acacgtgcta caatggcgga aacagaggga agcgaggggg cgacccggag 1260

caaatctcaa aaataccgtc tcagttcgga ctgcagtctg caactcgact gcacgaagcc 1320

ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat ccgttcccgg gtcttgtaca 1380

caccgcccgt cacaccatgg gagtcggtaa tgcccgaagt cagtgaccca aaagagggag 1440

ctgccgaagg caggacagat aactggggtg aagtcgtaac aaggtagccg tatcggaagg 1500

tgcggctgga tcacctcctt tct 1523

<210> 1381
<211> 1497
<212> DNA
<213> Oribacterium sp. oral taxon 102

<400> 1381
gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taacacatgc aagtcgaacg 60

gggttctata tcggaagttt tcggatggaa gagataggac ccagtggcgg acgggtgagt 120

aacacgtggg taacctgcct catagagggg gataacagag agaaatcact gctaataccg 180

cataagcaca cgggatcgca tgatcctggg tgaaaagatt tatcgctatg agatggactc 240

gcgtctgatt agctggttgg cggggtaaag gcccaccaag gcgacgatca gtagccgatc 300

tgagaggatg gccggccaca ttgggactga gacacggccc agactcctac gggaggcagc 360

agtgggggat attgcacaat ggagggaact ctgatgcagc aacgccgcgt gagtgaagaa 420

gtatttcggt atgtaaagct ctatcagcag ggaagatgat gacagtacct gaataagaag 480

ccccggctaa ctacgtgcca gcagccgcgg taatacgtag ggggcaagcg ttatccggat 540

ttactgggtg taaagggagc gtagacggcg aagcaagtct gaagtgaaaa tccggggctc 600

aactccggaa gtgctttgga aactgttttg atagagtgtc ggagaggtaa gtggaattcc 660

tggtgtagcg gtgaaatgcg tagatatcag gaagaacacc ggaggcgaag gcggcttact 720

ggacgataac tgacgttgag gctcgaaagc gtgggaagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gaatactagg tgtcgggggc gaagcccttc ggtgccgtcg 840

caaacgcaat aagtattcca cctggggagt acgttcgcaa gaatgaaact caaaggaatt 900

gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct 960

taccaagtct tgacatccca ttgacagagc atgtaatgtg ctttcccctc ggggcaatgg 1020

agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccctatatt cagtagccag cagtaagatg ggcactctgg agagactgcc 1140

agggataacc tggaggaagg cggggatgac gtcaaatcat catgcccctt atgacttggg 1200

cgacacacgt gctacaatgg cgtaaacaaa gggaagcgag ctcgcgagag taagcgaaac 1260

tcaaaaataa cgtctcagtt cggactgtag tctgcaaccc gactacacga agctggaatc 1320

gctagtaatc gcagatcagc atgctgcggt gaatacgttc ccgggtcttg tacacaccgc 1380

ccgtcacacc atgggagtcg gtaatgcccg aagccagtga accaagagag ggagctgtcg 1440

aaggcaggac tgataactgg ggtgaagtcg taacaaggta gccgtatcgg aaggtgc 1497

<210> 1382
<211> 1527
<212> DNA
<213> Oribacterium sp. oral taxon 108

<400> 1382
tttattatga gagttcgatc ctggctcagg atgaacgctg gcggcgtgcc taacacatgc 60

aagtcgaacg agatgcgtat cggaaagctt cggccggaag atacgttatc tagtggcgga 120

cgggtgagta acacgtgggt aacctgcctt atggaggggg ataacagaga gaaatcactg 180

ctaataccgc ataagcacac attgccgcat ggcagagtgt gaaaagattt atcgccataa 240

gatggacccg cgtctgatta gccagttggc agggtaaaag cctaccaaag caacgatcag 300

tagccgatct gagaggatga ccggccacat tgggactgag acacggccca aactcctacg 360

ggaggcagca gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg acgccgcgtg 420

agtgaagaag tatttcggta tgtaaagctc tatcagcagg gaagataatg acagtacctg 480

actaagaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt 540

tatccggatt tactgggtgt aaagggagcg tagacggaat ggcaagtctg aagtgaaaac 600

cctgggctca acctggggac tgctttggaa actgttgttc tagagtgttg gagaggtaag 660

tggaattctt ggtgtagcgg tgaaatgcgt agatatcagg aagaacaccg gaggcgaagg 720

cggcttactg gacaataact gacgttgagg ctcgaaagcg tggggatcaa acaggattag 780

ataccctggt agtccacgct gtaaacgatg aatactaggt gtcggggagc aaagcatctc 840

ggtgccgtcg ctaacgcaat aagtattcca cctggggagt acgttcgcaa gaatgaaact 900

caaaggaatt gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaagtct tgagatccca ttgacagagt gtgtaatgca ttttcccttc 1020

ggggcaatgg tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa cccctatagt tagtagccag cagtaagatg ggcactctaa 1140

ctagactgcc agggataacc tggaggaagg cggggatgac gtcaaatcat catgcccctt 1200

atgacttggg ctacacacgt gctacaatgg cgtaaacaaa gggaagcaag agggtgacct 1260

taagcaaatc tcaaaaataa cgtctcagtt cggactgtag tctgcaaccc gactacacga 1320

agctggaatc gctagtaatc gcagatcagc atgctgcggt gaatacgttc ccgggtcttg 1380

tacacaccgc ccgtcacacc atgggagttg gtaatgcccg aagtcaatgt tccaagagag 1440

gaagctgccg aaggcaggac tgatgactgg ggtgaagtcg taacaaggta gccgtatcgg 1500

aaggtgcggc tggatcacct cctttct 1527

<210> 1383
<211> 1506
<212> DNA
<213> Orientia tsutsugamushi

<400> 1383
tcaaacttaa gagtttgatc ctggctcaga acgaacgctg gcggcatgcc taacacatgc 60

aagtcgaacg aattaatgct gagcttgctt agcattaatt agtggcaaac gggtgagtaa 120

cacgtgggaa tctgcccatc agtacggaat aacatttaga aataagtgct aataccgtat 180

gccctctaca aggaggaaag atttatcgct gatggatgag cccgcggcag attaggtagt 240

tggtaaggta atggcttacc aagcctgtga tctgtagctg gtctgagagg acgaacagcc 300

acactgggac tgagacacgg cccagactcc tacgggggggc agcagtgggg aatattggac 360

aatgggcgaa agcctgatcc agcaatgccg cgtgagtgat gaaggcctta gggttgtaaa 420

gctcttttag tagggatgat aatgacagta cctacagaaa aagccccggc taactccgtg 480

ccagcagccg cggtaagacg gaggggggcta gcgttgttcg gaattactgg gcgtaaaggg 540

cgcgtaggcg gtttaataag ttaggagtga aatcccgggg cttaaccctg gaactgcttc 600

taaaactgtt aggctagagt gtggtagagg atgatggaat ttctagtgta gaggtaaaat 660

tcttagatat tagaaggaac accagtggcg aaagctgtca tctgggccat tactgacgct 720

gaggcgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgctgtaaac 780

gatgagtgct agatattggg ggatttttct ttcagtttcg tagctaacgc attaagcact 840

ccgcctgggg agtacggtcg caagattaaa actcaaagga attgacgggg gcccgcacaa 900

gcggtggagc atgcggttta attcgatgat ccgcgaaaaa ccttaccaac tcttgacatg 960

gtagtcgcga aaaatggaga cattttttctt cagtttggct ggactacaca caggtgttgc 1020

atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttattcttat ttgccagcgg gtaatgccgg gaactatagg aaaactgccg gtgctaagcc 1140

ggaggaaggt ggggatgagg tcaagtcatc atggccctta tgagttgggc tacacgcgtg 1200

ctacaatggt acctacagaa tgatgcaata cggtaacgtg gagctaatca ttaaaaggta 1260

tctcagttcg gattgcactc tgcaactcga gtgcatgaag tcggaatcgc tagtaatcgc 1320

ggatcagcat gccgcggtga atacgttctc gggccttgta cacactgccc gtcgcaccat 1380

gggagtcagt ggtacctgaa gttggtgagc taacgtaaga ggcagctaac cacggtagaa 1440

ctggtgactg gggtaaagtc gtaacaaggt agccgtaggg gaacctgcgg ctggattacc 1500

tccttt 1506

<210> 1384
<211> 1451
<212> DNA
<213> Ornithinibacillus bavariensis

<400> 1384
ccttcggggt gaaagtagtg gatcgagcgg cggacgggtg agtaacacgt gggcaacctg 60

cctgtaagac tgggataact cgcggaaacg cgagctaata ccggataata ctttttatca 120

catggtaaga agatgaaagg cggcgtaagc tgtcacttac agatgggccc gcggcgcatt 180

agctagttgg tgaggtaacg gctcaccaag gcgacgatgc gtagccgacc tgagagggtg 240

atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc agtagggaat 300

cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa ggttttcgga 360

ttgtaaaact ctgttgttag ggaagaacaa gtacaagagt aactgcttgt accttgacgg 420

tacctaacca gaaagccccg gctaactacg tgccagcagc cgcggtaata cgtaggggcc 480

gagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggttcttta agtctgatgt 540

gaaagcccac ggcttaaccg tggagggtca ttggaaactg gaggacttga gtgcagaaga 600

ggagagtgga attccacgtg tagcggtgaa atgcgtagag atgtggagga acaccagtgg 660

cgaaggcgac tctctggtct gtaactgacg ctgaggcgcg aaagcgtggg gagcgaacag 720

gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgtta gggggtttcc 780

gcccccttagt gctgaagtta acgcattaag cactccgcct ggggagtacg gccgcaaggc 840

tgaaactcaa aagaattgac gggggccgca caagcggtgg agcatgtggt ttaattcgaa 900

gcaacgcgaa gaaccttacc aggtcttgac atcctctgac caccctagag atagggcttt 960

cccttcgggg acagagagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1020

tgggttaagt cccgcaacga gcgcaaccct tgatcttagt tgccagcatt cagttgggca 1080

ctctaaggtg actgccggtg acaaaccgga ggaaggtggg gatgacgtca aatcatcatg 1140

cccccttatga cctgggctac acacgtgcta caatggatgg tacaaagggc agcgaagccg 1200

cgaggtgaag caaatcccat aaaaccattc tcagttcgga ttgcaggctg caactcgcct 1260

gcatgaagcc ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat acgttcccgg 1320

gccttgtaca caccgcccgt cacaccacga gagttggtaa cacccgaagt cggtgaggta 1380

acctttttgga gccagccgcc taaggtggga ccaatgattg gggtgaagtc gtaacaaggt 1440

agccgtgtcg a 1451

<210> 1385

<211> 1504
<212> DNA
<213> Ornithinibacillus sp. 7-10AIA

<400> 1385
tggctcagga cgaacgctgg cggcgtgcct aatacatgca agtcgagcga gtgaaattaa 60

ctgatccctt cggggtgacg ttaatggatc tagcggcgga cgggtgagta acacgtgggc 120

aacctgcctg taagactggg ataactcgcg gaaacgtgag ctaataccgg ataacacttc 180

gaaccacatg gtttgaagat gaaaggcggc gcaagctgtc acttacagat gggcccgcgg 240

cgcattagct agttggtgag gtaacggctc accaaggcga cgatgcgtag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatggac gaaagtctga cggagcaacg ccgcgtgagt gatgaaggtt 420

ttcggattgt aaaactctgt tgttagggaa gaacaagtac aatagtaact gattgtacct 480

tgacggtacc taaccagaaa gccccggcta actacgtgcc agcagccgcg gtaatacgta 540

gggggcaagc gttgtccgga attattgggc gtaaagcgcg cgcaggcggt cctttaagtc 600

tgatgtgaaa gcccacggct taaccgtgga gggtcattgg aaactggagg acttgagtgc 660

agaagaggag agtggaattc cacgtgtagc ggtgaaatgc gtagagatgt ggaggaacac 720

cagtggcgaa ggcgactctc tggtctgtaa ctgacgctga ggcgcgaaag cgtggggagc 780

gaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttagggg 840

gtttccgccc cttagtgctg aagttaacgc attaagcact ccgcctgggg agtacggccg 900

caaggctgaa actcaaaaga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctctgaccac cctagagata 1020

gggctttccc ttcggggaca gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttat tcttagttgc cagcatttag 1140

ttgggcactc taaggagact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggatggtac aaagggcagc 1260

aaaaccgcga ggtcgagcaa atcccataaa accattctca gttcggattg caggctgcaa 1320

ctcgcctgca tgaagccgga atcgctagta atcgcggatc agcatgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag ttggtaacac ccgaagtcgg 1440

tgaggtaacc ttttggagcc agccgcctaa ggtgggacca atgattgggg tgaagtcgta 1500

acaa 1504

<210> 1386
<211> 1420
<212> DNA
<213> Oscillibacter sp. G2

<220>
<221> modified_base
<222> (72)..(72)
<223> a, c, t, g, unknown or other

<400> 1386
ggacctggct caggacgaac gctggcggcg tgcttaacac atgcaagtcg aacggagcac 60

ccttgaatga gntttcggyc aaaggaaagg aatgcttagt ggcggactgg tgagtaacgc 120

gtgaggaacc tgcctttcag aggggacaa cagctggaaa cggctgctaa taccgcatga 180

cgcattcgga tggcatcatc tgaatgccaa agatttatcg ctgaaagatg gcctcgcgtc 240

tgattagata gttggcgggg taacggccca ccaagtcgac gatcagtagc cggactgaga 300

ggttgaccgg ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgg gcaatgggcg caagcctgac ccagcaacgc cgcgtgaagg aagaaggctt 420

tcgggttgta aacttctttt aagagggaag agcagaagac ggtacctctt gaataagcca 480

cggctaacta cgtgccagca gccgcggtaa tacgtaggtg gcaagcgttg tccggattta 540

ctgggtgtaa agggcgtgca gccgggtgyg caagtcagat gtgaaatctc agggctcaac 600

cctgaaactg catttgaaac tgtgygtctt gagtgccgga gaggtaatcg gaattccttg 660

tgtagcggtg aaatgcgtag atataaggaa gaacaccagt ggcgaaggcg gattactgga 720

cggtaactga cggtgaggcg cgaaagcgtg gggagcaaac aggattagat accctggtag 780

tccacgctgt aaacgatcaa tactaggtgt gcggggactg acccccctgcg tgccggagtt 840

aacacaataa gtattgcacc tggggagtac gatcgcaagg ttgaaactca aaggaattga 900

cgggggcccg cacaagcggt ggattatgtg gtttaattcg aagcaacgcg agaaccttac 960

caggtcttga catcctgcta cgagtagaga tacatcaggt gcccttcggg gaaagcagag 1020

acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cctattgtta gttgctacgc aagagcactc tagcgagact gccgttgaca 1140

aaacggagga aggtggggac gacgtcaaat catcatgccc cttatgacct gggctacaca 1200

cgtaatacaa tggcggagaa caaagggatg caaagccgcg aggcagagcg aaccccaaaa 1260

agccgtccca gttcggatcg caggctgcaa cccgcctgcg tgaagtcgga atcgctagta 1320

atcgtgggtc agcataccac ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgagag tcgggaacac ccgaagtccg tagcctaacc 1420

<210> 1387
<211> 1534
<212> DNA
<213> Oscillibacter valericigenes

<400> 1387
atttatagag agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca 60

agtcgaacgg agcacccttg attgaggttt cggccaaatg agaggaatgc ttagtggcgg 120

actggtgagt aacgcgtgag gaacctgcct ttcagagggg gacaacagtt ggaaacgact 180

gctaataccg catgatacat ttgggcgaca tcgcttgaat gtcaaagatt tatcgctgaa 240

agatggcctc gcgtctgatt agatagttgg tgaggtaacg gcccaccaag tcgacgatca 300

gtagccggac tgagaggttg accggccaca ttgggactga gatacggccc agactcctac 360

gggaggcagc agtggggaat attgggcaat ggacgcaagt ctgacccagc aacgccgcgt 420

gaaggaagaa ggctttcggg ttgtaaactt cttttaaggg ggaagagtag aagacggtac 480

cccttgaata agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag 540

cgttgtccgg atttactggg tgtaaagggc gtgtagccgg gaaggtaagt cagatgtgaa 600

atctgggggc tcaacctcca aactgcattt gaaactactt ttcttgagta tcggagaggt 660

aatcggaatt ccttgtgtag cggtgaaatg cgtagatata aggaagaaca ccagtggcga 720

aggcggatta ctggacgaca actgacggtg aggcgcgaaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gctgtaaacg atcaatacta ggtgtgcggg gactgacccc 840

ctgcgtgccg cagttaacac aataagtatt gcacctgggg agtacgatcg caaggttgaa 900

actcaaagga attgacgggg gcccgcacaa gcggtggatt atgtggttta attcgaagca 960

acgcgaagaa ccttaccagg acttgacatc ctactaacga ggtagagata cgtcaggtgc 1020

ccttcgggga aagtagagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaacga gcgcaacccc tattgttagt tgctacgcaa gagcactcta 1140

gcgagactgc cgttgacaaa acggaggaag gtggggacga cgtcaaatca tcatgcccct 1200

tatgtcctgg gctacacacg taatacaatg gcggtcaaca gagggatgca aagccgtgag 1260

gtggagcgaa cccctaaaag ccgtctcagt tcggatcgca ggctgcaact cgcctgcgtg 1320

aagtcggaat cgctagtaat cgcggatcag aatgccgcgg tgaatacgtt cccgggcctt 1380

gtacacaccg cccgtcacac catgagagtc gggaacaccc gaagtccgta gcctaacagc 1440

aatgagggcg cggccgaagg tgggtttgat aattggggtg aagtcgtaac aaggtagccg 1500

tatcggaagg tgcggctgga tcacctcctt tcta 1534

<210> 1388
<211> 1450
<212> DNA
<213> Oscillospira guilliermondii

<400> 1388
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggagcgccaa ggaaggagtt 60

ttcggacaac ggatttggct gcttagtggc ggactggtga gtaacgcgtg aggaacctgc 120

ccttgagtgg gggacaacgg ttggaaacga ctgctaatac cgcatgatgt attgtcggga 180

catcccggcg ataccaaaga tttatcgctc aaggatggcc tcgcgtctga ttagatagtt 240

ggtgaggtaa cggctcacca agtcgacgat cagtagccgg actgagaggt tggccggcca 300

cattgggact gagatacggc ccagactcct acgggaggca gcagtgggga atattgggca 360

atggacgcaa gtctgaccca gcaacgccgc gtgaaggaag aaggctttcg ggttgtaaac 420

ttcttttaag ggggaagagc agaagacggt acccccttgaa taagccacgg ctaactacgt 480

gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggatttactg ggtgtaaagg 540

gcgtgcagcc gggtctgcaa gtcagatgtg aaatccacgg gcttaacccg tgaactgcat 600

ttgaaactgc gggtcttgag tatcggagag gtaatcggaa ttcctggtgt agcggtgaaa 660

cgcgtagata tcaggaagaa caccagtggc gaaggcggat tactggacga caactgacgg 720

tgaggcgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgctgtaaa 780

cgatcaatac taggtgtgcg gggactaacc cctcgcgtgc cggagtcaac acaataagta 840

ttgcacctgg ggagtacgat cgcaaggttg aaactcaaag gaattgacgg gggcccgcac 900

aagcggtgga ttatgtggtt taattcgaag caacgcgaag aaccttacca aggcttgaca 960

tggagaggct cggcttagag ataggtcttt cccttcgggg acttctcaca caggtggtgc 1020

atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ctattgttag ttgctacgca agagcactct agcgagactg ccgttgacaa aacggaggaa 1140

ggtggggacg acgtcaaatc atcatgcccc ttatgtcttg ggctacacac gtaatacaat 1200

ggcggataca aagggatgcg aaaccgcgag gtggagcgaa ccccgaaaag ccgtctcagt 1260

tcggatcgca ggctgcaacc cgcctgcgtg aagtcggaat cgctagtaat cgtgggtcag 1320

cataccacgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac catgagagtc 1380

gggaacaccc gaagtccgta gcctaaccgc aaggggggcg cggccgaagg tgggttcgat 1440

aattggggtg 1450

<210> 1389
<211> 1539
<212> DNA
<213> Oxalobacter formigenes

<400> 1389
tgaactgaag agtttgatcc tggctcagat tgaacgctgg cggcatgctt tacacatgca 60

agtcgaacgg cagcatgggg gcaaccctga tggcgagtgg cgaacgggtg agtaatatat 120

cggaacgtac ccaagagtgg gggacaacca gtcgaaagat tggctaatac cgcatacgat 180

ctaaggatga aagtggggga ccttcgggcc tcacgctcct ggagcggccg atagctgatt 240

agctagttgg tggggtaaag gcctaccaag gcgatgatca gtagctggtc tgagaggacg 300

atcagccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 360

tttggacaat gggggaaacc ctgatccagc aatgccgcgt gagtgaagaa ggccttcggg 420

ttgtaaagct cttttgtcag ggaagaaatt gattgggcta atatcccgat tagatgacgg 480

tacctgaaga ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 540

gagcgttaat cggaattact gggcgtaaag cgtgcgcagg cggttgtgta agacagatgt 600

gaaatgcccg ggctcaacct gggaattgca tttgtgactg cacggctaga gtgtgtcaga 660

gggggggtaga attccacgtg tagcagtgaa atgcgtagat atgtggagga ataccgatgg 720

cgaaggcagc cccctgggat aacactgacg ctcatgcacg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccctaa acgatgtcga ctagttgttg ggtcttaatt 840

gacttagtaa cgcagctaac gcgtgaagtc gaccgcctgg ggagtacggt cgcaagatta 900

aaactcaaag gaattgacgg ggacccgcac aagcggtgga tgatgtggat taattcgatg 960

caacgcgaaa aaccttacct acccttgaca tgtcaggaat cccgaagaga tttgggagtg 1020

ctcgaaagag agcctgaaca caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgtcattag ttgctacgaa agggcactct 1140

aatgaaactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc ctcatggccc 1200

ttatgggtag ggcttcacac gtcatacaat ggtgcataca gagggttgcc aacccgagag 1260

ggggagctaa tctcagaaag tgcatcgtag tccggattga agtctgcaac tcgacttcat 1320

gaagttggaa tcgctagtaa tcgcggatca gcatgtcgcg gtgaatacgt tcccgggtct 1380

tgtacacacc gcccgtcaca ccatgggagc gggttttacc agaagtaggt agcttaaccg 1440

taaggagggc gcttaccacg gtaggattcg tgactggggt gaagtcgtaa caaggtagcc 1500

gtatcggaag gtgcggctgg atcacctcct ttctagaga 1539

<210> 1390
<211> 1523
<212> DNA
<213> Paenibacillus barcinonensis

<400> 1390
aacgctggcg gcatgcctaa tacatgcaag tcgagcggac ttgaagagaa gcttgcttct 60

ctgatggtta gcggcggacg ggtgagtaac acgtaggcaa cctgccctca agcttgggac 120

aactaccgga aacggtagct aataccgaat acttgttttc ttcgcctgaa gagaactgga 180

aagacggagc aatctgtcac ttgaggatgg gcctgcggcg cattagctag ttggtgaggt 240

aacggctcac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttccg caatgggcga 360

aagcctgacg gagcaatgcc gcgtgagtga tgaaggtttt cggatcgtaa agctctgttg 420

ccagggaaga acgcttggga gagtaactgc tcccaaggtg acggtacctg agaagaaagc 480

cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt tgtccggaat 540

tattgggcgt aaagcgcgcg caggcggtca tgtaagtctg gtgtttaatc ccggggctca 600

accccggatc gcactggaaa ctgggtgact tgagtgcaga agaggagagt ggaattccac 660

gtgtagcggt gaaatgcgta gagatgtgga ggaacaccag tggcgaaggc gactctctgg 720

gctgtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 780

gtccacgccg taaacgatga atgctaggtg ttaggggttt cgataccctt ggtgccgaag 840

ttaacacatt aagcattccg cctggggagt acggtcgcaa gactgaaact caaaggaatt 900

gacggggacc cgcacaagca gtggagtatg tggtttaatt cgaagcaacg cgaagaacct 960

taccaggtct tgacatccaa ctaacgaggt agagatacgt taggtgccct tcggggaaag 1020

ttgagacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttga tcttagttgc cagcatttcg gatgggcact ctaaggtgac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc 1200

tgggctacac acgtactaca atggccggta caacgggcag tgaaaccgcg aggtggaacg 1260

aatcctaaaa agccggtctc agttcggatt gcaggctgca actcgcctgc atgaagtcgg 1320

aattgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccacgaga gtttataaca cccgaagtcg gtggggtaac cgcaaggagc 1440

cagccgccga aggtgggata gatgattggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtgcggct ggatcacctc ttt 1523

<210> 1391
<211> 931
<212> DNA
<213> Paenibacillus barengoltzii

<220>
<221> modified_base
<222> (891)..(891)
<223> a, c, t, g, unknown or other

<400> 1391
gcggagttta tcgggagctt gctcctgata aacttagcgg cggacgggtg agtaacacgt 60

aggcaacctg cccgtaagac tgggataact accggaaacg gtagctaata ccggatacgc 120

aagtctctcg catgaggggc ttgggaaagg cggagcaatc tgtcacttac ggatgggcct 180

gcggcgcatt agctagttgg tggggtaacg gctcaccaag gcgacgatgc gtagccgacc 240

tgagagggtg aacggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttccgcaat ggacgaaagt ctgacggagc aacgccgcgt gagtgatgaa 360

ggttttcgga tcgtaaagct ctgttgccag ggaagaacgt ccgttagagt aactgctaac 420

ggagtgacgg tacctgagaa gaaagccccg gctaactacg tgccagcagc cgcggtaata 480

cgtaggggcc gagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggctgttta 540

agtctggtgt ttaatcctgg ggctcaaccc cgggtcgcac tggaaactgg acagcttgag 600

tgcagaagag gagagtggaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 660

caccagtggc gaaggcgact ctctgggctg taactgacgc tgaggcgcga aagcgtgggg 720

agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgaatgc taggtgttag 780

gggtttcgat acccttggtg ccgaagttaa cacattaagc attccgcctg gggagtacgg 840

ccgcaaggct gaaactcaaa ggaattgacg gggacccgca caagcagtgg ngtatgtggt 900

ttaattcgaa gcaacgcgaa gaaccttacc a 931

<210> 1392
<211> 968
<212> DNA
<213> Paenibacillus chibensis

<400> 1392
gcggacttga tggagagctt gctctcctga tggttagcgg cggacgggtg agtaacacgt 60

aggcaacctg cctgcaagac cgggataacc cacggaaacg tgagctaata ccggatatct 120

catttcctct cctgagggaa tgatgaaaga cggagcaatc tgtcacttgc ggatgggcct 180

gcggcgcatt agctagttgg tgaggtaacg gctcaccaag gcgacgatgc gtagccgacc 240

tgagagggtg aacggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttccgcaat gggcgaaagc ctgacggagc aacgccgcgt gagtgatgaa 360

ggttttcgga tcgtaaagct ctgttgccag ggaagaacgt ccggtagagt aactgctatc 420

ggagtgacgg tacctgagaa gaaagccccg gctaactacg tgccagcagc cgcggtaata 480

cgtagggggc aagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggtcattta 540

agtctggtgt ttaaggccaa ggctcaacct tggttcgcac tggaaactgg gtgacttgag 600

tgcagaagag gagagtggaa ttccacgtgt agcggtgaaa tgcgtagata tgtggaggaa 660

caccagtggc gaaggcgact ctctgggctg taactgacgc tgaggcgcga aagcgtgggg 720

agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgaatgc taggtgttag 780

gggtttcgat acccttggtg ccgaagttaa cacattaagc attccgcctg gggagtacgg 840

tcgcaagact gaaactcaaa ggaattgacg gggacccgca caagcagtgg agtatgtggt 900

ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac atccctctga ccggtctaga 960

gatagacc 968

<210> 1393
<211> 1408
<212> DNA
<213> Paenibacillus cookii

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<400> 1393
cggagttngt tttgaaagct tgctttcaaa acaacttagc ggcggacggg tgagtaacac 60

gtaggcaacc tgcccttag actgggataa ctaccggaaa cggtagctaa taccggataa 120

tttctttttt ctcctgaagg aagaatgaaa gacggagcaa tctgtcactg agggatgggc 180

ctgcggcgca ttagctagtt ggtggggtaa cggcccacca aggcgacgat gcgtagccga 240

cctgagaggg tgaacggcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtaggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg 360

aaggttttcg gatcgtaaag ctctgttgcc agggaagaac gtccggtaga gtaactgcta 420

ccggagtgac ggtacctgag aagaaagccc cggctaacta cgtgccagca gccgcggtaa 480

tacgtagggg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca ggcggtcatt 540

taagtctggt gtttaaacct tgggctcaac ctaaggtcgc actggaaact gggtgacttg 600

agtacagaag aggaaagtgg aattccacgt gtagcggtga aatgcgtaga tatgtggagg 660

aacaccagtg gcgaaggcga ctttctgggc tgtaactgac gctgaggcgc gaaagcgtgg 720

ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaggtgtt 780

aggggtttcg ataccttgg tgccgaagtt aacacagtaa gcactccgcc tggggagtac 840

ggtcgcaaga ctgaaactca aaggaattga ggggacccgc acaagcagtg gagtatgtgg 900

tttaattcga agcaacgcga agaaccttac caggtcttga catccctctg aatccactag 960

agatagtggc ggccttcggg acagaggaga caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttaactttag ttgccagcag 1080

gtaaggctgg gcactctaga gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgacctgggc tacacacgta ctacaatggc cggtacaacg 1200

ggaagcgaag ccgcgaggtg gagccaatcc catcaaagcc ggtctcagtt cggattgcag 1260

gctgcaactc gcctgcatga agtcggaatt gctagtaatc gcggatcagc atgccgcggt 1320

gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc acgagagttt acaacacccg 1380

aagtcggtgg ggtaacccgc aagggagc 1408

<210> 1394
<211> 1455
<212> DNA
<213> Paenibacillus durus

<220>
<221> modified_base
<222> (103)..(103)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (141)..(142)
<223> a, c, t, g, unknown or other

<400> 1394
agcggcggac gggtgagtaa cacgtaggca acctgcccct tggactggga taactaccgg 60

aaacggtagc taataccgga taattcctct tagctcctgc tangaggctg aaaggcggag 120

caatctgtca ccaagggatg nncctgcggc gcattagcta gttggtgggg taacggctca 180

ccaaggcgac gatgcgtagc cgacctgaga gggtgaacgg ccacactggg actgagacac 240

ggcccagact cctacgggag gcagcagtag ggaatcttcc gcaatgggcg aaagcctgac 300

ggagcaacgc cgcgtgagtg atgaaggttt tcggatcgta aagctctgtt gccagggaag 360

aacgtcttgt agagtaactg ctacaagagt gacggtacct gagaagaaag ccccggctaa 420

ctacgtgcca gcagccgcgg taatacgtag ggggcaagcg ttgtccggaa ttattgggcg 480

taaagcgcgc gcaggcggct gtttaagtct ggtgtttaaa ccatgggctc aacctgtggt 540

cgcactggaa actggacagc ttgagtgcag aagaggaaag tggaattcca cgtgtagcgg 600

tgaaatgcgt agagatgtgg aggaacacca gtggcgaagg cgactttctg ggctgtaact 660

gacgctgagg cgcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 720

gtaaacgatg agtgctaggt gttaggggtt tcgataccct tggtgccgaa gttaacacag 780

taagcactcc gcctggggag tacggtcgca agactgaaac tcaaaggaat tgacggggac 840

ccgcacaagc agtggagtat gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc 900

ttgacatccc tctgaatcgt ctagagatga tggcgcggcc ttcgggacag aggagacagg 960

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1020

caacccttga ctttagttgc cagcaggtca agctgggcac tctagagtga ctgccgagtg 1080

acaaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga cctgggctac 1140

acacgtacta caatggccgg tacaacggga agcgaagcgc gaggcgggag ccaatcttag 1200

aaagccggtc tcagttcgga ttgcaggctg caactcgcct gcatgaagtc ggaattgcta 1260

gctaatcgcg gatcagcatg ccgcggtgca atgacgttcc cgggtcttgt acacaccgcc 1320

cgtcacacca cgagagttta caacacccga agtcggtggg gtaaccgcaa ggagccagcc 1380

gccgaagtgg ggtagatgat tggggtgaag tcgtaacaag gtagccgtat cggaaggtgc 1440

ggctggatca cctcc 1455

<210> 1395
<211> 1440
<212> DNA
<213> Paenibacillus glucanolyticus

<220>
<221> modified_base
<222> (179)..(179)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (198)..(198)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (446)..(446)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (532)..(532)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (535)..(535)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (595)..(595)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (597)..(597)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (729)..(729)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (818)..(818)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (902)..(902)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (953)..(953)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (966)..(966)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1072)..(1072)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1125)..(1125)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1363)..(1363)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1400)..(1400)
<223> a, c, t, g, unknown or other

<400> 1395
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgag 60

cggacttgat ggagtgcttg cactcttgag agttagcggc ggacgggtga gtaacacgta 120

ggcaacctgc cctcaagact gggataacta ccggaaacgg tagctaatac cggataatnt 180

attacatagc attatgtnat aatgaaagac ggagcaatct gtcacttggg gatgggcctg 240

cggcgcatta gctagttggt ggggtaacgg cccaccaagg cgacgatgcg tagccgacct 300

gagagggtga acggccacac tgggactgag acacggccca gtctcctacg ggaggcagca 360

gtagggaatc ttccgcaatg ggcgaaaaac tgacggagca acgccgcgtg agtgatgaag 420

gttttcggat cgtaaagctc tgttgncaag gaagaacgtc ttctagagta actgttatga 480

gagtgacggt acttgagaag aaagccccgg ctaactacgt gccagcagcc gnggnaatac 540

gtagggggca agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc ggtcntntaa 600

gtctggtgtt taaacccggg gctcaacttc gggtcgcact ggaaactggg ggacttgagt 660

gcagaagagg agagtggaat tccacgtgta gcggtgaaat gcgtagatat gtggaggaac 720

accagtggng aaggcgactc tctgggctgt aactgacgct gaggcgcgaa agcgtgggga 780

gcaaacagga ttagataccc tggtagtcca cgccgttnaa acgatgaatg ctaggtgtta 840

ggggtttcga taccccttggt gccgaagtta acacattaag cattccgcct ggggagtacg 900

gncgcaagca ctgaaactca aaggaattga cggggacccg cacaagcagt ggngtatgtg 960

gtttanttcg aagcaacgcg aagaacctta ccaagtcttg acatccctct gaatctgcta 1020

gagatagagg cggccttcgg gacagaggag acaggtggtg catggttgtc gncagctcgt 1080

gtcgtgagat gttgggttat gtcccgcaac gagcgcaacc cttgntttta gttgccagca 1140

ctaagggtgg gcactctaga atgactgccg gtgacaaacc ggaggaaggc ggcgtatgac 1200

gtcaaatcat catgcccctt atgacttggg ctacacacgt actacaatgg ctggtacaac 1260

gggaagcgaa gccgcgaggt ggagccaatc ctataaaagc cagtctcagc tcggattgca 1320

ggctgcaact cgcctgcatg aagtcggaat tgctagtaat cgnggatcag catgccgcgg 1380

tgaatacgtt cccgggtctn gtacacaccg cccgtcacac cacgagagtt tacaacaccc 1440

<210> 1396
<211> 1395
<212> DNA
<213> Paenibacillus lactis

<400> 1396
ggagtgcttg cactcctgag atttagcggc ggacgggtga gtaacacgta ggcaacctgc 60

cctcaagact gggataacta ccggaaacgg tagctaatac cggataggat atttggctgc 120

atggccgaat atggaaaggc ggagcaatct gtcacttgag gatgggcctg cggcgcatta 180

gctagttggt ggggtaatgg cctaccaagg cgacgatgcg tagccgacct gagagggtga 240

acggccacac tgggactgag acacggccca gactcctacg ggaggcagca gtagggaatc 300

ttccgcaatg gacgaaagtc tgacggagca acgccgcgtg agtgatgaag gttttcggat 360

cgtaaagctc tgttgccagg gaagaacgcc agagagagta actgctcttt gggtgacggt 420

acctgagaag aaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggcga 480

agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc ggttctttaa gtctggtgtt 540

taaacccgga gcttaacttc gggacgcact ggaaactggg gaacttgagt gcagaagagg 600

agagtggaat tccacgtgta gcggtgaaat gcgtagatat gtggaggaac accagtggcg 660

aaggcgactc tctgggctgt aactgacgct gaggcgcgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgccgtaaac gatgaatgct aggtgttagg ggtttcgata 780

cccttggtgc cgaagttaac acattaagca ttccgcctgg ggagtacggt cgcaagactg 840

aaactcaaag gaattgacgg ggacccgcac aagcagtgga gtatgtggtt taattcgaag 900

caacgcgaag aagcttacca ggtcttgaca tccctttgac ccctctagag atagaggttt 960

ccttcgggac agaggagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt 1020

gggttaagtc ccgcaacgag cgcaaccctt gatcttagtt gccagcacgt aatggtgggc 1080

actctaaggt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aaatcatcat 1140

gccccttatg acctgggcta cacacgtact acaatggctg gtacaacggg aagcgaagcc 1200

gcgaggtgga gccaatccta aaaagccagt ctcagttcgg attgcaggct gcaactcgcc 1260

tgcatgaagt cggaattgct agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg 1320

ggtcttgtac acaccgcccg tcacaccacg agagtttaca acacccgaag tcggtggggt 1380

aaccgcaagg agcca 1395

<210> 1397
<211> 1505
<212> DNA
<213> Paenibacillus lautus

<220>
<221> modified_base
<222> (1118)..(1118)
<223> a, c, t, g, unknown or other

<400> 1397
cgaacgctgg cggcgtgcct aatacatgca agtcgagcgg acttgatgga gtgcttgcac 60

tcctgaaggt tagcggcgga cgggtgagta acacgtaggc aacctgccct caagactggg 120

ataactaccg gaaacggtag ctaataccgg ataatttatt tcacagcatt gtggaataat 180

gaaagacgga gcaatctgtc acttggggat gggcctgcgg cgcattagct agttggtggg 240

gtaacggccc accaaggcga cgatgcgtag ccgacctgag agggtgaacg gccacactgg 300

gactgagaca cggcccagac tcctacggga ggcagcagta gggaatcttc cgcaatgggc 360

gaaagcctga cggagcaacg ccgcgtgagt gatgaaggtt ttcggatcgt aaagctctgt 420

tgccaaggaa gaacgtcttc tagagtaact gctaggagag tgacggtact tgagaagaaa 480

gccccggcta actacgtgcc agcagccgcg gtaatacgta gggggcaagc gttgtccgga 540

attattgggc gtaaagcgcg cgcaggcggt tctttaagtc tggtgtttaa acccgaggct 600

caacttcggg tcgcactgga aactggggga cttgagtgca gaagaggaga gtggaattcc 660

acgtgtagcg gtgaaatgcg tagatatgtg gaggaacacc agtggcgaag gcgactctct 720

gggctgtaac tgacgctgag gcgcgaaagc gtggggagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gaatgctagg tgttaggggt ttcgataccc ttggtgccga 840

agttaacaca ttaagcattc cgcctgggga gtacggtcgc aagactgaaa ctcaaaggaa 900

ttgacgggga cccgcacaag cagtggagta tgtggtttaa ttcgaagcaa cgcgaagaac 960

cttaccaagt cttgacatcc ctctgaatcc tctagagata gaggcggcct tcgggacaga 1020

ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

caacgagcgc aacccttgat tttagttgcc agcacttngg gtgggcactc tagaatgact 1140

gccggtgaca aaccggagga aggcggggat gacgtcaaat catcatgccc cttatgactt 1200

gggctacaca cgtactacaa tggctggtac aacgggaagc gaagccgcga ggtggagcca 1260

atcctataaa agccagtctc agttcggatt gcaggctgca actcgcctgc atgaagtcgg 1320

aattgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccacgaga gtttacaaca cccgaagtcg gtggggtaac ccgcaaggga 1440

gccagccgcc gaaggtgggg tagatgattg gggtgaagtc gtaacaaggt agccgtatcg 1500

gaagg 1505

<210> 1398
<211> 1500
<212> DNA
<213> Paenibacillus pabuli

<220>
<221> modified_base
<222> (77)..(77)
<223> a, c, t, g, unknown or other

<400> 1398
gatcctggct caggacgaac gctggcggca tgcctaatac atgcaagtcg agcggagttg 60

agagaaagct tgctttnttg atacttagcg gcggacgggt gagtaacacg taggcaacct 120

gccctcaagt ttgggacaac taccggaaac ggtagctaat accgaatagt tgttttcttc 180

gcctgaagag aactggaaag acggagcaat ctgtcacttg gggatgggcc tgcggcgcat 240

tagctagttg gtggggtaac ggctcaccaa ggcgacgatg cgtagccgac ctgagagggt 300

gatcggccac actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa 360

tcttccgcaa tgggcgaaag cctgacggag caatgccgcg tgagtgatga aggttttcgg 420

atcgtaaagc tctgttgcca gggaagaacg cttgggagag taactgctct caaggtgacg 480

gtacctgaga agaaagcccc ggctaactac gtgccagcag ccgcggtaat acgtaggggg 540

caagcgttgt ccggaattat tgggcgtaaa gcgcgcgcag gcggtcattt aagtctggtg 600

tttaatcccg gggctcaacc ccggatcgca ctggaaactg ggtgacttga gtgcagaaga 660

ggagagtgga attccacgtg tagcggtgaa atgcgtagat atgtggagga acaccagtgg 720

cgaaggcgac tctctgggct gtaactgacg ctgaggcgcg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgtta ggggtttcga 840

taccttggt gccgaagtta acacattaag cactccgcct ggggagtacg gtcgcaagac 900

tgaaactcaa aggaattgac ggggacccgc acaagcagtg gagtatgtgg tttaattcga 960

agcaacgcga agaaccttac caggtcttga catccctctg accggtacag agatgtacct 1020

ttccttcggg acagaggaga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttgatcttag ttgccagcac ttcgggtggg 1140

cactctaagg tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt caaatcatca 1200

tgcccccttat gacctgggct acacacgtac tacaatggcc ggtacaacgg gctgtgaagc 1260

cgcgaggtgg aacgaatcct aaaaagccgg tctcagttcg gattgcaggc tgcaactcgc 1320

ctgcatgaag tcggaattgc tagtaatcgc ggatcagcat gccgcggtga atacgttccc 1380

gggtcttgta cacaccgccc gtcacaccac gagagtttat aacacccgaa gtcggtgggg 1440

taaccgcaag gagccagccg ccgaaggtgg gatagatgat tggggtgaag tcgtaacaag 1500

<210> 1399
<211> 1491
<212> DNA
<213> Paenibacillus polymyxa

<400> 1399
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc ggggttaatt agaagcttgc 60

ttctaactaa cctagcggcg gacgggtgag taacacgtag gcaacctgcc cacaagactg 120

ggataactac cggaaacggt agctaatacc cgatgcctcc ttttcctgca tgggagaagg 180

aggaaaggcg gagcaatctg tcacttgtgg atgggcctgc ggcgcattag ctagttggtg 240

gggtaaaggc ctaccaaggc gacgatgcgt agccgacctg agagggtgat cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct tccgcaatgg 360

gcgaaagcct gacggagcaa cgccgcgtga gtgatgaagg ttttcggatc gtaaagctct 420

gttgccaggg aagaacgtct tgtagagtaa ctgctacaag agtgacggta cctgagaaga 480

aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcaa gcgttgtccg 540

gaattattgg gcgtaaagcg cgcgcaggcg gctctttaag tctggtgttt aatcccgagg 600

ctcaacttcg ggtcgcactg gaaactgggg agcttgagtg cagaagagga gagtggaatt 660

ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca ccagtggcga aggcgactct 720

ctgggctgta actgacgctg aggcgcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatgcta ggtgttaggg gtttcgatac ccttggtgcc 840

gaagttaaca cattaagcat tccgcctggg gagtacggtc gcaagactga aactcaaagg 900

aattgacggg gacccgcaca agcagtggag tatgtggttt aattcgaagc aacgcgaaga 960

accttaccag gtcttgacat ccctctgacc ggtctagaga taggaccttt ccttcgggac 1020

agaggagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt atgcttagtt gccagcaggt caagctgggc actctaagca 1140

gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg 1200

acctgggcta cacacgtact acaatggccg gtacaacggg aagagcgaag gagcgatctg 1260

gagccaatcc tagaaaagcc ggtctcagtt cggattgtag gctgcaactc gcctacatga 1320

agtcggaatt gctagtaatc gcggatcagc atgccgcggt gaatacgttc ccgggtcttg 1380

tacacaccgc ccgtcacacc acgagagttt acaacacccg aagtcggtga ggtaaccgca 1440

aggagccagc cgccgaaggt ggggtagatg attggggtga agtcgtaaca a 1491

<210> 1400
<211> 968
<212> DNA
<213> Paenibacillus popilliae

<220>
<221> modified_base

<222> (51)..(52)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (54)..(54)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (59)..(59)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (112)..(112)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (114)..(114)
<223> a, c, t, g, unknown or other

<400> 1400
cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt nntncggant 60

tattgggcgt aaagcgcgcg caggcggtca tttaagtctg gtgtttaaac cntngggctc 120

aacctaaggt cgcactggaa actgggtgac ttgagtacag aagaggaaag tggaattcca 180

cgtgtagcgg tgaaatgcgt agatatgtgg aggaacacca gtggcgaagg cgactttctg 240

ggctgtaact gacgctgagg cgcgaaagcg tggggagcaa acaggattag ataccctggt 300

agtccacgcc gtaaacgatg agtgctaggt gttaggggtt tcgataccct tggtgccgaa 360

gttaacacag taagcactcc gcctggggag tacggtcgca agactgaaac tcaaaggaat 420

tgacggggac ccgcacaagc agtggagtat gtggtttaat tcgaagcaac gcgaagaacc 480

ttaccaggtc ttgacatccc tctgaatcca ctagagatag tggcggcctt cgggacagag 540

gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 600

aacgagcgca acccttaact ttagttgcca gcaggtaagg ctgggcactc tagagtgact 660

gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc cttatgacct 720

gggctacaca cgtactacaa tggccggtac aacgggaagc gaagccgcga ggtggagcca 780

atcccatcaa agccggtctc agttcggatt gcaggctgca actcgcctgc atgaagtcgg 840

aattgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggt cttgtacaca 900

ccgcccgtca caccacgaga gtttacaaca cccgaagtcg gtggggtaac ccgcaaggga 960

gccagccg 968

<210> 1401
<211> 1496
<212> DNA
<213> Paenibacillus sp. CIP 101062

<400> 1401
tacatgcaag tcgagcggag ttaatcggga gcttgctcct ggttgactta gcggcggacg 60

ggtgagtaac acgtaggcaa cctgcccgta agaccgggat aactagcgga aacgttagct 120

aataccggat aatcaagttt ctcgcatggg ggacttggga aaggcggagc aatctgtcac 180

ttacggatgg gcctgcggcg cattagctag ttggtggggt aacggctcac caaggcgacg 240

atgcgtagcc gacctgagag ggtgaacggc cacactggga ctgagacacg gcccagactc 300

ctacgggagg cagcagtagg gaatcttccg caatggacga aagtctgacg gagcaacgcc 360

gcgtgagtga agaaggtttt cggatcgtaa agctctgttg ccagggaaga acgtccgcta 420

gagtaactgc tagcggagtg acggtacctg agaagaaagc cccggctaac tacgtgccag 480

cagccgcggt aatacgtagg gggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg 540

caggcggcta tttaagtctg gtgtttaatc ctggggctca accccgggtc gcactggaaa 600

ctgggtggct tgagtgcaga agaggagagt ggaattccac gtgtagcggt gaaatgcgta 660

gagatgtgga ggaacaccag tggcgaaggc gactctctgg gctgtaactg acgctgaggc 720

gcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatga 780

atgctaggtg ttaggggttt cgataccctt ggtgccgaag ttaacacatt aagcattccg 840

cctggggagt acggtcgcaa gactgaaact caaaggaatt gacggggacc cgcacaagca 900

gtggagtatg tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcccc 960

ctgaccggta cagagatgta cctttccttc gggacagggg agacaggtgg tgcatggttg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgactt 1080

tagttgccag caggtcaagc tgggcactct agagtgactg ccggtgacaa accggaggaa 1140

ggtggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtactacaat 1200

ggctggtaca acgggaagcg aaggagcgat ccggagcgaa tcctaaaaag ccagtctcag 1260

ttcggattgc aggctgcaac tcgcctgcat gaagtcggaa ttgctagtaa tcgcggatca 1320

gcatgccgcg gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccacgagagt 1380

ttacaacacc cgaagtcggt gaggtaaccg caaggagcca gccgccgaag gtggggtaga 1440

tgattggggt gaagtcgtaa caaggtagcc gtatcggaag gtgcggttgg atcacc 1496

<210> 1402
<211> 965
<212> DNA
<213> Paenibacillus sp. HGF5

<220>
<221> modified_base
<222> (913)..(913)
<223> a, c, t, g, unknown or other

<400> 1402
ggagtgcttg cactcctgag atttagcggc ggacgggtga gtaacacgta ggcaacctgc 60

cctcaagact gggataacta ccggaaacgg tagctaatac cggataggat atttggctgc 120

atggccgaat atggaaaggc ggagcaatct gtcacttgag gatgggcctg cggcgcatta 180

gctagttggt ggggtaatgg cctaccaagg cgacgatgcg tagccgacct gagagggtga 240

acggccacac tgggactgag acacggccca gactcctacg ggaggcagca gtagggaatc 300

ttccgcaatg gacgaaagtc tgacggagca acgccgcgtg agtgatgaag gttttcggat 360

cgtaaagctc tgttgccagg gaagaacgcc agagagagta actgctcttt gggtgacggt 420

acctgagaag aaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggca 480

agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc ggttctttaa gtctggtgtt 540

taaacccgga gcttaacttc gggacgcact ggaaactggg gaacttgagt gcagaagagg 600

agagtggaat tccacgtgta gcggtgaaat gcgtagatat gtggaggaac accagtggcg 660

aaggcgactc tctgggctgt aactgacgct gaggcgcgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgccgtaaac gatgaatgct aggtgttagg ggtttcgata 780

cccttggtgc cgaagttaac acattaagca ttccgcctgg ggagtacggt cgcaagactg 840

aaactcaaag gaattgacgg ggacccgcac aagcagtgga gtatgtggtt taattcgaag 900

caacgcgaag aancttacca ggtcttgaca tccctttgac ccctctagag atagaggttt 960

ccttc 965

<210> 1403
<211> 1556
<212> DNA
<213> Paenibacillus sp. HGF7

<400> 1403
ttatcggaga gtttgatcct ggctcaggac gaacgctggc ggcgtgccta atacatgcaa 60

gtcgagcgga cttgatgaga agcttgcttc tctgagagtt agcggcggac gggtgagtaa 120

cacgtaggca acctgcctgt aagatcggga taactaccgg aaacggtagc taagaccgga 180

taatcggtat ctccgcatgg ggagatcgtg aaacacggag caatctgtgg cttacggatg 240

ggcctgcggc gcattagcta gttggtgagg taacggctca ccaaggcgac gatgcgtagc 300

cgacctgaga gggtgaacgg ccacactggg actgagacac ggcccagact cctacgggag 360

gcagcagtag ggaatcttcc gcaatggacg caagtctgac ggagcaacgc cgcgtgagtg 420

atgaaggttt tcggatcgta aagctctgtt gccagggaag aacgccaagg agagtaactg 480

ctctttgggt gacggtacct gagaagaaag ccccggctaa ctacgtgcca gcagccgcgg 540

taatacgtag ggggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggcggtt 600

ttttaagtct ggtgtttaat cccgaggctc aacctcggtt cgcaccggaa actgggagac 660

tggagtgcag gagaggaaag tggaattcca cgtgtagcgg tgaaatgcgt agagatgtgg 720

aggaacacca gtggcgaagg cgactttctg gcctgtaact gacgctgagg cgcgaaagcg 780

tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg catgctaggt 840

gttaggggtt tcgataccct tggtgccgaa gttaacacag taagcatgcc gcctggggag 900

tacgctcgca agagtgaaac tcaaaggaat tgacggggac ccgcacaagc agtggagtat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc tctgaccggc 1020

ttagagataa gcctttcctt cgggacagag gtgacaggtg gtgcatggtt gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgaac ttagttgcca 1140

gcaggttaag ctgggcactc taagttgact gccggtgaca aaccggagga aggcggggat 1200

gacgtcaaat catcatgccc cttatgacct gggctacaca cgtactacaa tggccggtac 1260

aacgggaagc gaaggagcga tctggagcca atcctagaaa agccggtctc agttcggatt 1320

gcaggctgca actcgcctgc atgaagtcgg aattgctagt aatcgcggat cagcatgccg 1380

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccacgaga gtttacaaca 1440

cccgaagtcg gtgaggtaac cgcaaggggc cagccgccga aggtggggta gatgattggg 1500

gtgaagtcgt aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttct 1556

<210> 1404
<211> 1434
<212> DNA
<213> Paenibacillus sp. JC66

<400> 1404
atcctggctc aggacgaacg ctggcggcgt gcstaataca tgcaagtcga gcggagcata 60

tcgcgatctt cggatggcaa tacgcttagc ggcgaacggg tgagtaacac gtaggcaacc 120

tgcctgtaag atcgggataa cttgcggaaa cgtgagctaa taccggatgt gcttgagtcc 180

acgcctgtgg gtttaaggaa agacggagca atctgtcact tacagatggg cctgcggcgc 240

attagctagt tggtgaggta acggctcacc aaggcgacga tgcgtagccg acctgagagg 300

gtgaccggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg 360

aatcttcggc aatggacgga agtctgaccg agcaacgccg cgtgagtgaa gaaggttttc 420

ggatcgtaaa actctgttgc cagagaagaa cgccaaggag agtaactgct ctttgggtga 480

cggtatctga gaagaaagcc ccggctaact acgtgccagc agccgcggta atacgtaggg 540

ggcaagcgtt gtccggaatt attgggcgta aagcgcgcgc aggcggtgaa ttaagtctga 600

tgtttaaacc cggggctcaa cctcgggtcg cattggaaac tggttgactg gagtgcagga 660

gaggaaagtg gaattccacg tgtagcggtg aaatgcgtag agatgtggag gaacaccagt 720

ggcgaaggcg actttctggc ctgtaactga cgctgaggcg cgaaagcgtg gggagcaaac 780

aggattagat accctggtag tccacgccgt aaacgatgaa tgctaggtgt caggggtttc 840

gataccttg gtgccgaagt taacacatta agcattccgc ctggggagta cggtcgcaag 900

actgaaactc aaaggaattg acggggaccc gcacaagcag tggagtatgt ggtttaattc 960

gaagcaacgc gaagaacctt accaggtctt gacatccctt tgaccggtgc agagatgtgc 1020

ctttccttcg ggacagagga gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1080

tgttgggtta agtcccgcaa cgagcgcaac ccttgatgct agttgccagc attcagttgg 1140

gcactctagg atgactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc 1200

atgcccctta tgacctgggc tacacacgta ctacaatggc cggtacaacg ggcagcgaag 1260

gagcgatctg gagcgaatcc caaaaagccg gtctcagttc ggattgcagg ctgcaactcg 1320

cctgcatgaa gtcggaattg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc 1380

cgggtcttgt acacaccgcc cgtcacacca cgagagttta caacacccga agtc 1434

<210> 1405
<211> 1522
<212> DNA
<213> Paenibacillus sp. R-27413

<400> 1405
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc ggagcttagc cttcctttgg 60

aaggctytgg cttagcggcg gacgggtgag taacacgtag gcaacctgcc cgtaagaccg 120

ggataacttg cggaaacgtg agctaatacc ggatagatag gaagagcgca tgctyttctt 180

aggaaagacg gagcaatctg tcacttacgg atgggcctgc ggcgcattag ctagttggtg 240

gggtaaaggc ctaccaaggc gacgatgcgt agccgacctg agagggtgac cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg 360

acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaaactct 420

gttgccagag aagaaagcta aggagagtca ctgctctttg gttgacggta tctgagaaga 480

aagccccggc taactacgtg ccagcagccg cggtaatacg tagggggcaa gcgttgtccg 540

gaattattgg gcgtaaagcg cgcgcaggcg gctgagtaag tctggtgttt aaacctgggg 600

ctcaacctcg ggtcgcattg gaaactgctt ggctggagtg caggagagga aagtggaatt 660

ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca ccagtggcga aggcgacttt 720

ctggcctgta actgacgctg aggcgcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatgcta ggtgtcaggg gtttcgatac ccttggtgcc 840

gaagttaaca cattaagcat tccgcctggg gagtacggtc gcaagactga aactcaaagg 900

aattgacggg gacccgcaca agcagtggag tatgtggttt aattcgaagc aacgcgaaga 960

accttaccag gtcttgacat ccctctgacc gtyctagaga tagggcttcc cttcggggca 1020

gaggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg atcttagttg ccagcattga gttgggcact ctaggatgac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc 1200

tgggctacac acgtactaca atggccggta caacgggcag cgaaggagcg atccggagcg 1260

aatcccaaaa agccggtctc agttcggatt gcaggctgca actcgcctgc atgaagtcgg 1320

aattgctagt aatcgcggat cagcatgccg cggtgaatac gttcccgggt cttgtacaca 1380

ccgcccgtca caccacgaaa gtttacaaca cctgaagtcg gtgaggtaac cgcaaggagc 1440

cagccgccga aggtggggta gatgattggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtgcggct ggatcacctc ct 1522

<210> 1406
<211> 1004
<212> DNA
<213> Paenibacillus sp. R-27422

<220>
<221> modified_base
<222> (31)..(33)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (54)..(54)
<223> a, c, t, g, unknown or other

<400> 1406
agagagagta actgctcttt gggtgacggt nnngagaaga aagccccggc taantacgtg 60

ccagcagccg cggtaatacg taggggggcaa gcgttgtccg gaattattgg gcgtaaagcg 120

cgcgcaggcg gttctttaag tctggtgttt aaacccggag cttaacttcg ggacgcactg 180

gaaactgggg aacttgagtg cagaagagga gagtggaatt ccacgtgtag cggtgaaatg 240

cgtagatatg tggaggaaca ccagtggcga aggcgactct ctgggctgta actgacgctg 300

aggcgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 360

atgaatgcta ggtgttaggg gtttcgatac ccttggtgcc gaagttaaca cattaagcat 420

tccgcctggg gagtacggtc gcaagactga aactcaaagg aattgacggg gacccgcaca 480

agcagtggag tatgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat 540

ccctttgacc cctctagaga tagaggtttc cttcgggaca gaggagacag gtggtgcatg 600

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 660

atcttagttg ccagcacgta atggtgggca ctctaaggtg actgccggtg acaaaccgga 720

ggaaggtggg gatgacgtca aatcatcatg ccccttatga cctgggctac acacgtacta 780

caatggctgg tacaacggga agcgaagccg cgaggtggag ccaatcctaa aaagccagtc 840

tcagttcgga ttgcaggctg caactcgcct gcatgaagtc ggaattgcta gtaatcgcgg 900

atcagcatgc cgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccacga 960

gagtttacaa cacccgaagt cggtggggta accgcaagga gcca 1004

<210> 1407
<211> 1515
<212> DNA
<213> Paenibacillus sp. oral taxon F45

<400> 1407
agagtttgat cctggctcag gacgaacgct ggcggcatgc ctaatacatg caagtcgagc 60

ggagttgacg agaagcttgc ttctctgatg cttagcggcg gacgggtgag taacacgtag 120

gcaacctgcc tttcagactg ggataacttc cggaaacgga tgctaatacc ggatacatcg 180

tttcttcgca tgaagagacg aggaaagacg gcgcaagctg tcactgagag atggacctgc 240

ggcgcattag ctagttggtg gggtaatggc ccaccaaggc gacgatgcgt agccgacctg 300

agagggtgaa cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tagggaatct tccacaatgg gcgaaagcct gatggagcaa tgccgcgtga gtgatgaagg 420

ttttcggatc gtaaagctct gttgccaggg aagaacgttt cgtagagtaa ctgctgcgga 480

agtgacggta cctgagaaga aagccccggc taactacgtg ccagcagccg cggtaatacg 540

taggggcaa gcgttgtccg gaattattgg gcgtaaagcg cgtgcaggcg gcttcttaag 600

ttgggtgttt aagaccgggg ctcaaccccg gctcgcaccc aaaactggga agcttgagtg 660

taggagagga aagtggaatt ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca 720

ccagtggcga aggcgacttt ctggcctata actgacgctg aggcgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttcggg 840

gtttcgatac cctgggtgcc gaagttcacg cattaagcac tccgcctggg gagtacggcc 900

gcaaggctga aactcaaagg aattgacggg gacccgcaca agcagtggag tatgtggttt 960

aattcgaagc aacgcgaaga accttaccag gtcttgacat ccctctgacc ggtctagaga 1020

tagaccttcc cttcggggta gaggagacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg actttagttg ccagcatttc 1140

ggatgggcac tctagagtga ttgccggtga caaaccggag gaaggcgggg atgacgtcaa 1200

atcatcatgc cccttatgac ctgggctaca cacgtactac aatggccggt acagagggtc 1260

gcgaagccgc gaggtggagc caatcccaga aagccggtct cagttcggat tgcaggctgc 1320

aactcgcctg catgaagtcg gaattgctag taatcgcgga tcagcatgcc gcggtgaata 1380

cgttcccggg tcttgtacac accgcccgtc acaccacgag agtttacaac acccgaagtc 1440

ggtgaggtaa ccgcaaggag ccagccgccg aaggtggggt agatgattgg ggtgaagtcg 1500

taacaaggta gccgt 1515

<210> 1408
<211> 1541
<212> DNA
<213> Paenibacillus timonensis

<400> 1408
gacgaacgct ggcggcgtac ctaatacatg caagtcgagc ggagttaatc gggagcttgc 60

tcctgattag cttagcggcg gacgggtgag taacacgtag gcaacctgcc cgtaagactg 120

ggataactac cggaaacggt agctaatacc ggatacgcaa attcctcgca tgggggattt 180

gggaaaggcg gagcaatctg tcacttacgg atgggcctgc ggcgcattag ctagttggtg 240

aggtaacggc tcaccaaggc gacgatgcgt agccgacctg agagggtgaa cggccacact 300

gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct tccgcaatgg 360

acgaaagtct gacggagcaa cgccgcgtga gtgatgaagg ttttcggatc gtaaagctct 420

gttgccaggg aagaacgtcc tctagagtaa ctgctagggg agtgacggta cctgagaaga 480

aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcga gcgttgtccg 540

gaattattgg gcgtaaagcg cgcgcaggcg gctgtttaag tctggtgttt aatcctgggg 600

ctcaactccg ggtcgcactg gaaactgggc agcttgagtg cagaagagga gagtggaatt 660

ccacgtgtag cggtgaaatg cgtagagatg tggaggaaca ccagtggcga aggcgactct 720

ctgggctgta actgacgctg aggcgcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgaatgcta ggtgttaggg gtttcgatac ccttggtgcc 840

gaagttaaca cattaagcat tccgcctggg gagtacggcc gcaaggctga aactcaaagg 900

aattgacggg gacccgcaca agcagtggag tatgtggttt aattcgaagc aacgcgaaga 960

accttaccag gtcttgacat ccccctgacc ggtctagaga taggcctttc cttcgggaca 1020

ggggagacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaacccttg actttagttg ccagcaggta aggttgggca ctctagagtg 1140

actgccggtg acaaaccgga ggaaggtggg gatgacgtca aatcatcatg cccctatgg 1200

cctgggctac acacgtacta caatggccgg tacaacggga agcgaagccg cgaggtggag 1260

cgaatcctag aaaagccggt ctcagttcgg attgcaggct gcaactcgcc tgcatgaagt 1320

cggaattgct agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggtcttgtac 1380

acaccgcccg tcacaccacg agagtttaca acacccgaag tcggtgaggt aacctgagct 1440

accccaaaaa gtgaagatta tgctgcgaag cgtattccga gtacttttcg gggaccccgg 1500

tttggagcca gccgccgaag gtggggtaga tgattggggt g 1541

<210> 1409
<211> 1504
<212> DNA
<213> Pantoea agglomerans

<400> 1409
agagtttgat ccctggctca gattgaacgc tggcggcagg cctaacacat gcaagtcgaa 60

cggtagcaca gagagcttgc tctcgggtga cgagtggcgg acgggtgagt aatgtctggg 120

aaactgcctg atggaggggg ataactactg gaaacggtag ctaataccgc ataacgtcgc 180

aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga tgggattagc 240

tagtaggtgg ggtaacggct cacctaggcg acgatcccta gctggtctga gaggatgacc 300

agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc cttcgggttg 420

taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa ttgacgtacc 480

cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 540

gttaatcgga attactgggc gtaaagcgca cgcaggcggt ctgtcaagtc ggatgtgaaa 600

tccccgggct caacctggga actgcattcg aaactggcag gctagagtct tgtagagggg 660

ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa 720

ggcggccccc tggacaaaga ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgtcgacttg gaggttgtgc ccttgaggcg 840

tggcttccgg agctaacgcg ttaagtcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctact cttgacatcc agagaacttt ccagagatgg tttggtgcct 1020

tcgggaactc tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcggtccgg ccgggaactc 1140

aaaggagact gccagtgata aactggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgagta gggctacaca cgtgctacaa tggcgcatac aaagagaagc gaactcgcga 1260

gagcaagcgg acctcataaa gtgcgtcgta gtccggattg gagtctgcaa ctcgactcca 1320

tgaagtcgga atcgctagta atcgtagatc agaatgctac ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgcaa aagaagtagg tagcttaacc 1440

ttcgggaggg cgcttaccac tttgtgattc atgactgggg tgaagtcgta acaaggtaac 1500

cgta 1504

<210> 1410
<211> 1542
<212> DNA
<213> Pantoea ananatis

<400> 1410
taaattgaag agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca 60

agtcggacgg tagcacagag gagcttgctc ctctggtgac gagtggcgga cgggtgagta 120

atgtctgggg atctgcccga tagaggggga taaccactgg aaacggtggc taataccgca 180

taacgtcgca agaccaaaga gggggacctt cgggcctctc actatcggat gaacccagat 240

gggattagct agtaggcggg gtaacggccc acctaggcga cgatccctag ctggtctgag 300

aggatgacca gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggc gcaagcctga tgcagccatg ccgcgtgtat gaagaaggcc 420

ttcgggttgt aaagtacttt cagcggggag gaaggcgatg tggttaataa ccgcattgat 480

tgacgttacc cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga 540

gggtgcaagc gttaatcgga attactgggc gtaaagcgca cgcaggcggt ctgttaagtc 600

agatgtgaaa tccccgggct taacctggga actgcatttg aaactggcag gcttgagtct 660

cgtagagggg ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac 720

cggtggcgaa ggcggccccc tggacgaaga ctgacgctca ggtgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgtcgacttg gaggttgttc 840

ccttgaggag tggcttccgg agctaacgcg ttaagtcgac cgcctgggga gtacggccgc 900

aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 960

ttcgatgcaa cgcgaagaac cttacctact cttgacatcc acggaatttg gcagagatgc 1020

cttagtgcct tcgggaaccg tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg 1080

aaatgttggg ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcgattcgg 1140

tcgggaactc aaaggagact gccggtgata aaccggagga aggtggggat gacgtcaagt 1200

catcatggcc cttacgagta gggctacaca cgtgctacaa tggcgcatac aaagagaagc 1260

gacctcgcga gagcaagcgg acctcataaa gtgcgtcgta gtccggatcg gagtctgcaa 1320

ctcgactccg tgaagtcgga atcgctagta atcgtggatc agaatgccac ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggttgcaa aagaagtagg 1440

tagcttaacc ttcgggaggg cgcttaccac tttgtgattc atgactgggg tgaagtcgta 1500

acaaggtaac cgtaggggaa cctgcggttg gatcacctcc tt 1542

<210> 1411
<211> 1344
<212> DNA
<213> Pantoea brenneri

<400> 1411
ggacgggtga gtaatgtctg gggatctgcc cgatagaggg ggataaccac tggaaacggt 60

ggctaatacc gcataacgtc gcaagaccaa agaggggggac cttcgggcct ctcactatcg 120

gatgaaccca gatgggatta gctagtaggc ggggtaatgg cccacctagg cgacgatccc 180

tagctggtct gagaggatga ccagccacac tggaactgag acacggtcca gactcctacg 240

ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc tgatgcagcc atgccgcgtg 300

tatgaagaag gccttcgggt tgtaaagtac tttcagcggg gaggaaggcg atgyggttaa 360

taaccgcgtc gattgacgtt acccgcagaa gaagcaccgg ctaactccgt gccagcagcc 420

gcggtaatac ggagggtgca agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc 480

ggtctgttaa gtcagatgtg aaatccccgg gcttaacctg ggaactgcat ttgaaactgg 540

caggcttgag tctygtagag gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga 600

tctggaggaa taccggtggc gaaggcggcc ccctggacra agactgacgc tcaggtgcga 660

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgtcgac 720

ttggaggttg ttcccttgag gagtggcttc cggagctaac gcgttaagtc gaccgcctgg 780

ggagtacggc cgcaaggtta aaactcaaat gaattgacgg gggcccgcac aagcggtgga 840

gcatgtggtt taattcgatg caacgcgaag aaccttacct actcttgaca tccagcgaac 900

tttccagaga tggattggtg ccttcgggaa cgctgagaca ggtgctgcat ggctgtcgtc 960

agctcgtgtt gtgaaatgtt gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt 1020

gccagcgatt cggtcgggaa ctcaaaggag actgccggtg ataaaccgga ggaaggtggg 1080

gatgacgtca agtcatcatg gcccttacga gtagggctac acacgtgcta caatggcgca 1140

tacaaagaga agcgacctcg cgagagcaag cggacctcac aaagtgcgtc gtagtccgga 1200

tcggagtctg caactcgact ccgtgaagtc ggaatcgcta gtaatcgtgg atcagaatgc 1260

cacggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg 1320

caaaagaagt aggtagctta acct 1344

<210> 1412
<211> 1422
<212> DNA

<213> Pantoea citrea

<400> 1412
attgaacgct ggcggcaggc ctaacacatg caagtcgaac ggtagcacag aggagcttgc 60

tccttgggtg acgagtggcg gacgggtgag taatgtctgg gaaactgcct gatggrgggg 120

gataactact ggaaacggta gctaataccg cataacgtcg caagaccaaa gtgggggacc 180

ttcgggcctc acaccatcgg atgtgcccag atgggattag ctagtaggtg gggtaacggc 240

tcacctaggc gacgatccct agctggtctg agaggatgac cagccacact ggaactgaga 300

cacggtccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcagcca tgccgcgtgt atgaagaagg ccttcgggtt gtaaagtact ttcagtcagg 420

aggaagggtg tagtcttaaa cggctatgca ttgacgttac tgacagaaga agcaccggct 480

aactccgtgc cagcagccgc ggtaatacgg agggtgcaag cgttaatcgg aattactggg 540

cgtaaagcgc acgcaggcgg tctgtcaagt cggatgtgaa atccccgggc tcaacccggg 600

aactgcattc gaaactggca ggctagagtc ttgtagaggg gggtagaatt ccaggtgtag 660

cggtgaaatg cgtagagatc tggaggaata ccggtggcga aggcggcccc ctggacaaag 720

actgacgctc aggtgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac 780

gccgtaaacg atgtcgactt ggaggttgtg cccttgaggy gtggcttccg gagctaacgc 840

gttaagtcga ccgcctgggg agtacggccg caaggttaaa actcaaatga attgacgggg 900

gcccgcacaa gcggtggagc atgtggttta attcgatgca acgcgaagaa ccttacctac 960

tcttgacatc cagagaactt agcagagatg ctttggtgcc ttcgggaact ctgagacagg 1020

tgctgcatgg ctgtcgtcag ctcgtgttgt gaaatgttgg gttaagtccc gcaacgagcg 1080

caacccctat cctttgttgc cagcgattcg gtcgggaact caaaggagac tgccggtgat 1140

aaaccggagg aaggtgggga tgacgtcaag tcatcatggc ccttacgagt agggctacac 1200

acgtgctaca atggcgcata caaagagaag cgacctcgcg agagcaagcg gacctcataa 1260

agtgcgtcgt agtccggatt ggagtctgca actcgactcc atgaagtcgg aatcgctagt 1320

aatcgtagat cagaatgcta cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

caccatggga gtgggttgca aaagaagtag atagcttaac ct 1422

<210> 1413
<211> 1344
<212> DNA
<213> Pantoea conspicua

<400> 1413
ggacgggtga gtaatgtctg gggatctgcc cgatagaggg ggataaccac tggaaacggt 60

ggctaatacc gcataacgtc gcaagaccaa agaggggac cttcgggcct ctcactatcg 120

gatgaaccca gatgggatta gctagtaggc ggggtaatgg cccacctagg cgacgatccc 180

tagctggtct gagaggatga ccagccacac tggaactgag acacggtcca gactcctacg 240

ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc tgatgcagcc atgccgcgtg 300

tatgaagaag gccttcgggt tgtaaagtac tttcagcggg gaggaaggcg atgcggttaa 360

taaccgcgtc gattgacgtt acccgcagaa gaagcaccgg ctaactccgt gccagcagcc 420

gcggtaatac ggagggtgca agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc 480

ggtctgttaa gtcagatgtg aaatccccgg gcttaacctg ggaactgcat ttgaaactgg 540

caggcttgag tctcgtagag gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga 600

tctggaggaa taccggtggc gaaggcggcc ccctggacga agactgacgc tcaggtgcga 660

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgtcgac 720

ttggaggttg ttcccttgag gagtggcttc cggagctaac gcgttaagtc gaccgcctgg 780

ggagtacggc cgcaaggtta aaactcaaat gaattgacgg gggcccgcac aagcggtgga 840

gcatgtggtt taattcgatg caacgcgaag aaccttacct actcttgaca tccagcgaac 900

ttggcagaga tgccttggtg ccttcgggaa cgctgagaca ggtgctgcat ggctgtcgtc 960

agctcgtgtt gtgaaatgtt gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt 1020

gccagcgatt cggtcgggaa ctcaaaggag actgccggtg ataaaccgga ggaaggtggg 1080

gatgacgtca agtcatcatg gcccttacga gtagggctac acacgtgcta caatggcgca 1140

tacaaagaga agcgacctcg cgagagcaag cggacctcac aaagtgcgtc gtagtccgga 1200

tcggagtctg caactcgact ccgtgaagtc ggaatcgcta gtaatcgtgg atcagaatgc 1260

cacggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg 1320

caaaagaagt aggtagctta acct 1344

<210> 1414
<211> 1344
<212> DNA
<213> Pantoea septica

<400> 1414
ggacgggtga gtaatgtctg ggaaactgcc cgatggaggg ggataactac tggaaacggt 60

agctaatacc gcataacgtc gcragaccaa agtgggggac cttcgggcct cacaccatcg 120

gatgtgccca gatgggatta gctagtaggt ggggtaacgg ctcacctagg cgacgatccc 180

tagctggtct gagaggatga ccagccacac tggaactgag acacggtcca gactcctacg 240

ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc tgatgcagcc atgccgcgtg 300

tatgaagaag gccttcgggt tgtaaagtac tttcagcggg gaggaaggcg atgyggttaa 360

taaccgcgtc gattgacgtt acccgcagaa gaagcaccgg ctaactccgt gccagcagcc 420

gcggtaatac ggagggtgca agcgttaatc ggaattactg ggcgtaaagc gcacgcaggc 480

ggtctgtcaa gtcggatgtg aaatccccgg gcttaacctg ggaactgcat tcgaaactgg 540

caggctagag tcttgtagag gggggtagaa ttccaggtgt agcggtgaaa tgcgtagaga 600

tctggaggaa taccggtggc gaaggcggcc ccctggacaa agactgacgc tcaggtgcga 660

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgtcgac 720

ttggaggctg tttccttgag aagtggcttc cggagctaac gcgttaagtc gaccgcctgg 780

ggagtacggc cgcaaggtta aaactcaaat gaattgacgg gggcccgcac aagcggtgga 840

gcatgtggtt taattcgatg caacgcgaag aaccttacct actcttgaca tccagagaac 900

ttgscagaga tgscctggtg ccttcgggaa ctctgagaca ggtgctgcat ggctgtcgtc 960

agctcgtgtt gtgaaatgtt gggttaagtc ccgcaacgag cgcaaccctt atcctttgtt 1020

gccagcgatt cggtcgggaa ctcaaaggag actgccggtg ataaaccgga ggaaggtggg 1080

gatgacgtca agtcatcatg gcccttacga gtagggctac acacgtgcta caatggcgca 1140

tacaaagaga agcgacctcg cgagagcaag cggacctcat aaagtgcgtc gtagtccgga 1200

tcggagtctg caactcgact ccgtgaagtc ggaatcgcta gtaatcgtgg atcagaatgc 1260

cacggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggttg 1320

caaaagaagt aggtagctta acct 1344

<210> 1415
<211> 1491
<212> DNA
<213> Papillibacter cinnamivorans

<220>
<221> modified_base
<222> (449)..(449)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (454)..(454)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (589)..(589)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1427)..(1427)
<223> a, c, t, g, unknown or other

<400> 1415
gatcctggct caggacgaac gctggcggcg tgcctaacac atgcaagtcg aacgaaaata 60

ccaaagcagc aatgcggggg tattttagtg gcggacgggt gagtaacgcg tgagcaatct 120

gcctttgga gggggatacc gactggaaac ggtcgttaat accgcataac gtatatggac 180

gacatcgtcc gtataccaaa ggagcaatcc gccgaaagat gagctcgcgt ctgattagct 240

agttggcggg gtaaaggccc accaaggcga cgatcagtag ccggactgag aggttgaacg 300

gccacattgg gactgagata cggcccagac tcctacggga ggcagcagtg gggaatattg 360

ggcaatgggc gaaagcctga cccagcaacg ccgcgtcaag gaagaaggcc ttcgggttgt 420

aaacttcttt taccagggaa gaagaagtnc ggtnncctgga aaacaagcca cggctatcta 480

cgtgccagca gccgcggtaa tacgtaggtg gcaagcgttg tccggattta ctgggtgtaa 540

agggcgcgta ggcggcattg caagtcagat gtgaaatgcc ggggcttanc cccggagctg 600

catttgaaac tgtagagctt gagtgatgga gaggcaggcg gaattcctag tgtagcggtg 660

aaatgcgtag atattaggag gaacaccagt ggcgaaggcg gcctgctgga cattaactga 720

cgctgaggcg cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgctgt 780

aaacgatgga tactaggtgt gggaggtctg acccccttccg tgccggagtt aacacaataa 840

gtatcccacc tggggagtac gatcgcaagg ttgaaactca aaggaattga cgggggcccg 900

cacaagcagt ggagtatgtg gtttaattcg aagcaacgcg aagaacctta ccaggatttg 960

acatcctact aacgaggtag agatacgtca ggtgcccttc ggggaaagta gagacaggtg 1020

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccttattg ctagttgcta cgcaagagca ctctagcgag actgccgttg acaaaacgga 1140

ggaaggcggg gacgacgtca aatcatcatg ccccttatgt cctgggctac acacgtacta 1200

caatggcggt taacagaggg aagcaagaca gtgatgtgga gcaaatccct aaaaaccgtc 1260

tcagttcgga tcgcaggctg caacccgcct gcgtgaagtc ggaattgcta gtaatcgcgg 1320

atcagcatgc cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccatga 1380

gagtcgggaa tacccgaagt ccgtagtcta accgcaaggg ggacgcngcc gaaggtaggt 1440

tcgataattg gggtgaagtc gtaacaaggt aaccgtatcg gaaggtgcgg c 1491

<210> 1416
<211> 1349
<212> DNA
<213> Parabacteroides distasonis

<400> 1416
accgggtggc gaccggcgca cgggtgagta acgcgtatgc aacttgccta tcagaggggg 60

ataacccggc gaaagtcgga ctaataccgc atgaagcagg ggccccgcat ggggatattt 120

gctaaagatt catcgctgat agataggcat gcgttccatt aggcagttgg cggggtaacg 180

gcccaccaaa ccgacgatgg ataggggttc tgagaggaag gtcccccaca ttggtactga 240

gacacggacc aaactcctac gggaggcagc agtgaggaat attggtcaat gggcgtaagc 300

ctgaaccagc caagtcgcgt gagggatgaa ggttctatgg atcgtaaacc tcttttataa 360

gggaataaag tgcgggacgt gtcccgtttt gtatgtacct tatgaataag gatcggctaa 420

ctccgtgcca gcagccgcgg taatacggag gatccgagcg ttatccggat ttattgggtt 480

taaagggtgc gtaggcggcc ttttaagtca gcggtgaaag tctgtggctc aaccatagaa 540

ttgccgttga aactgggagg cttgagtatg tttgaggcag gcggaatgcg tggtgtagcg 600

gtgaaatgct tagatatcac gcagaacccc gattgcgaag gcagcctgcc aagccatgac 660

tgacgctgat gcacgaaagc gtggggatca aacaggatta gataccctgg tagtccacgc 720

agtaaacgat gatcactagc tgtttgcgat acacagtaag cggcacagcg aaagcgttaa 780

gtgatccacc tggggagtac gccggcaacg gtgaaactca aaggaattga cgggggcccg 840

cacaagcgga ggaacatgtg gtttaattcg atgatacgcg aggaacctta cccgggtttg 900

aacgcattca gttcccgttg gaaatgggag ttttgagtat gttcgagtca ggcggaatgc 960

gtggtttagc ggtgaaatgc tcaggaggtg tcggcttaag tgccataacg agcgcaaccc 1020

ttgccactag ttactaacag gtgatgctga ggactctggt gggactgcca gcgtaagctg 1080

cgaggaaggc ggggatgacg tcaaatcagc acggccctta catccgggc gacacacgtg 1140

ttacaatggc gtggacaaag ggaagccacc tggcgacagg gagcgaatcc ccaaaccacg 1200

tctcagttcg gatcggagtc tgcaacccga ctccgtgaag ctggattcgc tagtaatcgc 1260

gcatcagcca tggcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagcca 1320

tgggagccgg gggtacctga agtccgtaa 1349

<210> 1417
<211> 1383
<212> DNA
<213> Parabacteroides goldsteinii

<400> 1417
aggggcagca cgatgtagca atacattggt ggcgaccggc gcacgggtga gtaacgcgta 60

tgcaacctac ctatcagagg ggaataaccc ggcgaaagtc ggactaatac cgcataaaac 120

aggggttcca catggaaata tttgttaaag aattatcgct gatagatggg catgcgttcc 180

attagatagt tggtgaggta acggctcacc aagtccacga tggatagggg ttctgagagg 240

aaggtccccc acactggtac tgagacacgg accagactcc tacgggaggc agcagtgagg 300

aatattggtc aatgggcgag agcctgaacc agccaagtcg cgtgaaggat gaaggatcta 360

tggtttgtaa acttctttta tatgggaata aagtgaggaa cgtgttcctt tttgtatgta 420

ccatatgaat aagcatcggc taactccgtg ccagcagccg cggtaatacg gaggatgcga 480

gcgttatccg gatttattgg gtttaaaggg tgcgtaggtg gttaattaag tcagcggtga 540

aagtttgtgg ctcaaccata aaattgccgt tgaaactggt tgacttgagt atatttgagg 600

taggcggaat gcgtggtgta gcggtgaaat gcatagatat cacgcagaac tccgattgcg 660

aaggcagctt actaaactat aactgacact gaagcacgaa agcgtgggga tcaaacagga 720

ttagataccc tggtagtcca cgcagtaaac gatgattact agctgtttgc gatacacagt 780

aagcggcaca gcgaaagcgt taagtaatcc acctggggag tacgccggca acggtgaaac 840

tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac 900

gcgaggaacc ttacccgggt ttgaacgcat tcggaccgga gtggaaacac ttcttctagc 960

aatagccgtt tgcgaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt 1020

aagtgccata acgagcgcaa cccttatcac tagttactaa caggtcatgc tgaggactct 1080

agtgagactg ccagcgtaag ctgtgaggaa ggtggggatg acgtcaaatc agcacggccc 1140

ttacatccgg ggcgacacac gtgttacaat ggtggggaca aagggcagct accgggcgac 1200

aggatgctaa tctccaaacc ccatctcagt tcggatcgaa gtctgcaacc cgacttcgtg 1260

aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct 1320

tgtacacacc gcccgtcaag ccatgggagt tgggggtacc taaagtccgt aaccgcaagg 1380

atc 1383

<210> 1418
<211> 1326
<212> DNA
<213> Parabacteroides gordonii

<400> 1418
gagtttgatc ctggctcagg atgaacgcta gcgacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgagtaa cgcgtatgca acctacctat cagaggggga taacccggcg 120

aaagtcggac taataccgca taaataaagt tgctgataga tgggcatgcg ttccattaga 180

tagttggtaa ggtaacggct taccaagtct gcgatggata ggggttctga gaggaaggtc 240

ccccacactg gtactgagac acggaccaga ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatggg cgagagcctg aaccagccaa gtcgcgtgaa ggatgaagga ttatggttcg 360

taaacttctt ttataaggga atatgtatgt accttatgaa taaggatcgg ctaactccgt 420

gccagcagcc gcggtaatac ggaggatccg agcgttatcc ggatttattg ggtttaaagg 480

gtgcgtaggt ggtttattaa gtcagcggtg aaagtttgtg gctcaaccat aaaattgccg 540

ttgaaactgg ttaacttgag tatatttgag gtaggcggaa tgcgtggtgt agcggtgaaa 600

tgcatagata tcacgcagaa ctccaattgc gaaggcagct tactaaacta actgacactg 660

aagcacgaaa gcgtggggat caaacaggat tagataccct ggtagtccac gcagtaaacg 720

atgattacta ggagtttgcg agtaagctct acagcgaaag cgttaagtaa tccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggtttgaacg cgcgaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccttatctt tagttactaa cagctgagga ctctaaagag actgccagcg taagctggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacatc cggggcgaca cacgtgttac 1080

aatggtgggc aaagggcagc tacacagcga tgtgatgcta atctccccca tctcagttcg 1140

gacgaagtct gcaacccgac ttcggaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg ggagttgggg 1260

gtacctaaag tccgtatcgg cctagggtaa aaccgatgac tggggctaag tcgtaacaag 1320

gtaacc 1326

<210> 1419
<211> 1344
<212> DNA
<213> Parabacteroides johnsonii

<400> 1419
gaccggcgca cggtggagta acgcgtatgc tacttaccta tcagaggggg atagcccggc 60

gaaaggcgga ttaatactcc ataaaacagg ggttccgcat gggactattt gttaaagatt 120

catcgctgat agataggcat gcgttccatt aggcagttgg cggggtaacg gcccaccaaa 180

ccgacgatgg ataggggttc tgagaggaag gtcccccaca ttggtactga gacacggacc 240

aaactcctac gggaggcagc agtgaggaat attggtcaat ggccgagagg ctgaaccagc 300

caagtcgcgt gaaggatgaa ggatctatgg tttgtaaact tcttttatag gggaataaag 360

tgtgggacgt gtcccatttt gtatgtaccc tatgaataag catcggctaa ctccgtgcca 420

gcagccgcgg taatacggag gtgcgagcgt tatccggatt tattgggttt aaagggtgcg 480

taggtggtaa tttaagtcag cggtgaaagt ttgtggctca accataaaat tgccgttgaa 540

actgggttac ttgagtgtgt ttgaggtagg cggaatgcgt ggtgtagcgg tgaaatgcat 600

agatatcacg cagaactcca attgcgaagg cagcttacta aaccataact gacactgaag 660

cacgaaagcg tgggtatcaa acaggattag ataccctggt agtccacgca gtaaacgatg 720

attactagga gtttgcgata cacagtaagc tctacagcga aagcgttaag taatccacct 780

ggggagtacg ccggcaacgg tgaaactcaa aggaattgac gggggcccgc acaagcggag 840

aacatgtggt ttaattcgat gatacgcgag gaaccttacc cgggtttgaa cgtagtcaga 900

ccggccttga aagaggtctt ctagcaatag ctgattacga ggtgctgcat ggttgtcgtc 960

agctcgtgcc gtgaggtgtc ggcttaagtg ccataacgag cgcaaccctt atcactagtt 1020

actaacaggt taagctgagg actctggtga gactgccagc gtaagctgtg aggaaggtgg 1080

ggatgacgtc aaatcagcac ggcccttaca tccggggcga cacacgtgtt acaatggcat 1140

ggacaaaggg cagctacctg gcgacaggat gctaatctct aaaccatgtc tcagttcgga 1200

tcggagtctg caactcgact ccgtgaagct ggattcgcta gtaatcgcgc atcagccatg 1260

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg ggagccgggg 1320

gtacctgaag tccgtaaccg caag 1344

<210> 1420
<211> 1374
<212> DNA
<213> Parabacteroides merdae

<400> 1420
atgatttgta gcaatacaga ttgatggcga ccggcgcacg ggtgagtaac gcgtatgcaa 60

cttacctatc agaggggat agcccggcga aagtcggatt aataccccat aaaacagggg 120

tcccgcatgg gaatatttgt taaagattca tcgctgatag ataggcatgc gttccattag 180

gcagttggcg gggtaacggc ccaccaaacc gacgatggat aggggttctg agaggaaggt 240

cccccacatt ggtactgaga cacggaccaa actcctacgg gaggcagcag tgaggaatat 300

tggtcaatgg ccgagaggct gaaccagcca agtcgcgtga aggaagaagg atctatggtt 360

tgtaaacttc ttttataggg gaataaagtg gaggacgtgt cctttttgt atgtacccta 420

tgaataagca tcggctaact ccgtgccagc agccgcggta atacggagga tgcgagcgtt 480

atccggattt attgggttta aagggtgcgt aggtggtgat ttaagtcagc ggtgaaagtt 540

tgtggctcaa ccataaaatt gccgttgaaa ctgggttact tgagtgtgtt tgaggtaggc 600

ggaatgcgtg gtgtagcggt gaaatgcata gatatcacgc agaactccga ttgcgaaggc 660

agcttactaa accataactg acactgaagc acgaaagcgt ggggatcaaa caggattaga 720

taccctggta gtccacgcag taaacgatga ttactaggag tttgcgatac aatgtaagct 780

ctacagcgaa agcgttaagt aatccacctg gggagtacgc cggcaacggt gaaactcaaa 840

ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat gatacgcgag 900

gaaccttacc cgggtttgaa cgtagtctga ccggctcaac cataaaactt ccagcaatag 960

cagattacga ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc ggcttaagtg 1020

ccataacgag cgcaaccctt atcactagtt actaacaggt gaagctgagg actctggtga 1080

gactgccagc gtaagctgtg aggaaggtgg ggatgacgtc aaatcagcac ggcccttaca 1140

tccggggcga cacacgtgtt acaatggcat ggacaaaggg cagctacctg gcgacaggat 1200

gctaatctcc aaaccatgtc tcagttcgga tcggagtctg caactcgact ccgtgaagct 1260

ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg ggccttgtac 1320

acaccgcccg tcaagccatg ggagccgggg gtacctgaag tccgtaaccg caag 1374

<210> 1421
<211> 973
<212> DNA
<213> Parabacteroides sp. D13

<220>
<221> modified_base
<222> (9)..(12)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (17)..(17)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (21)..(21)
<223> a, c, t, g, unknown or other

<400> 1421
ttgtatgtnn nnatgantaa ngatcggcta actccgtgcc agcagccgcg gtaatacgga 60

ggatccgagc gttatccgga tttattgggt ttaaagggtg cgtaggcggc cttttaagtc 120

agcggtgaaa gtctgtggct caaccataga attgccgttg aaactggggg gcttgagtat 180

gtttgaggca ggcggaatgc gtggtgtagc ggtgaaatgc atagatatca cgcagaaccc 240

cgattgcgaa ggcagcctgc caagccatta ctgacgctga tgcacgaaag cgtggggatc 300

aaacaggatt agataccctg gtagtccacg cagtaaacga tgatcactag ctgtttgcga 360

tacactgtaa gcggcacagc gaaagcgtta agtgatccac ctggggagta cgccggcaac 420

ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc 480

gatgatacgc gaggaacctt acccgggttt gaacgcattc ggaccgaggt ggaaacacct 540

tttctagcaa tagccgtttg cgaggtgctg catggttgtc gtcagctcgt gccgtgaggt 600

gtcggcttaa gtgccataac gagcgcaacc cttgccacta gttactaaca ggtgatgctg 660

aggactctgg tgggactgcc agcgtaagct gcgaggaagg cggggatgac gtcaaatcag 720

cacggccctt acatccgggg cgacacacgt gttacaatgg cgtggacaaa gggaggccac 780

ctggcgacag ggagcgaatc cccaaaccac gtctcagttc ggatcggagt ctgcaacccg 840

actccgtgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 900

ccgggccttg tacacaccgc ccgtcaagcc atgggagccg ggggtacctg aagtccgtaa 960

ccgaaaggat cgg 973

<210> 1422
<211> 1481
<212> DNA
<213> Parabacteroides sp. NS31-3

<400> 1422
agagtttgat cctggctcag gatgaacgct agcgacaggc ttaacacatg caagtcgagg 60

ggcagcatag aagtagcaat actttggtgg cgaccggcgc acgggtgagt aacgcgtatg 120

caacctacct atcagagggg aataacccgg cgaaagtcgg actaataccg cataaaacag 180

gggcaccgca tggtgatatt tgttaaagaa attcgctgat agatgggcat gcgttccatt 240

aggtagttgg tgaggtaacg gctcaccaag ccgacgatgg ataggggaac tgagaggttg 300

gtcccccaca ctggtactga gacacggacc agactcctac gggaggcagc agtgaggaat 360

attggtcaat gggcgggagc ctgaaccagc caagtcgcgt gaaggaagaa ggatctatgg 420

ttcgtaaact tcttttgcag gggaataaag tgcgggacgt gtcctgtttt gtatgtaccc 480

tgagaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag gatccgagcg 540

ttatccggat ttattgggtt taaagggtgc gtaggtggtt tgataagtca gcggtgaaag 600

tttgcagctt aactgtaaaa atgccgttga aactgtcgga cttgagtgta aatgaggtag 660

gcggaatgcg tggtgtagcg gtgaaatgca tagatatcac gcagaactcc gattgcgaag 720

gcagcttact aagctacaac tgacactgaa gcacgaaagc gtggggatca aacaggatta 780

gataccctgg tagtccacgc agtaaacgat gattactagc tgtttgcgat acacagtaag 840

cggcacagcg aaagcgttaa gtaatccacc tggggagtac gccggcaacg gtgaaactca 900

aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg atgatacgcg 960

aggaacctta cccgggtttg aacgtaggga gacaggggtg gaaacatcct tttcagcaat 1020

gactgcctac gaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg tcggcttaag 1080

tgccataacg agcgcaaccc ttatttccag ttactaacag gtgatgctga ggactctgga 1140

gagactgcca gcgtaagctg tgaggaaggt ggggatgacg tcaaatcagc acggcccttа 1200

catccggggc gacacacgtg ttacaatggt aaggacaaag ggcagctacc gggcgaccgg 1260

atgcgaatct ctaaacctta tctcagttcg gatcggagtc tgcaactcga ctccgtgaag 1320

ctggattcgc tagtaatcgc gcatcagcca tggcgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcaagcca tgggagccgg gggtacctga agttcgtaac cgtaaggatc 1440

gacctagggt aaaactggtg actggggcta agtcgtaaca a 1481

<210> 1423
<211> 1537
<212> DNA
<213> Parachlamydia sp. UWE25

<400> 1423
tgagaatttg atcttggttc agattgaatg ctgacagcgt ggatgaggca tgcaagtcga 60

acgaaacctt cgggtttagt ggcggaaggg ttagtaagac atggataact tgcctttaac 120

tctgggataa cggttggaaa cgaccgctaa taccggatag ggtgaaaaga agacatcttt 180

tttttattaa agtgggggat cgcaagacct cgcggttaaa gagaggtcca tgggatatca 240

gctagttggt gtggtaaagg cgcaccaagg ctaagacgtc taggcggatt gagagattga 300

ccgccaacac tgggactgag aactgcccag actcctacgg gaggctgcag tcgagaatca 360

ttcgcaatgg gcgaaagcct gacgatgcga cgctgtgtga gtgaagaagg ccttagggtc 420

gtaaagctct ttcgcctggg aacaagatga gctggctaac atccagtgat tttgagcgta 480

ccaggtaaag aagcaccggc taactccgtg ccagcagctg cggtaatacg gagggtgcaa 540

gcattaatcg gatttattgg gcgtaaaggg cgcgtaggcg ggggtgtcag tcagatgtga 600

aatcccgagg ctcaacctcg gaacagcatt tgaaactaca tctctagagg gtaggcggag 660

aaaacggaat tccacaagta gcggtgaaat gcgtagatat gtggaagaac accggtggcg 720

aaggcggttt tctagcttat acctgacgct aaagcgcgaa agcaagggga tcaaacagga 780

ttagataccc tggtagtcct tgccgtaaac tatgtatact tggtgtaact ggactcaacc 840

ctagttgtgc cgtagctaac gcgttaagta taccgcctgg ggagtacagt cgcaaggctg 900

aaactcaaaa gaattgacgg ggacccgcac aagcagtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttaccc agacttgaca tgtagtagac cggtctagaa ataggccttt 1020

ccttcgggac tgctacacag gtgctgcatg gctgtcgtca gctcgtgccg tgaggtgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcattagttg ccaacattta aggtgggaac 1140

tctaatgaga ctgcctgggt taaccaggag gaaggtgagg atgacgtcaa gtccgcatgg 1200

cccttatgtc tggggctaca cacgtgctac aatggtcggt acaaaaggca gcgaagccgc 1260

gaggtgaagc aaatcccgaa agccggcccc agttcagatt gtagtctgca actcgactac 1320

atgaagacgg aattgctagt aatggcgagt cagcaacatc gccgtgaata cgttcccggg 1380

tcttgtacac accgcccgtc acatcatggg agttggtttt acccgaatcc gctggcttaa 1440

ccgcaaggga agaggcgtgt aaggtgaggc cgatgactgg gatgaagtcg taacaaggta 1500

gccctaccgg aaggtggggc tggatcacct cctttaa 1537

<210> 1424
<211> 1463
<212> DNA
<213> Paracoccus denitrificans

<400> 1424
caacttgaga gtttgatcct ggctcagaac gaacgctggc ggcaggccta acacatgcaa 60

gtcgagcgaa cccttcgggg ttagcggcgg acgggtgagt aacgcgtggg aatatgccct 120

ttgctacgga atagccccgg gaaactggga gtaataccgt atacgccctt tgggggaaag 180

atttatcggc aaaggattag cccgcgttgg attaggtagt tggtggggta atggcctacc 240

aagccgacga tccatagctg gtttgagagg atgatcagcc acactgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatcttagac aatgggggca accctgatct 360

agccatgccg cgtgagtgat gaaggcccta gggttgtaaa gctctttcag ctgggaagat 420

aatgacggta ccagcagaag aagccccggc taactccgtg ccagcagccg cggtaatacg 480

gagggggcta gcgttgttcg gaattactgg gcgtaaagcg cacgtaggcg gaccggaaag 540

ttgggggtga aatcccgggg ctcaacctcg gaactgcctt caaaactatc ggtctggagt 600

tcgagagagg tgagtggaat tccgagtgta gaggtgaaat tcgtagatat tcggaggaac 660

accagtggcg aaggcggctc actggctcga tactgacgct gaggtgcgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatgcc agtcgtcggg 780

cagcatgctg ttcggtgaca cacctaacgg attaagcatt ccgcctgggg agtacggtcg 840

caagattaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgcagaa ccttaccaac ccttgacatc gcaggaccgc tccagagatg 960

gagttttctc gtaagagacc tgtggacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1020

gagatgttcg gttaagtccg gcaacgagcg caacccacac tcttagttgc cagcatttgg 1080

ttgggcactc taagagaact gccgatgata agtcggagga aggtgtggat gaagtcaagt 1140

cctcatggcc cttacgggtt gggctacaca cgtgctacaa tggtggtgac agtgggttaa 1200

tccccaaaag ccatctcagt tcggattggg gtctgcaact cgaccccatg aagttggaat 1260

cgctagtaat cgcggaacag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt gggtctaccc gacggccgtg cgctaaccag caatggaggc 1380

agcggaccac ggtaggctca gcgactgggg tgaagtcgta acaaggtagc cgtaggggaa 1440

cctgcggctg gatcacctcc ttt 1463

<210> 1425
<211> 1430
<212> DNA
<213> Paracoccus marcusii

<400> 1425
cagaacgaac gctggcggca ggcttaacac atgcaagtcg agcgagacct tcgggtctag 60

cggcggacgg gtgagtaacg cgtgggaacg tgcccttctc tacggaatag ccccgggaaa 120

ctgggagtaa taccgtatac gccctttggg ggaaagattt atcggagaag gatcggcccg 180

cgttggatta ggtagttggt ggggtaatgg cccaccaagc cgacgatcca tagctggttt 240

gagaggatga tcagccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtggggaatc ttagacaatg ggggcaaccc tgatctagcc atgccgcgtg agtgatgaag 360

gccttagggt tgtaaagctc tttcagctgg gaagataatg acggtaccag cagaagaagc 420

cccggctaac tccgtgccag cagccgcggt aatacggagg gggctagcgt tgttcggaat 480

tactgggcgt aaagcgcacg taggcggact ggaaagtcag aggtgaaatc ccagggctca 540

accttggaac tgcctttgaa actatcagtc tggagttcga gagaggtgag tggaattccg 600

agtgtagagg tgaaattcgt agatattcgg aggaacacca gtggcgaagg cggctcactg 660

gctcgatact gacgctgagg tgcgaaagcg tggggagcaa acaggattag ataccctggt 720

agtccacgcc gtaaacgatg aatgccagac gtcggcaagc atgcttgtcg gtgtcacacc 780

taacggatta agcattccgc ctggggagta cggtcgcaag attaaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gcagaacctt 900

accaaccctt gacatggcag gaccgctgga gagattcagc tttctcgtaa gagacctgca 960

cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttcggtta agtccggcaa 1020

cgagcgcaac ccacgtccct agttgccagc attcagttgg gcactctatg gaaactgccg 1080

atgataagtc ggaggaaggt gtggatgacg tcaagtcctc atggcccttа cgggttgggc 1140

tacacacgtg ctacaatggt ggtgacagtg ggttaatccc caaaagccat ctcagttcgg 1200

attgtcctct gcaactcgag ggcatgaagt tggaatcgct agtaatcgcg gaacagcatg 1260

ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagttggtt 1320

ctacccgacg acgctgcgct aaccttcggg gggcaggcgg ccacggtagg atcagcgact 1380

ggggtgaagt cgtaacaagg tagccgtagg ggaacctgcg gctggatcac 1430

<210> 1426
<211> 1500
<212> DNA
<213> Paraprevotella clara

<400> 1426
agagtttgat cctggctcag gatgaacgct agcggcaggc ctaacacatg caagtcgagg 60

gaggagcttt cgggcttcga ccggcgtacg ggtgcgtaac gcgtatacaa tctgcctttc 120

acatagggat agcccgaaga aatttggatt aatacctaat ggtatatagg gatggcatca 180

tttttatatt aaagctgagg cggtgaaaga tgagtatgcg ttctattagc tagttggaga 240

ggtaacggct ccccaaggct acgatagata ggggttctga gagggatatc ccccacactg 300

gtactgagat acggaccaga ctcctacggg aggcagcagt gaggaatatt ggacaatggt 360

cggaagactg atccagccat gccgcgtgca ggaagacggc cttatgggtt gtaaactgct 420

tttgcagggg aagaataagg agtacgtgta ctttgatgac ggtactctgc gaataagcat 480

cggctaactc cgtgccagca gccgcggtaa tacggaggat gcgagcgtta tccggaatca 540

ttgggtttaa agggtccgta ggcgggctaa taagtcagag gtgaaagcgc tcagctcaac 600

tgagcaactg cctttgaaac tgttagtctt gaatggttgt gaagtagttg gaatgtgtag 660

tgtagcggtg aaatgcttag atattacaca gaacaccgat agcgaaggca tattactaac 720

aattaattga cgctgatgga cgaaagcgtg gggagcgaac aggattagat accctggtag 780

tccacgctgt aaacgatgga tactagctgt ttggttgtaa gactgagtgg ctaagcgaaa 840

gtgataagta tcccacctgg ggagtacgca cgcaagtgtg aaactcaaag gaattgacgg 900

gggcccgcac aagcggagga acatgtggtt taattcgatg atacgcgagg aaccttacca 960

aggtttaaat ggagactgac aggtgtagag atacgctttt cttcggacag ttttcaaggt 1020

gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcagg ttaagtccta taacgagcgc 1080

aacccctgcc attagttgct agcgagtcga gtcgagcact ctagtgggac tgccggtgca 1140

aaccgtgagg aaggtgggga tgacgtcaaa tcatcacggc ccttacatct tgggctacac 1200

acgtgctaca atggtcgtta cagagagcag ccactgcgtg agcaggcgcg aatctataaa 1260

gacgatcaca gttcggatcg gagtctgcaa ctcgactccg tgaagctgga atcgctagta 1320

atcggatatc agccatgatc cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

agccatggaa gctgggggta cctgaagacg gtcaccgaaa ggagctgttt agggtaaaac 1440

tagtgactgg ggctaagtcg taacaaggta gccgtaccgg aaggtgcggc tggaacacct 1500

<210> 1427
<211> 1532
<212> DNA
<213> Paraprevotella xylaniphila

<400> 1427
tacaatggag agtttgatcc tggctcagga tgaacgctag ctacaggctt aacacatgca 60

agtcgagggg cagcatgaac ttagcttgct aagtttgatg gcgaccggcg cacgggtgag 120

taacgcgtat ccaacctgcc ctttacgcgg ggatagcctt ctgaaaggaa gtttaatacc 180

cgatgaattc gtttagtcgc atggcttgat gaataaagat ttatcagtaa aggatgggga 240

tgcgtcccat tagcttgttg gcggggtaac ggcccaccaa ggcgacgatg ggtaggggtt 300

ctgagaggaa ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag 360

cagtgaggaa tattggtcaa tgggcgcgag cctgaaccag ccaagtagcg tggaggacga 420

cggccctacg ggttgtaaac tccttttata aggggataaa gttggccatg tatggccatt 480

tgcaggtacc ttatgaataa gcatcggcta attccgtgcc agcagccgcg gtaatacgga 540

agatgcgagc gttatccgga tttattgggt ttaaagggag cgtaggcggg cagtcaagtc 600

agcggtcaaa tggcgcggct caaccgcgtt ccgccgttga aactggcagc cttgagtatg 660

cacagggtac atggaattcg tggtgtagcg gtgaaatgct tagatatcac gaggaactcc 720

gatcgcgcag gcattgtacc ggggcattac tgacgctgag gctcgaaggt gcgggtatca 780

aacaggatta gataccctgg tagtccgcac agtaaacgat gaatgcccgc tgtcggcgac 840

atagtgtcgg cggccaagcg aaagcgttaa gcattccacc tggggagtac gccggcaacg 900

gtgaaactca aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg 960

atgatacgcg aggaacctta cccgggcttg aatcgcaggt gcatgggccg gagacggccc 1020

tttccttcgg gactcctgcg aaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg 1080

tcggcttaag tgccataacg agcgcaaccc ccctccccag ttgccatcgg gtaatgccgg 1140

gcactttggg gacactgcca ccgcaaggtg cgaggaaggt ggggatgacg tcaaatcagc 1200

acggccctta cgtccggggc gacacacgtg ttacaatggg gggtacagag ggccgctgcc 1260

cggtgacggt tggccaatcc ctaaagcccc tctcagttcg gactggagtc tgcaacccga 1320

ctccacgaag ctggattcgc tagtaatcgc gcatcagcca tggcgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcaagcca tgaaagccgg gggtgcctga agtccgtgac 1440

cgcgagggtc ggcctagggt aaaaccggtg attggggcta agtcgtaaca aggtagccgt 1500

accggaaggt gcggctggaa cacctccttt ct 1532

<210> 1428
<211> 1532
<212> DNA
<213> Parascardovia denticolens

<400> 1428
tttttgtgga gggttcgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg ggatcctctc cagcttgctg ggggggtgag agtggcgaac gggtgagtaa 120

tgcgtgacta acctgcctca tggtctggaa tagctcctgg aaacgggtgg taatgccgga 180

tggtccaact ttccgcatgg tttgttggga aagcttttgc gccatgggat ggggtcgcgt 240

cctatcagct tgttggtggg gtgttggcct accaaggctt cgacgggtag ccggcctaag 300

agggcgaccg gccacattgg gactgagata cggcccagac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggg ggaaccctga tgcagcgacg ccgcgtgcgg gatggaggcc 420

ttcgggtcgt gaaccgcttt tacaggggag caagctttcg ggtgagttaa ctttgtgaat 480

aagcaccggc taactacgtg ccagcagccg cggtaatacg tagggtgcaa gcgttgtccg 540

gatttattgg gcgtaaaggg ctcgtaggcg gttcgtcgcg tctggtgtga aagcccgctg 600

cttaacggtg ggtttgcgtt ggatacgggc gggcttgagt gcagtagggg agactggaat 660

tctcggtgta acggtggaat gtgtagatat cgggaagaac acctatggcg aaggcaggtc 720

tctgggctgt tactgacgct gaggagcgaa agcgtgggga gcgaacagga ttagataccc 780

tggtagtcca cgctgtaaac ggtggacgct ggatgtgggg cccatttcca cgggttccgt 840

gtcggagcta acgcgttaag cgtcccgcct ggggagtacg gccgcaaggc taaaactcaa 900

agaaattgac gggggcccgc acaagcggcg gagcatgcgg attaattcga tgcaacgcga 960

agaaccttac cagggcttga catgttgacg atcgcctcag agatggggct tcccttcggg 1020

gcgtcttcac aggtggtgca tggtcgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct cgctttgtgt tgccagcggg tcgtgccggg tactcgcaag 1140

ggaccgccgg ggttaactcg gaggaaggtg gggatgacgt cagatcatca tgccccttac 1200

gtcctgggct tcacgcatgc tacaatggcc ggtacagcgg gatgcgatgc cgtgaggcgg 1260

agcggatcct gtaaaaccgg tctcagttcg gatcggagcc tgcaactcgg ctccgtgaag 1320

gtggagtcgc tagtaatcgc ggatcagcaa cgccgcggtg aatgcgttcc cgggccttgt 1380

acacaccgcc cgtcaagtca tgaaagtggg cagcacccga agccggtggc ctaacccttg 1440

tgggggggagc cgtctaaggt gaggtccgcg attgggacta agtcgtaaca aggtagccgt 1500

accggaaggt gcggctggat cacctccttt ct 1532

<210> 1429
<211> 1026
<212> DNA
<213> Parasutterella excrementihominis

<220>
<221> modified_base
<222> (864)..(864)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (935)..(935)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (969)..(970)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (980)..(980)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (982)..(982)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1011)..(1011)
<223> a, c, t, g, unknown or other

<400> 1429
acgcggagag aagcttgctt ctctccggcg acgagtggcg aacgggtgag taatacatcg 60

gaacgtgtcc gctcgtgggg gacaaccagc cgaaaggttg gctaataccg catgagttct 120

acggaagaaa gaggggggacc cgcaagggcc tctcgcgagc ggagcggccg atgactgatt 180

agccggttgg tgaggtaacg gctcaccaaa gcaacgatca gtagctggtc tgagaggacg 240

accagccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 300

tttggacaat gggcgcaagc ctgatccagc tattccgcgt gtgggatgaa ggccctcggg 360

ttgtaaacca cttttgtaga gaacgaaaag acaccttcta ataaagggtg ttgctgacgg 420

tactctaaga ataagcaccg gctaactacg tgccagcagc cgcggtaata cgtagggtgc 480

gagcgttaat cggaattact gggcgtaaag ggtgcgcagg cggttgagta agacagatgt 540

gaaatccccg agcttaactc gggaatggca tatgtgactg ctcgactaga gtgtgtcaga 600

gggaggtgga attccacgtg tagcagtgaa atgcgtagat atgtggaaga acaccgatgg 660

cgaaggcagc ctcctgggac ataactgacg ctcaggcacg aaagcgtggg gagcaaacag 720

gattagatac cctggtagtc cacgccctaa acgatgttaa ctagttgttg ggaagtaaaa 780

ttctcagtaa cgcagccaac gcgagaagtt aaccgcctgg gaagtacggt cgcaagacta 840

aaactcaaag gaattgacgg gganccgcac aagcggtgga tgatgtggat taattcgatg 900

caacgcgaaa aaccttacct acccttgaca tgtcnggaag ctcttgtaat gagagtgtgc 960

ccgcaaggnn cctgaacacn gntgctgcat ggctgtcgtc agctcgtgtc ntgagatgtt 1020

gggtta 1026

<210> 1430
<211> 1320
<212> DNA
<213> Parasutterella secunda

<400> 1430
attgaacgct ggcggcatgc tttacacatg caagtcgaac gagtggcgaa cgggtgagta 60

atacatcgga acgtgtcctg ttgtggggga taactactcg aaagagtagc taataccgca 120

taaggaaagg cgcagttgga gcggccgatg actgattagc tagttggtgg ggtaaaggcc 180

taccaaggcg acgatcagta gctggtctga gaggacgacc agccacattg ggactgagac 240

acggcccaaa ctcctacggg aggcagcagt ggggaatttt ggacaatggg ggcaaccctg 300

atccagccat gccgcgtgcg ggaagaaggc cttcgggttg taaaccgctt ttgttaggaa 360

cgatgacggt acctaaagaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac 420

gtagggtgcg agcgttaatc ggaattactg ggcgtaaagc gtgcgcaggc ggttgggtaa 480

gacaggtgtg aaatccccga gcttaacttg ggaactgcac ttgtgactgc tcaactagag 540

tatgtcagag ggaggtggaa ttccaagtgt agcagtgaaa tgcgtagata tttggaagaa 600

caccgatggc gaaggcagcc tcctgggata actgacgctc atgcacgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcaacta gttgttgggc 720

gcttagtaac acagctaacg cgagaagttg accgcctggg gagtacggtc gcaagattaa 780

aactcaaagg aattgacggg gacccgcaca agcggtggat gatgtggatt aattcgatgc 840

aacgcgaaaa accttaccta gccttgacat gcacaggtgc tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtcac tagttgctac 960

agcactctag tgaaactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct 1020

catggccctt atggctaggg cctcacacgt catacaatgg tcggcagagg gcagcgaagc 1080

tgtgaagtgg agccaatccc arccgatcgt agtccggatg cagtctgcaa ctcgactgca 1140

gaagtcggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggtct 1200

tgtacacacc gcccgtcaca ccatgggagt ggggttcacc agaaggcgtt gcctagggcg 1260

gcgaccacgg tgggtttcat gactggggtg aagtcgtaac aaggtagcag taccggaagg 1320

<210> 1431
<211> 1487
<212> DNA
<213> Parvimonas micra

<400> 1431
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gtgatttttg tggaaattct ttcgggaatg gaaatgaaat gaaagtggcg aacgggtgag 120

taacacgtga gcaacctacc ttacacaggg ggatagccgt tggaaacgac gattaatacc 180

gcatgagacc acagaatcgc atgatatagg ggtcaaagat ttatcggtgt aagaagggct 240

cgcgtctgat tagctagttg gaagggtaaa ggcctaccaa ggcgacgatc agtagccggt 300

ctgagaggat gaacggccac attggaactg agacacggtc caaactccta cgggaggcag 360

cagtggggaa tattgcacaa tgggggggaac cctgatgcag cgacgccgcg tgagcgaaga 420

aggttttcga atcgtaaagc tctgtcctat gagaagataa tgacggtatc ataggaggaa 480

gccccggcta aatacgtgcc agcagccgcg gtaatacgta tggggcgagc gttgtccgga 540

attattgggc gtaaagggta cgtaggcggt tttttaagtc aggtgtgaaa gcgtgaggct 600

taacctcatt aagcacttga aactggaaga cttgagtgaa ggagaggaaa gtggaattcc 660

tagtgtagcg gtgaaatgcg tagatattag gaggaatacc ggtggcgaag gcgactttct 720

ggacttttac tgacgctcag gtacgaaagc gtggggagca aacaggatta gataccctgg 780

tagtccacgc cgtaaacgat gaatgctagg tgttgggagt caaatctcgg tgccgaagtt 840

aacacattaa gcattccgcc tggggagtac ggtggcaaca ctgaaactca aaggaattga 900

cggggacccg cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg aagaacctta 960

ccaaggcttg acatatagtt gagttattga gaaattgata agtccctcgg gacaactata 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttatcttcag ttgccagcac gtagaggtgg gaactctgga gagactgccg 1140

atgacaaatc ggaggaaggt ggggatgacg tcaaatcatc atgcccttta tgtcttgggc 1200

tacacacgtg ctacaatggt tggtacaacg agaagcgaga tagagatgtt aagcgaaact 1260

ctaaaaacca atctcagttc ggattgtagg ctgcaactcg cctacatgaa gtcggagttg 1320

ctagtaatcg cgaatcagaa tgtcgcggtg aatgcgttcc cgggtcttgt acacaccgcc 1380

cgtcacacca tgggagttgg caatacccga agccgccgat ctaaccgcaa ggaggaaggc 1440

gtcgaaggta gggttaatga ctggggtgaa gtcgtaacaa ggtaacc 1487

<210> 1432
<211> 1530
<212> DNA
<213> Parvimonas sp. oral taxon 110

<400> 1432
ttttaataga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg tgatttttgt ggaaagccct tcggggacgg aagcgaaatg aaagtggcga 120

acgggtgagt aacacgtgag caacctacct tacacagggg gatagccgtt ggaaacgacg 180

attaataccg catgagacca caaagccaca tggcttaggg gtaaaagatt tatcggtgta 240

agatgggctc gcgtctgatt agctagttgg aagggtaaag gcctaccaag gcaacgatca 300

gtagccggtc tgagaggatg aacggccaca ttggaactga gacacggtcc aaactcctac 360

gggaggcagc agtggggaat attgcacaat gggggggaacc ctgatgcagc gacgccgcgt 420

gagcgaagaa ggttttcgaa tcgtaaagct ctgtcctatg agaagataat gacggtatca 480

taggaggaag ccccggctaa atacgtgcca gcagccgcgg taatacgtat ggggcgagcg 540

ttgtccggaa ttattgggcg taaagggtac gtaggcggcc ttttaagtca ggtgtgaaag 600

cgtgaggctt aacctcatta agcacttgaa actggaaggc ttgagtgaag gagaggaaag 660

tggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaataccg gtggcgaagg 720

cgactttctg gacttttact gacgctcagg tacgaaagcg tggggagcaa acaggattag 780

ataccctggt agtccacgcc gtaaacgatg aatgctaggt gttgggagtc aaatctcggt 840

gccgaagtta acacattaag cattccgcct ggggagtacg gtggcaacac tgaaactcaa 900

aggaattgac ggggacccgc acaagcagcg gagcatgtgg tttaattcga agcaacgcga 960

agaaccttac caaggcttga catatagttg agttattgag aaattgataa gtccctcggg 1020

acaactatac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tatcttcagt taccagcatg taatgatggg gactctggag 1140

agactgccga tgacaaatcg gaggaaggtg gggatgacgt caaatcatca tgccctttat 1200

gtcttgggct acacacgtgc tacaatggtt ggtacaacga gaagctagac agtgatgtta 1260

agcaaaactc taaaaaccaa tctcagttcg gattgtaggc tgcaactcgc ctacatgaag 1320

tcggagttgc tagtaatcgc gaatcagaat gtcgcggtga atgcgttccc gggtcttgta 1380

cacaccgccc gtcacaccat gggagttggc aatacccgaa gccgccgatc taaccgcaag 1440

gaggaaggcg tcgaaggtag ggttaatgac tggggtgaag tcgtaacaag gtagccgtat 1500

cggaaggtgc ggctggatca cctcctttct 1530

<210> 1433
<211> 1475
<212> DNA
<213> Pasteurella bettyae

<220>
<221> modified_base
<222> (29)..(29)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (127)..(127)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (130)..(130)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (203)..(203)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (290)..(290)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (354)..(354)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (369)..(369)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (371)..(371)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (627)..(627)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (963)..(963)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1264)..(1265)
<223> a, c, t, g, unknown or other

<400> 1433
attgaagagt ttgatcatgg ctcagattna acgctggcgg caggcttaac acatgcaagt 60

cgaacggtag cayaggggag cttgctccct gggtgacgag tggcggacgg gtgagtaatg 120

cttgggnatn tggcttatgg agggggataa ctacgggaaa ctgtagctaa taccgcgtaa 180

tgtctacgga ctaaagggtg ggnctatttg gccacctgcc atgagatgag cccaagtggg 240

attaggtagt tggtggggta aaggcctacc aagccgacga tctctagctn gtctgagagg 300

atgaccagcc acactggaac tgagacacgg tccagactcc tacgggaggc agcngtgggg 360

aatattgcnc natgggggga accctgatgc agccatgccg cgtgaatgaa gaaggccttc 420

gggttgtaaa gttctttcgg tgatgaggaa ggcaggtatt ttaatagaat acttgattga 480

cgttaatcac agaagaagca ccggctaact ccgtgccagc agccgcggta atacggaggg 540

tgcgagcgtt aatcggaata actgggcgta aagggcatgc aggcggttgt ttaagtgaga 600

tgtgaaagcc ccgggcttaa cctgggnatt gcatttcaga ctggacagct agagtacttt 660

agggaggggt agaattccac gtgtagcggt gaaatgcgta gagatgtgga ggaataccga 720

aggcgaaggc agccccttgg gaatgtactg acgctcatat gcgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgctg taaacgatgt cgatttgggg attgagcaat 840

aagcttggtg cgcgaagcta acgtgataaa tcgaccgcct ggggagtacg gccgcaaggt 900

taaaactcaa atgaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 960

tgnaacgcga agaaccttac ctactcttga catccataga agaactcaga gatgagtttg 1020

tgccttcggg agctatgaga caggtgctgc atggctgtcg tcagctcgtg ttgtgaaatg 1080

ttgggttaag tcccgcaacg agcgcaaccc ttatcctttg ttgccagcga catggtcggg 1140

aactcaaagg agactgccag tgataaactg gaggaaggtg gggatgacgt caagtcatca 1200

tggcccttac gagtagggct acacacgtgc tacaatggtg catacagagg gaagcgagcc 1260

tgcnnggggg agcgaatctc agaaagtgca tctaagtccg gattggagtc tgcaactcga 1320

ctccatgaag tcggaatcgc tagtaatcgc aaatcagaat gttgcggtga atacgttccc 1380

gggccttgta cacaccgccc gtcacaccat gggagtgggt tgtaccagaa gtagatagct 1440

taacggaaac gggggcgttt accacggtat gattc 1475

<210> 1434
<211> 1544
<212> DNA
<213> Pasteurella dagmatis

<400> 1434
ttgaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtagcaggaa gaaagcttgc tttctttgct gacgagtggc ggacgggtga 120

gtaatgcttg ggaatctggc ttatggaggg ggataactgt gggaaactgc agctaatacc 180

gcgtagtatc gagagatgaa agggtgggac cttcgggcca cctgccataa gatgagccca 240

agtgggatta ggtagttggt ggggtaaagg cctaccaagc cgacgatctc tagctggtct 300

gagaggatga ccagccacac tgggactgag acacggccca gactcctacg ggaggcagca 360

gtggggaata ttgcgcaatg gggggaaccc tgacgcagcc atgccgcgtg aatgaagaag 420

gccttcgggt tgtaaagttc tttcggtaat gaggaagggg tattattgaa tagataatat 480

cattgacgtt aattacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 540

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcacgcaggc ggacttttaa 600

gtgagatgtg aaatccccga gcttaacttg ggaactgcat ttcagactgg gagtctagag 660

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 720

taccgaaggc gaaggcagcc ccttgggaat gtactgacgc tcatgtgcga aagcgtgggg 780

agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgctgtcgat ttggggattg 840

tgctttatgc atggtgcccg aagctaacgt gataaatcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc caaagaaggc cgtagagata 1020

tggctgtgcc ttcgggaact ttgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgatttg 1140

gtcgggaact caaaggagac tgccagtgac aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgagt agggctacac acgtgctaca atggtgcata cagagggcgg 1260

cgagacggcg acgttgagcg aatctcagaa agtgcatcta agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgcaaat cagaatgttg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgta ccagaagtag 1440

atagcttaac cttcgggagg gcgtttacca cggtatgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc ctta 1544

<210> 1435
<211> 1545
<212> DNA
<213> Pasteurella multocida

<400> 1435
ttgaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg gtagcaggaa gaaagcttgc tttctttgct gacgagtggc ggacgggtga 120

gtaatgcttg ggaatctggc ttatggaggg ggataactgt gggaaactgc agctaatacc 180

gcgtattctc tgaggaggaa agggtgggac cttagggcca cctgccataa gatgagccca 240

agtgggatta ggtagttggt ggggtaaagg cctaccaagc ctgcgatctc tagctggtct 300

gagaggatga ccagccacac tggaactgag acacggtcca gactcctacg ggaggcagca 360

gtggggaata ttgcgcaatg gggggaaccc tgacgcagcc atgccgcgtg aatgaagaag 420

gccttcgggt tgtaaagttc tttcggtaat gaggaaggga tgttgttaaa tagatagcat 480

cattgacgtt aattacagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac 540

ggagggtgcg agcgttaatc ggaataactg ggcgtaaagg gcacgcaggc ggacttttaa 600

gtgagatgtg aaatccccga gcttaacttg ggaactgcat ttcagactgg gagtctagag 660

tactttaggg aggggtagaa ttccacgtgt agcggtgaaa tgcgtagaga tgtggaggaa 720

taccgaaggc gaaggcagcc ccttgggaat gtactgacgc tcatgtgcga aagcgtgggg 780

agcaaacagg attagatacc ctggtagtcc acgctgtaaa cgctgtcgat ttggggattg 840

ggctatatgc ttggtgcccg aagctaacgt gataaatcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc ctaagaagag ctcagagatg 1020

agcttgtgcc ttcgggaact tagagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattcg 1140

gtcgggaact caaaggagac tgccagtgac aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggt ccttacgagt agggctacac acgtgctaca atggtgcata cagagggcag 1260

cgagagtgcg agcttgagcg aatctcagaa agtgcatcta agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgcaaat cagaatgttg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgta ccagaagtag 1440

atagcttaac cttcgggagg gcgtttacca cggtatgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1436
<211> 1434
<212> DNA
<213> Pediococcus acidilactici

<400> 1436
tcgaacgaac ttccgttaat tgatcaggac gtgcttgcac tgaatgagat tttaatatga 60

agtgagtggc ggacgggtga gtaacacgtg ggtaacctgc ccagaagcag gggataacac 120

ctggaaacag atgctaatac cgtataacag agaaaaccgc ctggttttct tttaaaagat 180

ggctctgcta tcacttctgg atggacccgc ggcgcattag ctagttggtg aggtaacggc 240

tcaccaaggc gatgatgcgt agccgacctg agagggtaat cggccacatt gggactgaga 300

cacggcccag actcctacgg gaggcagcag tagggaatct tccacaatgg acgcaagtct 360

gatggagcaa cgccgcgtga gtgaagaagg gtttcggctc gtaaagctct gttgttaaag 420

aagaacgtgg gtgagagtaa ctgttcaccc agtgacggta tttaaccaga aagccacggc 480

taactacgtg ccagcagccg cggtaatacg taggtggcaa gcgttatccg gatttattgg 540

gcgtaaagcg agcgcaggcg gtcttttaag tctaatgtga aagttcggct caaccgaaga 600

agtgcattgg aaactgggag acttgagtgc agaagaggac agtggaactc catgtgtagc 660

ggtgaaatgc gtagatatat ggaagaacac cagtggcgaa ggcggctgtc tggtctgtaa 720

ctgacgctga ggctcgaaag catgggtagc gaacaggatt agataccctg gtagtccatg 780

ccgtaaacga tgattactaa gtgttggagg gtttccgccc ttcagtgctg cagctaacgc 840

attaagtaat ccgcctgggg agtacgaccg caaggttgaa actcaaaaaa attgacgggg 900

gcccgcacaa gcggtggagc atgtggttta attcgaagct acgcgaagaa ccttaccagg 960

tcttgacatc ttctgccaac ctaagagatt aggcgttccc ttcggggaca gaatgacagg 1020

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccttat tactagttgc cagcattcag ttgggcactc tagtgagact gccggtgaca 1140

aaccggagga aggtggggac gacgtcaaat catcatgccc cttatgacct gggctacaca 1200

cgtgctacaa tggatggtac aacgagttgc gaaaccgcga ggtttagcta atctcttaaa 1260

accattctca gttcggactg taggctgcaa ctcgcctaca cgaagtcgga atcgctagta 1320

atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgagag tttgtaacac ccaaagccgg tggggtaacc ttttaggagc tagc 1434

<210> 1437
<211> 984
<212> DNA
<213> Pediococcus pentosaceus

<400> 1437

gtcgaacgaa cttccgttaa ttgattatga cgtacttgta ctgattgaga ttttaacacg 60

aagtgagtgg cgaacgggtg agtaacacgt gggtaacctg cccagaagta ggggataaca 120

cctggaaaca gatgctaata ccgtataaca gagaaaaccg catggttttc ttttaaaaga 180

tggctctgct atcacttctg gatggacccg cggcgtatta gctagttggt gaggtaaagg 240

ctcaccaagg cagtgatacg tagccgacct gagagggtaa tcggccacat tgggactgag 300

acacggccca gactcctacg ggaggcagca gtagggaatc ttccacaatg gacgcaagtc 360

tgatggagca acgccgcgtg agtgaagaag ggtttcggct cgtaaagctc tgttgttaaa 420

gaagaacgtg ggtaagagta actgtttacc cagtgacggt atttaaccag aaagccacgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggatttattg 540

ggcgtaaagc gagcgcaggc ggtcttttaa gtctaatgtg aaagccttcg gctcaaccga 600

agaagtgcat tggaaactgg gagacttgag tgcagaagag gacagtggaa ctccatgtgt 660

agcggtgaaa tgcgtagata tatggaagaa caccagtggc gaaggcggct gtctggtctg 720

caactgacgc tgaggctcga aagcatgggt agcgaacagg attagatacc ctggtagtcc 780

atgccgtaaa cgatgattac taagtgttgg agggtttccg cccttcagtg ctgcagctaa 840

cgcattaagt aatccgcctg gggagtacga ccgcaaggtt gaaactcaaa agaattgacg 900

ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gctacgcgaa gaaccttacc 960

aggtcttgac atcttctgac agtc 984

<210> 1438
<211> 1393
<212> DNA
<213> Peptococcus niger

<400> 1438
gcctaataca tgcaagtcga acggacgagg aaagagacct cttcggagtg acctttcccg 60

agttagtggc ggatgggtga gtaacgcgtg agtgacctgc ccagcagtgg ggaataacag 120

tgagaaatca ttgctaatac cgcatatctt acaagtgctt catggtacct gtaagaaaga 180

cggccttcgt gctgtcgctg ttggatggac tcgcgtctga ttagccagtt ggtggggtaa 240

cggcctacca aagcaatgat cagtagccgg cctgagaggg tgaacggcca cattgggact 300

gagacacggc ccaaactcct acgggaggca gcagtgggga atcttccgca atgggcgcaa 360

gcctgacgga gcaatgccgc gtgagtgaag aaggccttcg ggttgtaaaa ctctgtcctc 420

atccaagaga ggggaaggta gtaactgacc tttccaggac ggtagatgag gaggaagccc 480

cggctaacta tgtgccagca gccgcggtaa aacatagggg gcaagcgttg tccggaatca 540

ctgggcgtaa agggcgcgca ggcggtctgt taagtcagat gtgaaaggtt agggctcaac 600

cctgaacgtg catctgatac tggcagactt gagtatggaa gaggtaagtg gaattcctag 660

tgtagcggtg aaatgcgtag atattaggag gaacaccagt ggcgaaggcg acttactggg 720

ccataactga cgctgaggcg cgaaagcgtg gggagcaaac aggattagat accctggtag 780

tccacgccgt aaacgatggg tactaggtgt cggaggtttc aagaccgtcg gtgccgcagt 840

taacacaata agtaccccgc ctggggagta cggtcgcaag actgaaactc aaaggaattg 900

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gacgcaacgc gaagaacctt 960

accaagactt gacatcctgc tgccgagtga tgtaatgtca cttttccttc gggacagcag 1020

agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccttgtcgt cagttgccat cattaagttg ggcactctga cgagactgcc 1140

gcagacaatg cggaggaagg tggggatgac gtcaaatcat catgcccctt atgtcttggg 1200

ctacacacgt gctacaatgg tcggtacaga gggcagcgaa ggagcgatcc ggagccaatc 1260

tcacaaagcc gatcccagtt cggattgcag gctgcaactc gcctgcatga agtcggaatg 1320

cgtagtaatc gcaggtcagc atactgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcacacc acg 1393

<210> 1439
<211> 1366
<212> DNA
<213> Peptococcus sp. oral clone JM048

<400> 1439
gagtttgatt ctggctcagg atgaacgctg gcggcatgcc taacacatgc aagttgaacg 60

agtagcgaac gggtgagtaa cgcgtgggca accaacctta cactggggga taacacagag 120

aaatttgtgc taataccgca taagaaaaag tggtgtaaga cgggcccgcg tctgattagt 180

tagttggtga ggtaaaagct taccaaggca acgatcagta gccgacctga gagggtgatc 240

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt gggggatatt 300

gcacaatgga gggaactctg atgcagcaat gccgcgtgaa ggaagaaggt tttcggattg 360

taaacttcta tcagcaggga agatgacggt acttgactaa gaagccccgg ctaactatgt 420

gccagcagcc gcggtaatac ataggggca agcgttatcc ggaatgactg ggtgtaaagg 480

gtgcgtaggc ggtaaggtaa gtctgatgtg aaagactggg gctcaactcc aggggtgcat 540

tggaaactat gttactagag tacaggagag ggaagcggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaggaa caccggtggc gaaggcggct ttctggactg actgacgctg 660

aggcacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gctgtaaacg 720

atgagtgcta ggtgctggcc ggtcggtgcc gaagttaacg caataagcac tccacctggg 780

gagtacggcc gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag atcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttaggtt aagtcctgta acgagcgcaa 960

cccttatgtt tagtagccag cggccgggca ctctgaacag actgccgtgg agaacacgga 1020

ggaaggcggg gatgacgtca aatcatcatg ccccttatga tctgggctac acacgtgcta 1080

caatggcgga caaagggaag cgaaggggag acctggagcg aatccgagtc cgtcccagtt 1140

cggatgtagt ctgcaactcg actacagaag ttggaatcgc tagtaatcgc agatcagcat 1200

gctgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccat gggagttggg 1260

agtgcccaaa agcagtgtcc aggaagctgt ctaaggcaag accgatgact ggggtgaagt 1320

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctt 1366

<210> 1440
<211> 1541
<212> DNA
<213> Peptococcus sp. oral taxon 167

<400> 1440
gagtttgatc ctggctcagg acaaacgctg gcggcatgcc taacacatgc aagtcgaacg 60

gacagaacag agaagctttt cggagtggaa ctggaaagtt agtggcggat gggtgagtaa 120

cgcgtggaca acctaccttg taaaggggaa taacctcgag aaatcgaagc taatacccca 180

taataacctt gattcgcatg aagcaaggag gaaaggcggc cttagagctg tcgatagaag 240

atgggtccgc gtctgattag ctagttggtg aggtaaaggc tcaccaaggc gacgatcagt 300

agccggcctg agagggtgaa cggccacatt gggactgaga cacggcccaa actcctacgg 360

gaggcagcag tggggaatct tccgcaatgg gcgaaagcct gacggagcaa tgccgcgtga 420

gtgaagaagg ccttcgggtt gtaaaactct gtcctagacg aagagagagt attgtgagta 480

actgacaatg ctaggacggt agactaggag gaagccccgg ctaactatgt gccagcagcc 540

gcggtaaaac atagggggca agcgttgtcc ggaatcactg ggcgtaaagg gcgcgcaggc 600

ggtaaattaa gtcaggtgtg aaagttcggg gctcaacccc gtgattgcac ctgatactga 660

taaactagag tgttggagag gtaagtggaa ttcctagtgt agcggtggaa tgcgtagata 720

ttaggaggaa caccagtggc gaaggcgact tactggccaa taactgacgc tgaggcgcga 780

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtac 840

taggtgttgg ttgtttcgaa acaatcggtg ccgcagtaaa cacaataagt actccgcctg 900

gggagtacgg tcgcaagact gaaactcaaa ggaattgacg ggggcccgca caagcggtgg 960

agcatgtggt ttaattcgac gcaacgcgaa gaaccttacc aagacttgac atcctcttgc 1020

cgggatatgt aatgtatcct tttcttcgga acaagagaga caggtggtgc atggttgtcg 1080

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttgttgttag 1140

ttgccatcat taagttgggc actctaacaa gactgccggt gacaaaccgg aggaaggtgg 1200

ggatgacgtc aaatcatcat gccccttatg tcttgggcta cacacgtgct acaatggtcg 1260

gtacagaggg cagcaagaga gtgatcttga gcgaatctca aaaagccgat cccagttcgg 1320

attgtaggct gcaactcgcc tacatgaagt cggaatcgct agtaatcgca ggtcagcata 1380

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg aaagttggta 1440

acatccgaag ccggtgatct aacctgcaaa ggaggaagcc gcccacggtg ggatcgatga 1500

ttggggtgaa gtcgtaacaa ggtagccgta tcggaaggtg c 1541

<210> 1441
<211> 1384

<212> DNA
<213> Peptoniphilus asaccharolyticus

<220>
<221> modified_base
<222> (146)..(146)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (182)..(184)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (416)..(416)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (448)..(448)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (620)..(620)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (649)..(649)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (890)..(890)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1208)..(1208)
<223> a, c, t, g, unknown or other

<400> 1441
agagtttgat cctggctcag gacgaacgct ggcggcgcgc ttaacacatg caagtcgagc 60

gatgaagctt taacagattc cttcgggatg aagataaagc ggattagcgg cggacgggtg 120

agtaacacgt gagtaacctg cctttnacat cgggatagcc tcgggaaacc gggattaata 180

cnnnataaaa tcctacatac acatgtacat aggttcaaaa ctacggtggt cttagatgga 240

ctcgcgtccc attagctagt tggtggagta aaagcctacc aaggcgacga tgggtagccg 300

gcctgagagg gtgaccggcc acattggaac tgagaaacgg tccaaactct acgggaggca 360

gcagtgggga atattgcaca atggaggaaa ctctgatgca gcgacgccgc gtgaangaag 420

aaggccttcg ggcagtaaag gtcttttnta tgggaagata atgacggtac cataaggaaa 480

agcaccggct gcatacgtgc cagcagccgc ggtaatacgt agggggctag cgttgtccgg 540

aatcactggg cgtaaagggt tcgcaggcgg aaatgcaagt cagatgtaaa aggcagtagc 600

ttaactactg taagcatttn aaactgtata tcttgagaag tgtagaggna agtggaattt 660

ttagtgtagc ggtgaaatgc gtagatatta aaaagaatac cggtggcgaa ggcgacttac 720

tgggcacatt ctgacgctga ggaacgaaag cgtgggtagc aaacaggatt agataccctg 780

gtagtccacg ctgtaaacga tgagtgctag gtgtcggcaa aagtcggtgc cgcagttaac 840

acattaagca ctccgcctgg ggagtacgtg cgcaagtatg aaactcaaan gaatcaaagg 900

aatcgacggg gacccgcaca agcagcggag atgtggttta attcgaagca acgcgaagaa 960

ccttaccagg gcttgacata tagaggacat atttagagat aaataattct tcttcggaag 1020

cctctataca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacggg cgcaaccctt atatctagtt gccagcattt cggatgggaa ctctagatag 1140

actgccgatg acaaatcgga ggaaggtggg gatgacgtca aatcatcatg ccctatatgc 1200

cctgggcnac acacgtgcta caatggaagg tacaaaggga agccaaatcg cgaggtggag 1260

caaacctcaa aaagcctttc ccagttcgga ttgttctctg caactcgagt acatgaagct 1320

ggagttgcta gtaatcgtag atcagaatgc tgcggtgaat gcgttcccgg gtcttgtaca 1380

cacc 1384

<210> 1442
<211> 1386
<212> DNA
<213> Peptoniphilus duerdenii

<400> 1442
acagatccct tcggggtgaa gatgaaatgg attagcggcg gacgggtgag taacacgtga 60

gtaacctgcc tttgacattg ggatagcctc gggaaactgg gattaatacc aaatgatact 120

atttgaccac atggttggat agtcaaagaa attcggtcaa agatggactc gcggctgatt 180

agctagttgg tgaggtaacg gcccaccaag gcgacgatca gtagccggcc tgagagggtg 240

accggccaca ttggaactga gacacggtcc aaactcctac gggaggcagc agtggggaat 300

attgcacaat gggggaaacc ctgatgcagc gacgccgcgt gagcgaagaa ggccttcggg 360

tcgtaaagct cttttatgag ggaagataat gacggtacct caagaaaaag ccccggctaa 420

ctacgtgcca gcagccgcgg taatacgtag ggggctagcg ttgtccggaa tcactgggcg 480

taaagggttc gcaggcggaa taacaagtca gatgtgaaag gcatgggctc aacccatgta 540

agcatttgaa actgtaattc ttgagaagtg gagaggtaag tggaattcct agtgtagcgg 600

tgaaatgcgt agatattagg aggaatacct gtggcgaagg cgacttactg gacacaaatc 660

tgacgctgag gaacgaaagc gtgggtagca aacaggatta gataccctgg tagtccacgc 720

cgtaaacgat gagtgctagg tgtcggggga gacctcggtg ccggcgttaa cacaataagc 780

actccgcctg gggagtacgt gcgcaagcat gaaactcaaa ggaattgacg gggacccgca 840

caagcagcgg agcatgtggt ttaattcgac gcaacgcgaa gaaccttacc agggcttgac 900

atactgagga cgtacttaga gataagtatt ctccttcggg agcctcaata caggtggtgc 960

atggttgtcg tcagctcgtg tcgtgagatg ttcagttaag tctggcaacg agcgcaaccc 1020

ttacctttag ttaccagcat ttcggatggg gactctaaag ggactgccga tgataaatcg 1080

gaggaaggtg gggatgacgt caaatcatca tgccctatat gccctgggct acacacgtgc 1140

tacaatggtc ggaacagagg gaagcaacag agcgatctca agcaaatctc ataaatccga 1200

tcccagttcg gattgcactc tgcaactcga gtgcatgaag tcggagttgc tagtaatcgc 1260

agatcagcat gctgcggtga atgcgttccc gggtcttgta cacaccgccc gtcacaccat 1320

gggagcctgt aatacccgaa gccggtgagc caaccgcaag gaggcagccg tcgaaggtag 1380

gatagg 1386

<210> 1443
<211> 1476
<212> DNA
<213> Peptoniphilus harei

<400> 1443
gacgaacgct ggcggcgcgc ttaacacatg caagtcgagc gatgaaatct tgacagatcc 60

ttcggggtga agataagatg gattagcggc ggacgggtga gtaacacgtg agtaacctgc 120

cttagacatt gggatagcct cgggaaaccg ggattaatac caaatgaaat cataggtgcc 180

catgcactaa tgatcaaaac tccggtggtc taagatggac tcgcgtccca ttagctagtt 240

ggtgaggtaa cggcccacca aggcgacgat gggtagccgg cctgagaggg tgaacggcca 300

cattggaact gagaaacggt ccaaactcct acgggaggca gcagtgggga atattgcaca 360

atggagggaa ctctgatgca gcgacgccgc gtgaacgatg aaggctttcg agtcgtaaag 420

ttcttttata tgggaagata atgacggtac cataagaaaa agccccggct aactacgtgc 480

cagcagccgc ggtaatacgt aggggctag cgttgtccgg aatcactggg cgtaaagggt 540

tcgcaggcgg aaatgcaagt cagatgtaaa aggcagtagc ttaactactg taagcatttg 600

aaactgcata tcttgagaag agtagaggta agtggaattt ttagtgtagc ggtgaaatgc 660

gtagatatta aaaagaatac cggtggcgaa ggcgacttac tgggctcatt ctgacgctga 720

ggaacgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg ctgtaaacga 780

tgagtgctag gtatcggaat aattcggtgc cgcagttaac acattaagca ctccgcctgg 840

ggagtacgtg cgcaagcatg aaactcaaag gaattgacgg ggacccgcac aagcagcgga 900

gcatgtggtt taattcgaag caacgcgaag aaccttacca gggcttgaca tactgaggac 960

cggtatagag atataccctc ttcttcggaa gcctcaatac aggtggtgca tggttgtcgt 1020

cagctcgtgt cgtgagatgt tcagttaagt ctggcaacga gcgcaacccc tatctttagt 1080

taccagcatt tcggatgggg actctaaaga gactgccgat gataaatcgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccctatatg ccctgggcta cacacgtgct acaatggaag 1200

atacaaaggg aagcgagata gtgatattaa gccaacctca aaaagtcttt ctcagttcgg 1260

attgtactct gcaactcgag tacatgaaga tggagttgct agtaatcgca gatcagcatg 1320

ctgcggtgaa tgcgttcccg ggtcttgtac acaccgcccg tcacaccatg gaagcttgta 1380

atacccgaag cctgcgagcg aaccttaggg aagcagcagt cgaaggtagg ataggtgact 1440

ggggtgaagt cgtaacaagg tagccgtatc ggaagg 1476

<210> 1444
<211> 1423
<212> DNA
<213> Peptoniphilus indolicus

<220>
<221> modified_base
<222> (162)..(162)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1214)..(1214)
<223> a, c, t, g, unknown or other

<400> 1444
cgcgcctaac acatgcaagt cgagcgatga agacataacc gacaccttcg ggaagaagtt 60

aagttggatt agcggcggac gggtgagtaa cacgtgagta acctgccttt gacacggggg 120

atagccaccg gaaacggtga ttaatacccg atgaaatcgt antgacacat gtcataacga 180

tcaaagtgaa ttagcggtca aagatggact cgcgtctgat taattagttg gtgaggtaac 240

ggctcaccaa gatagcgatc agtagccggc ctgagagggt gaacggccac attggaactg 300

agaaacggtc caaactccta cgggaggcag cagtggggaa tattgcacaa tgggggaaac 360

cctgatgcag cgacgccgcg tgagcgaaga aggatttcga ttcgtaaagc tctgtcctat 420

gggaagataa tgacggtacc ataggaggaa gccccggcta actacgtgcc agcagccgcg 480

gtaatacgta gggggcgagc gttgtccgga atcactgggc gtaaagggtt cgcaggcggt 540

ttagaaagtc agatgtgaaa ggcgagggct caaccctcgt aagcatttga aacttctaaa 600

cttgagtagt gaagaggtaa gtggaattcc tagtgtagcg gtgaaatgcg tagatattag 660

gaggaatacc ggtggcgaag gcgacttact ggtcacaaac tgacgctgag gaacgaaagc 720

gtgggtagca aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctagg 780

tgtccggagg atttcggtgc cgcagttaac acaataagca ctccgcctgg ggagtacgtg 840

cgcaagcatg aaactcaaag gaattgacgg ggacccgcac aagcagcgga gcatgtggtt 900

taattcgaag caacgcgaag aaccttacca gggcttgaca taatattgac ccctctagag 960

atagaggttt cccttcgggg acagtattac aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tacctttagt tgccagcatg 1080

taaagatggg aactctaaag ggactgccga tgataaatcg gaggaaggtg gggatgacgt 1140

caaatcatca tgccctttat gtcctgggct acacacgtgc tacaatggtc ggaacaaaga 1200

gcgggcaagc tagngatagc aagcgaatct caaaaagccg atctcagttc ggattgttct 1260

ctgcaactcg agaacatgaa gtcggagttg ctagtaatcg cagatcagaa tgctgcggtg 1320

aatgcgttcc cgggtcttgt acacaccgcc cgtcacacca tgggagttgg caatacccga 1380

agtcgtcgag ctaaccgcaa ggaagcagac gccgaaggta ggg 1423

<210> 1445
<211> 1480
<212> DNA
<213> Peptoniphilus ivorii

<400> 1445
gacgaacgct ggcggcgcgc ctaacacatg caagtcgagc gatgaacctc ttcggatccc 60

ttcggggtga agaagagcgg attagcggcg gacgggtgag taacgcgtga ggaacctgcc 120

tctcacaacg ggatagcctc gggaaaccgg gattaatacc gtatgagacc acagtaacgc 180

ctgttacagt ggttaaagtc acagcggtga gagatggcct cgcgtctgat tagctagttg 240

gtggggtaac ggcctaccaa ggctgcgatc agtaaccggc ctgagagggt gaacggtcac 300

attggaactg agacacggtc caaactccta cgggaggcag cagtggggaa tcttgcacaa 360

tgggggcaac cctgatgcag cgacgccgcg tgagcgatga aggctttcga gtcgtaaagc 420

tctgtcctat gggaagataa tgacggtacc ataggaggaa gccccggcta actacgtgcc 480

agcagccgcg gtaatacgta gggggcgagc gttgtccgga attactgggc gtaaagggtt 540

cgcaggcggc tcggcaagtc cgatgtaaaa ggcgaaggct taaccttcgy aagcatcgga 600

aactgtcgag cttgagtgaa ggagaggcaa gtggaattcc tagtgtagcg gtggaatgcg 660

tagatattag gaggaatacc ggtggcgaag gcgacttgct ggacttcaac tgacgctgag 720

gaacgaaagc gtgggtagca aacaggatta gataccctgg tagtccacgc tgtaaacgat 780

gagtgctagg tgtcgggggt caaacctcgg tgccgtcgtt aacacaataa gcactccgcc 840

tggggagtac gtgcgcaagc atgaaactca aaggaattga cggggacccg cacaagcagc 900

ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccgggacttg aaatattgtc 960

gccaatttta gagataaaat gttttcttcg gaaacggcaa tacaggtggt gcatggttgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttactttc 1080

agttgccagc gcattatggc gggaactctg gaaggactgc cgatgataaa tcggaggaag 1140

gtggggatga cgtcaaatca tcatgccctt tatgtcccgg gctacacacg tgctacaatg 1200

gtcggtacag agggcagcga gacagcgatg ttaagcgaat ctcaaaaagc cgatcccagt 1260

tcggattgca ggctgcaact cgcctgcatg aagtcggagt tgctagtaat cgcggatcag 1320

aatgccgcgg tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac catgggagtt 1380

ggcaataccc gaagccagcg agccaaccgt aaggaggcag ctgtcgaagg tagggttaat 1440

gactggggtg aagtcgtaac aaggtagccg tatcggaagg 1480

<210> 1446
<211> 1531
<212> DNA
<213> Peptoniphilus lacrimalis

<400> 1446
ttttaattga gagtttgatc ctggctcagg acgaacgctg gcggcgcgct taacacatgc 60

aagtcgagcg atgaaatctt aacagaaccc ttcggggcga agataagacg gattagcggc 120

ggacgggtga gtaacacgtg agtaacctgc cttttacaca gggatagcct cgggaaaccg 180

ggattaaaac ctgatgaaac tatcaaatca catgattaag aaagttaaaa ctccggtggt 240

aaaagatgga ctcgcgtccc attagctagt tggtgaaggt aacggcccac caaggcaacg 300

atgggtagcc ggcctgagag ggtgaacggc cacattggaa ctgagaaacg gtccaaactc 360

ctacgggagg cagcagtggg gaatattgca caatggggga aaccctgatg cagcgacgcc 420

gcgtgagcga agaaggcctt cgggtcgtaa agctctttta tatgggaaga taatgacggt 480

accataagaa aaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggget 540

agcgttgtcc ggaatcactg ggcgtaaagg gttcgcaggc ggcaatgcaa gtcagatgta 600

aaaggcaaag gctcaacctt tgtaagcatc tgaaactgta tagcttgaga agtgtagagg 660

caagtggaat ttttagtgta gcggtgaaat gcgtagatat taaaaagaat accggtggcg 720

aaggcgactt gctgggcaca atctgacgct gaggaacgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgtcggt ataaatcggt 840

gccgcagtta acacaataag cactccgcct ggggagtacg tgcgcaagca tgaaactcaa 900

aggaattgac ggggacccgc acaagcagcg gagcatgtgg tttaattcga agcaacgcga 960

agaaccttac cagggcttga catataagag acgaacttag agataagttt tcttcttcag 1020

aagcccttat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttattacta gttaccagca tttcggatgg ggactctaga 1140

aagactgccg atgataaatc ggaggaaggt ggggatgacg tcaaatcatc atgccctata 1200

tgccctgggc aacacacgtg ctacaatggc cgtaacaaag agaagcgaaa tcgcaaggtc 1260

aagcaaacct caaaaagacg gtctcagttc ggattgttct ctgcaactcg agaacatgaa 1320

gtcggagttg ctagtaatcg cagatcagaa tgctgcggtg aatgcgttcc cgggtcttgt 1380

acacaccgcc cgtcacacca tgggagcttg taatacccga agcctgtgag ctaaccgcaa 1440

gggagcagca gtcgaaggta ggacaagtga ctggggtgaa gtcgtaacaa ggtagccgta 1500

tcggaaggtg cggctggatc acctcctttc t 1531

<210> 1447
<211> 1386
<212> DNA
<213> Peptoniphilus sp. JC140

<400> 1447
attagcggcg gacgggtgag taacacgtga gtaacctgcc ttagacattg ggatagcctc 60

gggaaaccgg gattaatacc gaataacatc acatagacac atgtcattgt gatcaaaact 120

ccggtggtct aagatggact cgcgtcccat tagctagttg gtagggtaac ggcctaccaa 180

ggcgacgatg ggtagccggc ctgagagggt gaacggccac attggaactg agaaacggtc 240

caaattccta cgggaggcag cagtggggaa tattgcacaa tgggggaaac cctgatgcag 300

cgacgccgcg tgaacgaaga aggctttcga gtcgtaaagt tcttttatat gggaagataa 360

tgacggtacc ataagaaaaa gccccggcta actacgtgcc agcagccgcg gtaatacgta 420

ggggggctagc gttgtccgga atcactgggc gtaaagggtt cgcaggcgga aatgcaagtc 480

agatgtaaaa ggcagtagct taactactgt aagcatttga aactgcatat cttgagaaga 540

gtagaggtaa gtggaatttt tagtgtagcg gtgaaatgcg tagatattaa aaagaatacc 600

ggtggcgaag gcgacttact gggctcatct gacgctgagg aacgaaagcg tgggtagcaa 660

acaggattag ataccctggt agtccacgct gtaaacgatg agtgctaggt gtcggcgtaa 720

gtcggtgccg cagttaacac aataagcact ccgcctgggg agtacgtgcg caagcatgaa 780

actcaaagga attgacgggg acccgcacaa gcagcggagc atgtggttta attcgaagca 840

acgcgaagaa ccttaccaag gcttgacata ctgaggaaag acttagagat aagtccctct 900

cttcggagac ctcaatacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 960

ggttaagtcc cgcaacgagc gcaaccctta tctttagttg ccagcatttc ggatgggaac 1020

tctaaagaga ctgccgatga taaatcggag gaaggtgggg atgacgtcaa atcatcatgc 1080

cctatatgcc ttgggctaca cacgtgctac aatggaaggt acaaagggaa gcaaaatagt 1140

gatattaagc aaacctcaaa aagcctttct cagttcggat tgtactctgc aactcgagta 1200

catgaagatg gagttgctag taatcgcaga tcagaatgct gcggtgaatg cgttcccggg 1260

tcttgtacac accgcccgtc acaccatggg agcttgtaat acccgaagcc tgcgagcgaa 1320

ccgtaaggaa gcagcagtcg aaggtaggat aagtgactgg ggtgaagtcg taacaaggta 1380

gccgta 1386

<210> 1448
<211> 1414
<212> DNA
<213> Peptoniphilus sp. gpac007

<220>
<221> modified_base
<222> (365)..(365)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (378)..(378)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (516)..(516)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (624)..(624)
<223> a, c, t, g, unknown or other

<400> 1448
atgcaagtcg agcgatgaac attgaatgwt cccttcgggg tgatttcgat cggattagcg 60

gcgaacgggt gagtaacgcg tgaggaacct gcctcttaca acgggatagc ctcgggaaac 120

cgggattaat accgtataag actccgacat ctcctggtga tgaagtcaaa gcgttagcgg 180

taagagatgg cctcgcgtct gattagttag ttggcggggt aacggcccac caagacgacg 240

atcagtaacc ggcctgagag ggtgaacggt cacattggaa ctgagacacg gtccaaactc 300

ctacgggagg cagcagtggg gaatcttgca caatgggggc aaccctgatg cagcgacgcc 360

gcktngagcg atgaaggntt tcgaatcgta aagctctgtc ctatgggaag ataatgacgg 420

taccwtggga ggaagccccg gctaactack tgccagcagc cgcggtaata cgtagggggc 480

gagcgttgtc cggaattact gggcgtaaag gkttcncags cggccatggc aaagtccgat 540

gtaaaaggcg aargctcaac cttcgtaagc atcggraact gtcaagcttg agtgaaggag 600

aggcaagtgg aattcctagt gtanccggtg gaatgcgtag atattaggag gaataccggt 660

ggcgaaggcg acttgctgga cttcaactga cgctgaggaa cgaaagcgtg ggtagcaaac 720

aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt cgggggtcaa 780

acctcggtgc cgccgttaac acaataagca ctccgcctgg ggagtacgtg cgcaagcatg 840

aaactcaaag gaattgacgg ggacccgcac aagcagcgga gcatgtggtt taattcgaag 900

caacgcgaag aaccttacca ggacttgaaa tactagcgcc cgctttagag ataaagtttt 960

ttcttcggaa acgctaatac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt 1020

tgggttaagt cccgcaacga gcgcaaccct tacttttagt tgccagcacg taatggtggg 1080

aactctaaag ggactgccga tgataaatcg gaggaaggtg gggatgacgt caaatcatca 1140

tgccctttat gtcctgggct acacacgtgc tacaatggtc ggtacagagg gcagcgaaag 1200

agcgatctca agcgaatctc aaaaagccga tcccagttcg gattgcaggc tgcaactcgc 1260

ctgcatgaag tcggagttgc tagtaatcgc gaatcagaat gtcgcggtga atgcgttccc 1320

gggtcttgta cacaccgccc gtcacaccat gggagttggc aatacccgaa gccagcgagc 1380

ccaaccgcaa cggagcagct gtcgaatgta gggt 1414

<210> 1449
<211> 1453
<212> DNA
<213> Peptoniphilus sp. gpac018A

<400> 1449
gacgaacgct ggcggcgcgc ctaacacatg caagtcgagc gatgaaagtc gttctgatcc 60

ttcgggtgat gaacttctgg attagcggcg aacgggtgag taacgcgtga ggaacctgcc 120

tcttacaacg ggatagcctc gggaaaccgg gattaatacc gtataagact ccgacatctc 180

atgatgatga agtcaaagcg ttagcggtaa gagatggcct cgcgtctgat tagctggttg 240

gcggggtaac ggcccaccaa ggcgacgatc agtaaccggc ctgagagggt gaacggtcac 300

attggaactg agacacggtc caaactccta cgggaggcag cagtggggaa tcttgcacaa 360

tgggggcaac cctgatgcag cgacgccgcg tgagcgattg aaggttttcg aatcgtaaag 420

ctctgtccta tgggaagata atgacggtac cataggagga agccccggct aactacgtgc 480

cagcagccgc ggtaatacgt aggggcgag cgttgtccgg aattactggg cgtaaagggt 540

tcgcaggcgg catggcaagt ccgatgtaaa aggcgaaggc tcaaccttcg taagcatcgg 600

aaactgtcaa gcttgagtga aggagaggca agtggaattc ctagtgtagc ggtggaatgc 660

gtagatatta ggaggaatac cggtggcgaa ggcgacttgc tggacttcaa ctgacsgtga 720

gaaacgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 780

tgagtgctag gtgtcggggt caaacctcgg tgccgccgtt aacacaataa gcactccgcc 840

tggggagtac gtgcgcaagc atgaaactca aaggaattgg acgggggacc cgcacaaagc 900

agcggagcat gtggtttaat tcgaagcaac gcgaagaacc ttaccaggac ttgaaatact 960

agcgcccgct ttagagataa agtttttttct tcggaaacgc taatacaggt ggtgcatggt 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttact 1080

tttagttgcc agcacgtaat ggtgggaact ctaaagggac tgccgatgat aaatcggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ctttatgtcc tgggctacac acgtgctaca 1200

atggtcggta cagagggcag cgaacgagcg atcgcaagcg aatctcaaaa agccgatccc 1260

agttcggatt gcaggctgca actcgcctgc atgaagtcgg agttgctagt aatcgcagat 1320

cagaatgctg cggtgaatgc gttcccgggt cttgtacaca ccgcccgtca caccatggga 1380

gttggcaata cccgaagcca gcgagccaac cgyaaggagg cagctgtcga aggtagggtt 1440

aatgactggg gtg 1453

<210> 1450
<211> 1459
<212> DNA
<213> Peptoniphilus sp. gpac077

<220>
<221> modified_base
<222> (473)..(473)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (553)..(553)
<223> a, c, t, g, unknown or other

<400> 1450
gacgaacgct ggcggcgcgc ttaacacatg caagtcgagc gatgaaatct taacagaacc 60

cttcggggcg aagataagac ggattagcgg cggacgggtg agtaacacgt gagtaacctg 120

ccttttacac agggatagcc tcgggaaacc gggattaaaa cctgatgaaa ctatcaaatc 180

acatgattaa gaaagttaaa actccggtgg taaaagatgg actcgcgtcc cattagctag 240

ttggttgaag gtaacggcca ccaaggcaac gatgggtagc cggcctgaga gggtgaacgg 300

ccacattgga actgagaaac ggtccaaact cctacgggag gcagcagtgg ggaatattgc 360

acaatggggg aaaccctgat gcagcgacgc cgcgtgagcg aagaaggcct tcgggtcgta 420

aagctcttta tatatgggaa gataatgacg gtaccataag aaaaagcccc ggntaactac 480

gtagccagca gccgcggtaa tacgtagggg gctagacgtt gtccggaatc actgggacgt 540

aaagggttcg cangcggcaa tgcaagtcag atgtaaaaag gcaaaggctc aaacatttgt 600

aagcatctga aactgtatag cttgaacttt aaggcgccaa gggaattttc tagtcaccgg 660

taaaacgccg tagatataaa gagaaatccc gtggccgaag gcgacctctg gggcaacaaa 720

tctggaccct gaggaacgaa agcttgggga ccaaacagga taagataccc ctggtagtcc 780

acgccgtaaa cgatgagtgc taggtgtcgg tataaatcgg tcccgcagtt aacacaataa 840

gcactccgcc ctggggagta cgtgcgcaag catgaaactc aaaggaattg acggggaccc 900

gcacaagcag cggagcatgt ggtttaattc gaagcaacgc gaagaacctt accagggctt 960

gacatataag agacgaactt agagataagt tttcttcttc ggaagccctt atacaggtgg 1020

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

cccttattac tagttaccag catttcggat ggggactcta gaaagactgc cgatgataaa 1140

tcggaggaag gtggggatga cgtcaaatca tcatgcccta tatgccctgg gcaacacacg 1200

tgctacaatg gccgtaacca aagagaagcg aaatcgccaa ggtcaagcaa acctcaaaaa 1260

gacggtctca gttcggattg ttctctgcaa ctcgagaaca tgaagtcgga gttgctagta 1320

atcgcagatc agaatgctgc ggtgaatgcg ttcccgggtc ttgtacacac cgcccgtcac 1380

accatgggag cttgtaatac ccgaagcctg tgagctaacc gcaaggaagc agcagtcgaa 1440

gtagacaagt gactgggtg 1459

<210> 1451
<211> 1445
<212> DNA
<213> Peptoniphilus sp. gpac148

<220>
<221> modified_base
<222> (1437)..(1437)
<223> a, c, t, g, unknown or other

<400> 1451
gacgaacgct ggcggcgcgc ctaacacatg caagtcgagc gatgaaattt taacggatct 60

tttcggagag aagataaaat ggattagcgg cggacgggtg agtaacacgt gaggaacctg 120

cctttcacaa ggggatagcc tcgggaaacc gggattaata ccctatgata caatcaagtc 180

tcctgattta attgttaaag tgatagcggt gaaagatggc ctcgcgtctg attagctagt 240

tggtgagata aaagcccacc aaggcgatga tcagtaaccg gcctgagagg gtgaacggtc 300

acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgggg aatattgcac 360

aatggaggga actctgatgc agcgacgccg cgtgagcgat gaaggctttc gagtcgtaaa 420

gctctgtcct atgggaagat aatgacggta ccataggagg aagccccggc taactacgtg 480

ccagcagccg cggtaatacg taggggcga gcgttgtccg gaatcactgg gcgtaaaggg 540

ttcgcaggcg gtttaccaag tccgatgtga aaggcatggg cttaacccat gtaagcatta 600

gaaactggta aacttgagtt aaggagaggt aagtggaatt cctagtgtag cggtgaaatg 660

cgtagatatt aggaagaata ccggtggcga aggcgactta ctggacttaa actgacgctg 720

aggaacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gctgtaaacg 780

atgagtgcta ggtgtcgggg gaactcggtg ccgcagttaa cacattaagc actccgcctg 840

gggagtacgt gcgcaagcat gaaactcaaa ggaattgacg gggacccgca caagcagcgg 900

agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aaggctagac attttactgc 960

ccggtctaga gataggccct ttcttcggaa cagtaaaaca ggtggtgcat ggttgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc acctttagtt 1080

gccagcatgt aacgatggga actctaaagg gactgccgat gataaatcgg aggaaggtgg 1140

ggatgacgtc aaatcatcat gccctttatg ccttgggcta cacacgtgct acaatggtcg 1200

gtacacagag cagcttagga gcgatctgaa gcgaatctca aaaagccgat ctcagttcgg 1260

attgcaggct gcaactcgcc tgcatgaagt cggagttgct agtaatcgcg aatcagaatg 1320

tcgcggtgaa tgcgttcccg ggtcttgtac acaccgcccg tcacaccatg ggagttggta 1380

atacccgaag ccgccgagct aaccgtttgg asgcaggcgt cgaaggtagg atcaatnact 1440

gggtg 1445

<210> 1452
<211> 1533
<212> DNA
<213> Peptoniphilus sp. oral taxon 386

<400> 1452
tttcaattga gagtttgatc ctggctcagg acgaacgctg gcggcgcgcc taacacatgc 60

aagtcgagcg atgaaaagga tttggagttc ttcgggacaa agaaaccttg gattagcggc 120

ggacgggtga gtaacacgtg agtaacctgc ctttgacatg gggatagcct cgggaaaccg 180

tgattaatac ccaataacat ttccaagtcg catgacatgg gaatcaaagc gtttagcggt 240

caaagatgga ctcgcgtctg attaattagt tggtgaggta acggctcacc aagatagcga 300

tcagtagccg gcctgagagg gtgaacggcc acattggaac tgagagacgg tccaaactcc 360

tacgggaggc agcagtgggg aatattgcac aatgggggga accctgatgc agcgacgccg 420

cgtgagcgaa gaaggttttc gaatcgtaaa gctctgtcct atgggaagat aatgacggta 480

ccataggagg aagccccggc taactacgtg ccagcagccg cggtaatacg tagggggcta 540

gcgttgtccg gaatcactgg gcgtaaaggg ttcgcaggcg gaaaagcaag tcaggtgtga 600

aaggcgaggg cttaaccctc gtaagcattt gaaactgttt ttcttgagat gtggagaggt 660

aagtggaatt cctagtgtag cggtgaaatg cgtagatatt aggaggaata ccggtggcga 720

aggcgactta ctggacacaa actgacgctg aggaacgaaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gctgtaaacg atgagtgcta ggtgtcggga gtaatctcgg 840

tgccgcagta aacacaataa gcactccgcc tggggagtac gtacgcaagt atgaaactca 900

aaggaattga cggggacccg cacaagcagc ggagcatgtg gtttaattcg aagcaacgcg 960

aagaacctta ccagggcttg acatatagcg gacatattta gagataaata cttttcttcg 1020

gaaaccgcta tacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttaccttt agttgccagc atgtaaagat gggaactcta 1140

aagggactgc cgatgataaa tcggaggaag gtggggatga cgtcaaatca tcatgcccta 1200

tatgccctgg gctacacacg tgctacaatg gtcggaacaa agggtagcaa acttgtgaaa 1260

gtaagcaaat ctcaaaaagc cgatctcagt tcggattgtt ctctgcaact cgagaacatg 1320

aagtcggagt tgctagtaat cgcagatcag aatgctgcgg tgaatgcgtt cccgggtctt 1380

gtacacaccg cccgtcacac catgggagtt ggcaataccc gaagcctgtg agctaacctt 1440

aggggagcag cagtcgaagg tagggttaat gactggggtg aagtcgtaac aaggtagccg 1500

tatcggaagg tgcggctgga tcacctcctt tct 1533

<210> 1453
<211> 1531
<212> DNA
<213> Peptoniphilus sp. oral taxon 836

<400> 1453
ttttaattga gagtttgatc ctggctcagg acgaacgctg gcggcgcgct taacacatgc 60

aagtcgagcg atgaaatctt aacagaaccc ttcggggcga agataagacg gattagcggc 120

ggacgggtga gtaacacgtg agtaacctgc cttttacaca gggatagcct cgggaaaccg 180

ggattaaaac ctgatgaaac tatcaaatca catgattaag aaagttaaaa ctccggtggt 240

aaaagatgga ctcgcgtccc attagctagt tggtgaaggt aacggcccac caaggcaacg 300

atgggtagcc ggcctgagag ggtgaacggc cacattggaa ctgagaaacg gtccaaactc 360

ctacgggagg cagcagtggg gaatattgca caatggggga aaccctgatg cagcgacgcc 420

gcgtgagcga agaaggcctt cgggtcgtaa agctctttta tatgggaaga taatgacggt 480

accataagaa aaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggGct 540

agcgttgtcc ggaatcactg ggcgtaaagg gttcgcaggc ggcaatgcaa gtcagatgta 600

aaaggcaaag gctcaacctt tgtaagcatc tgaaactgta tagcttgaga agtgtagagg 660

caagtggaat ttttagtgta gcggtgaaat gcgtagatat taaaaagaat accggtggcg 720

aaggcgactt gctgggcaca atctgacgct gaggaacgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgtcggt ataaatcggt 840

gccgcagtta acacaataag cactccgcct ggggagtacg tgcgcaagca tgaaactcaa 900

aggaattgac ggggacccgc acaagcagcg gagcatgtgg tttaattcga agcaacgcga 960

agaaccttac cagggcttga catataagag acgaacttag agataagttt tcttcttcgg 1020

aagcccttat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgcaac gagcgcaacc cttattacta gttaccagca tttcggatgg ggactctaga 1140

aagactgccg atgataaatc ggaggaaggt ggggatgacg tcaaatcatc atgccctata 1200

tgccctgggc aacacacgtg ctacaatggc cgtaacaaag agaagcgaaa tcgcaaggtc 1260

aagcaaacct caaaaagacg gtctcagttc ggattgttct ctgcaactcg agaacatgaa 1320

gtcggagttg ctagtaatcg cagatcagaa tgctgcggtg aatgcgttcc cgggtcttgt 1380

acacaccgcc cgtcacacca tgggagcttg taatacccga agcctgtgag ctaaccgcaa 1440

ggaagcagca gtcgaaggta ggacaagtga ctggggtgaa gtcgtaacaa ggtagccgta 1500

tcggaaggtg cggctggatc acctcctttc t 1531

<210> 1454
<211> 1476
<212> DNA
<213> Peptostreptococcaceae bacterium ph1

<400> 1454
tgatcctggc tcaggacgaa cgctggcggc gtgcctaaca catgcaagtc gagcgatgaa 60

accttaacag actccttcgg gatgaagatt aggtggatta gcggcggacg ggtgagtaac 120

acgtgagtaa cctgcctttg acacagggat agccatggga aaccgtgatt aataccagat 180

gaaatctaaa ctacacatgt agcaaagatc aaagcgacca agcggtcaaa gatggactcg 240

cgcctgatta gctagttggt gagataaaag ctcaccaagg caacgatcag tagccggcct 300

gagagggtga ccggccacat tggaactgag acacggtcca aactcctacg ggaggcagca 360

gtggggaata ttgcacaatg gggggaaccc tgatgcagcg acgccgcgtg agcgaagaag 420

ggattcgttt cgtaaagctc tgtcctatgg gaagataatg acggtaccat agaagaaagc 480

cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcgagcgt tgtccggaat 540

cactgggcgt aaagggttcg caggcggata aacaagtcaa gagtaaaagg catgggctta 600

acccatgtaa gctattgaaa ctgtctatct tgagatgtgg agaggtaagt ggaattacta 660

gtgtagcggt gaaatgcgta gatattagta ggaataccag tagcgaaggc gacttactgg 720

acacaaactg acgctgagga acgaaagcgt gggtagcaaa caggattaga taccctggta 780

gtccacgctg taaacgatga gtgctaggtg tcggcaaaag tcggtgccgc agtaaacgca 840

ataagcactc cgcctgggga gtacgtgcgc aagcatgaaa ctcaaaggaa ttgacgggga 900

cccgcacaag cagcggagca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggg 960

cttgacatat aggtgaaaag cttagagata agtaataccc ttcggggaca gctatacagg 1020

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccttac ctttagttac cagcaagtaa agttggggac tctagaggga ctgccgatga 1140

taaatcggag gaaggtgggg atgacgtcaa atcatcatgc cctatatgcc ctgggcaaca 1200

cacgtgctac aatggtcgga acaaagggaa gcgaagtcgt gaggcgaagc aaaacccata 1260

aaaccgatct cagttcggat tgttctctgc aactcgagaa catgaagtcg gagttgctag 1320

taatcgcaga tcagaatgct gcggtgaatg cgttcccggg tcttgtacac accgcccgtc 1380

acaccatggg agttatcaat acccgaagcc tgtgagctaa caataagaag cagcagtcga 1440

aggtagggag aatgactggg gtgaagtcgt aacaag 1476

<210> 1455
<211> 1473

<212> DNA
<213> Peptostreptococcus anaerobius

<220>
<221> modified_base
<222> (64)..(64)
<223> a, c, t, g, unknown or other

<400> 1455
gatgaacgct ggcggcgtgc ctaacacatg caagtcgagc gcgtctgatt tgatgcttgc 60

attnatgaaa gatgagcggc ggacgggtga gtaacgcgtg ggtaacctgc cctatacaca 120

tggataacat actgaaaagt ttactaatac atgataatat atatttacgg catcgtagat 180

atatcaaagt gttagcggta taggatggac ccgcgtctga ttagctagtt ggtgagataa 240

ctgcccacca aggcgacgat cagtagccga cctgagaggg tgatcggcca cattggaact 300

gagacacggt ccaaactcct acgggaggca gcagtgggga atattgcaca atgggcgcaa 360

gcctgatgca gcaacgccgc gtgaacgatg aaggtcttcg gatcgtaaag ttctgttgca 420

ggggaagata atgacggtac cctgtgagga agccccggct aactacgtgc cagcagccgc 480

ggtaatacgt aggggctag cgttatccgg atttactggg cgtaaagggt gcgtaggtgg 540

tctttcaagt cggtggttaa aggctacggc tcaaccgtag ttagcctccg aaactggaag 600

acttgagtgc aggagaggaa agtggaattc ccagtgtagc ggtgaaatgc gtagatattg 660

ggaggaacac cagtagcgaa ggcggctttc tggactgcaa ctgacactga ggcacgaaag 720

cgtgggtagc aaacaggatt agataccctg gtagtccacg ctgtaaacga tgagtactag 780

gtgtcggggg ttacccccct cggtgccgca gctaacgcat taagtactcc gcctggggag 840

tacgcacgca agtgtgaaac tcaaaggaat tgacggggac ccgcacaagt agcggagcat 900

gtggtttaat tcgaagcaac gcgaagaacc ttacctaagc ttgacatccc ttagaccggt 960

gtttaatcac accttccctt cggggctgag gtgacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttgtct ttagttgcca 1080

gcattcagtt gggcactcta gagagactgc cagggataac ctggaggaag gtggggatga 1140

cgtcaaatca tcatgccccc tatgcttagg gctacacacg tgctacaatg ggtggtacag 1200

agggttgcca aaccgtgagg tggagctaat cccttaaagc cattctcagt tcggattgta 1260

ggctgaaact cgcctacatg aagctggagt tactagtaat cgcagatcag aatgctgcgg 1320

tgaatgcgtt cccgggtctt gtacacaccg cccgtcacac catgggagtc ggaaacaccc 1380

gaagccgatt atccaaccgc aaggaggaag tcgtcgaagg tggcgtcgat aactggggtg 1440

aagtcgtaac aaggtagccg tatcggaagg tgc 1473

<210> 1456
<211> 1427
<212> DNA
<213> Peptostreptococcus micros

<400> 1456
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gtgatttttg tggaaagccc 60

ttcggggacg gaagcgaaat gaaagtggcg aacgggtgag taacacgtga gcaacctacc 120

ttacacaggg ggatagccgt tggaaacgac gattaatacc gcatgagacc acaaagccac 180

atggcttagg ggtaaaagat ttatcggtgt aagatgggct cgcgtctgat tagctagttg 240

gaagggtaaa ggcctaccaa ggcaacgatc agtagccggt ctgagaggat gaacggccac 300

attggaactg agacacggtc caaactccta cgggaggcag cagtggggaa tattgcacaa 360

tgggggggaac cctgatgcag cgacgccgcg tgagcgaaga aggttttcga atcgtaaagc 420

tctgtcctat gagaagataa tgacggtatc ataggaggaa gccccggcta aatacgtgcc 480

agcagccgcg gtaatacgta tggggcgagc gttgtccgga attattgggc gtaaagggta 540

cgtaggcggc ctattaagtc aggtgtgaaa gcgtgaggct taacctcatt aagcacttga 600

aactggaagg cttgagtgaa ggagaggaaa gtggaattcc tagtgtagcg gtgaaatgcg 660

tagatattag gaggaatacc ggtggcgaag gcgactttct ggacttttac tgacgctcag 720

gtacgaaagc gtggggagca acaggattac gataccctgg tagtccacgc cgtaaacgat 780

gaatgctagg tgttgggagt caaatctcgg tgccgaagtt aacacattaa gcattccgcc 840

tggggagtac ggtggcaaca ctgaaactca aaggaattga cggggacccg cacaagcagc 900

ggagcatgtg gtttaattcg aagcaacgcg aagaacctta ccaaggcttg acatatagtt 960

gagttattga gaaattgata agtccctcgg gacaactata caggtggtgc atggttgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttatcttcag 1080

ttaccagcat gtaatgatgg ggactctgga gagactgccg atgacaaatc ggaggaaggt 1140

ggggatgacg tcaaatcatc atgcccttta tgtcttgggc tacacacgtg ctacaatggt 1200

tggtacaacg agaagctaga cagtgatgtt aagcaaaact ctaaaaacca atctcagttc 1260

ggattgtagg ctgcaactcg cctacatgaa gtcggagttg ctagtaatcg cgaatcagaa 1320

tgtcgcggtg aatgcgttcc cgggtcttgt acacaccgcc cgtcacacca tgggagttgg 1380

caatacccga agccgccgat ctaaccgcaa ggaggaaggc gtcgaag 1427

<210> 1457
<211> 1353
<212> DNA
<213> Peptostreptococcus sp. 9succ1

<220>
<221> modified_base
<222> (91)..(91)
<223> a, c, t, g, unknown or other

<400> 1457
aaatggatta gcggcggacg ggtgagtaac acgtgagtaa cctgcctttg acatggggat 60

agcctcggga aaccgggatt aatacccaat naaactgtaa gatcgcatga tcaatcagtc 120

aaaatgtcta gtggtcaaag atggactcgc gtcccattag ctagttggtg agataaaagc 180

tcaccaaggc gacgatgggt agccggcctg agagggtgaa cggccacatt ggaactgaga 240

cacggtccaa actcctacgg gaggcagcag tggggaatat tgcacaatgg gggaaaccct 300

gatgcagcga cgccgcgtga gcgaagaagg ctttcgagtc gtaaagctct gtcctatggg 360

aagatagtga cggtaccata ggaggaagcc ccggctaact acgtgccagc agccgcggta 420

atacgtaggg ggctagcgtt gtccggaatt actgggcgta aagggttcgc aggcggcaat 480

gcaagtcagg tgtgaaagac ggaggctcaa cctccgcaag catttgaaac tgcatagctt 540

gagatgtgga gaggtaagtg gaattcctag tgtagcggtg aaatgcgtag atattaggag 600

gaataccggt ggcgaaggcg acttactgga cacaaactga cgctgaggaa cgaaagcgtg 660

gggagcaaac aggattagat accctggtag tccacgctgt aaacgatgag tgctaggtgt 720

cggagcaatt cggtgccgta gttaacacaa taagcactcc gcctggggag tacgtacgca 780

agtatgaaac tcaaaggaat tgacggggac ccgcacaagc agcggagcat gtggtttaat 840

tcgaagcaac gcgaagaacc ttaccaggtc ttgacatata gtgggatatt ctagagatag 900

aatagactct tcggagactg ctaaacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 960

agatgttggg ttaagtcccg caacgagcgc aacccttacc tttagttgcc agcatgtaaa 1020

gatggggact ctagagggac tgccgatgat aaatcggagg aaggtgggga tgacgtcaaa 1080

tcatcatgcc ctatatgacc tgggctacac acgtgctaca atggtcggta taaagagaag 1140

caagatagtg atattaagca aacctcaaaa agccgatctc agttcggatt gtaggctgca 1200

actcgcctac atgaagtcgg agttgctagt aatcgcagat cagaatgctg cggtgaatgc 1260

gttcccgggt cttgtacaca ccgcccgtca caccatggga gttggcaata cccgaagccg 1320

gtgacctaac cgcaaggaag gagccgtcga agg 1353

<210> 1458
<211> 1327
<212> DNA
<213> Peptostreptococcus sp. P4P_31 P3

<400> 1458
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acacgtgagc aacctacctt acacaggggg atagccgttg gaaacgacga ttaataccgc 120

atgagcaaag tcggtgtaag atgggctcgc gtctgattag ctagttggaa gggtaaaggc 180

ctaccaaggc aacgatcagt agccggtctg agaggatgaa cggccacatt ggaactgaga 240

cacggtccaa actcctacgg gaggcagcag tggggaatat tgcacaatgg ggggaaccct 300

gatgcagcga cgccgcgtga gcgaagaagg ttttcgaatc gtaaagctct gtcctatgag 360

aagatgacgg tatcatagga ggaagccccg gctaaatacg tgccagcagc cgcggtaata 420

cgtatggggc gagcgttgtc cggaattatt gggcgtaaag ggtacgtagg cggcctttta 480

agtcaggtgt gaaagcgtga ggcttaacct cattaagcac ttgaaactgg aaggcttgag 540

tgaaggagag gaaagtggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaggaa 600

taccggtggc gaaggcgact ttctggactt actgacgctc aggtacgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgaatgcta ggtgttggga 720

tctcggtgcc gaagttaaca cattaagcat tccgcctggg gagtacggtg gcaacactga 780

aactcaaagg aattgacggg gacccgcaca agcagcggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccaa ggcttgacat atacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttatctt cagttaccag 960

catatgggga ctctggagag actgccgatg ataaatcgga ggaaggtggg gatgacgtca 1020

aatcatcatg ccctttatgt cttgggctac acacgtgcta caatggttgg caacgagaag 1080

caagatagtg atgtcaagca aaactctacc aatctcagtt cggatgtagg ctgcaactcg 1140

cctacagaag tcggagttgc tagtaatcgc aaatcagaat gttgcggtga atgcgttccc 1200

gggtcttgta cacaccgccc gtcacaccat gggagttggc aatacccgaa gccgccatct 1260

aggaaggcgt cgaaggtagg gttaatgact ggggtgaagt cgtaacaagg tagccgtatc 1320

ggaaggt 1327

<210> 1459
<211> 1333
<212> DNA
<213> Peptostreptococcus sp. oral clone AP24

<400> 1459
gagtttgatc ctggctcagg atgaacgttg gcgacgtgcc taacacatgc aagtcgagcg 60

agcggcggac gggtgagtaa tacatgagca acctgccttg gacagaggga tagccgtggg 120

aaaccgcgat taatacctca taagcaaagt cggtccaaga tggactcatg acccattagc 180

tagttggtga gataacagcc caccaaggcg acgatgggta gccggcttga gagagtgacc 240

ggccacattg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatgga ggaaactctg atgcagcgac gtcgcgtgag cgaagaaggt tttcgaatcg 360

taaagctctg tcctatggga agaagacggt accatagaag aaagccccgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggggcg aacgttatcc ggaatgattg ggcgtaaagg 480

gtacgtaggc ggacctgtaa gtcaggtgtg aaaggcatgg gctcaaccca tgtaagcact 540

tgaaactgcg ggccttgagg gaaggagagg taagtggaat tcctagtgta gcggtgaaat 600

gcgtagatat taggaggaat accggtggcg aaggcgactt actggactta ctgacgctga 660

ggtacgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaatgg 720

tgagtgctag gtgtcgggat ctcggtgccg acgttaacac attaagcact ccgcctgggg 780

agtacgcacg caagtgtgaa actcaaagga attgacgggg acccgcacaa gcagcggagc 840

atgtggttta attcgatgca acgcgaaaaa ccttaccagg acttgacata tacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctattctt agttactaac agctgaggac tctaaggaga ctgccggtga caaaccggag 1020

gaagatgggg atgacgtcaa atcatcatgc cctttatgtc ctgggctaca cacgtgctac 1080

aatggtcggc agaaggaagc gagatagcga tatcgagcga acccccccga tcccagttcg 1140

gatgttctct gcaactcgag aacagaagcc ggagttgcta gtaattgcga atcagcatgt 1200

cgcagtgaat gcgttcccgg gtcttgtaca caccgcccgt cacaccatgg gagttggtaa 1260

tacccgaagc ctgtagccaa gcagcagtcg aaggtaggat caatgactgg ggtgaagtcg 1320

taacaaggta acc 1333

<210> 1460
<211> 1334
<212> DNA
<213> Peptostreptococcus sp. oral clone FJ023

<400> 1460
cggcgcgtct taagcatgca agtcgaacga gtggcgaacg ggtgagtaac acgtgagcaa 60

cctaccttac acaggggat agccgttgaa aacgacgatt aataccgcat gagaaaagtc 120

ggtgtaagat gggctcgcgt ctgattagct agttggaagg gtaaaggcct accaaggcaa 180

cgatcagtag ccggtctgag aggatgaacg gccacattgg aactgagaca cggtccaaac 240

tcctaaggga ggcagcagtg gggaatattg cacaatgggg ggaaccctga tgcagcgacg 300

ccgcgtgagc gaagaaggtt ttcgaatcgt aaagctctgt cctatgagaa gatgacggta 360

tcataggagg aagccccggc taaatacgtg ccagcagccg cggtaatacg tatggggcga 420

gcgttgtccg gaattattgg gcgtaaaggg tacgtaggcg gcctattaag tcaggtgtga 480

aagcgtgagg cttaacctca ttaagcactt gaaactggaa ggcttgagtg aaggagagga 540

aagtggaatt cctagtgtag cggtgaaatg cgtagatatt aggaggaata ccggtggcga 600

aggcgacttt ctggacttac tgacgctcag gtacgaaagc gtggggagca aacaggatta 660

gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgttgggatc tcggcgccga 720

agttaacaca ttaagcattc cgcctgggga gtacggtggc aacactgaaa ctcaaaggaa 780

ttgacgggga cccgcacaag cagcagagca tgtggtttaa ttcgaagcaa cgcgaagaac 840

cttaccaagg cttgacatat acaggtggtg catggttgtc gtcagctcgt gtcgtgagat 900

gttgggttaa gtcccgcaac gagcgcaacc cttatcttca gttaccagca cgtggggact 960

ctggagagac tgccgatgac aaatcggaag aaggtgggga tgacatcaaa tcatcatgcc 1020

ctttatgtct tgggctacac acgtgctaca atggttggca acgagagact agacagtgat 1080

gttaagcaaa actctaccaa tctcagttcg gatgtaggct gcaactcgcc tacagaagtc 1140

ggagttgcta gtaatcgcga atcagaatgt cgcggtgaac gcgttcccgg gtcttgtaca 1200

caccgcccgt cacaccatgg gagttggcaa tacccgaagc cgccatctag gaaggcgtcg 1260

aaggtagggt taatgactgg ggtgaagtcg taacaaggta gccgtatcgg aaggtgcggt 1320

tggatcacct cctt 1334

<210> 1461
<211> 1432
<212> DNA
<213> Peptostreptococcus stomatis

<400> 1461

ctgagcaaaa ccaagcggcg gacgggtgag taacgcgtgg gtaacctgcc ctatacacat 60

ggataacata ctgaaaagtt tactaataca tgataatata tatttgcggc atcgcagata 120

tatcaaagtg ttagcggtat aggatggacc cgcgtctgat tagctagttg gtgagataac 180

tgcccaccaa ggcgacgatc agtagccgac ctgagagggt gatcggccac attggaactg 240

agacacggtc caaactccta cgggaggcag cagtggggaa tattgcacaa tgggcgaaag 300

cctgatgcag caacgccgcg tgaacgatga aggtcttcgg atcgtaaagt tctgttgcag 360

gggaagataa tgacggtacc ctgtgaggaa gccccggcta actacgtgcc agcagccgcg 420

gtaatacgta gggggctagc gttatccgga tttactgggc gtaaagggtg cgtaggtggt 480

ccttcaagtc ggtggttaaa ggctacggct caaccgtagt aagccgccga aactggagga 540

cttgagtgca ggagaggaaa gtggaattcc cagtgtagcg gtgaaatgcg tagatattgg 600

gaggaacacc agtagcgaag gcggctttct ggactgcaac tgacactgag gcacgaaagc 660

gtgggtagca aacaggatta gataccctgg tagtccacgc tgtaaacgat gagtactagg 720

tgtcgggggt tacccccctc ggtgccgcag ctaacgcatt aagtactccg cctggggagt 780

acgcacgcaa gtgtgaaact caaaggaatt gacggggacc cgcacaagta gcggagcatg 840

tggtttaatt cgaagcaacg cgaagaacct tacctaagct tgacatccct cggacaggtg 900

tttaatcaca cccttccttc gggactgagg tgacaggtgg tgcatggttg tcgtcagctc 960

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtctt tagttgccag 1020

cattcagttg ggcactctag agagactgcc agggataacc tggaggaagg tggggatgac 1080

gtcaaatcat catgcccctt atgcttaggg ctacacacgt gctacaatgg gtggtacaga 1140

gggttgccaa accgtgaggt ggagccaatc ccttaaagcc attctcagtt cggattgtag 1200

gctgaaactc gcctacatga agctggagtt actagtaatc gcagatcaga atgctgcggt 1260

gaatgcgttc ccgggtcttg tacacaccgc ccgtcacacc acgggagtcg gaaacacccg 1320

aagccgatta tccaaccgca aggaggaagt cgtcgaaggt ggcgtcgata actggggtga 1380

agtcgtaaca aggtagccgt atcggaaggt gcggctggat cacctccttt ct 1432

<210> 1462
<211> 1511
<212> DNA
<213> Phascolarctobacterium faecium

<220>
<221> modified_base
<222> (50)..(50)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1382)..(1382)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1477)..(1477)

<223> a, c, t, g, unknown or other

<400> 1462
atcctggctc aggacgaacg ctggcggcgt gcctaacaca tgcaagtcgn acggagaatt 60

ttatttcggt agaattctta gtggcgaacg ggtgagtaac gcgtaggcaa cctacccttt 120

agacggggac aacattccga aaggagtgct aataccggat gtgatcatcg tgccgcatgg 180

caggatgaag aaagatggcc tctacaagta agctatcgct aaaggatggg cctgcgtctg 240

attagctagt tggtagtgta acggactacc aaggcgatga tcagtagccg gtctgagagg 300

atgaacggcc acattgggac tgagacacgg cccaaactcc tacgggaggc agcagtgggg 360

aatcttccgc aatggacgaa agtctgacgg agcaacgccg cgtgagtgat gaaggatttc 420

ggtctgtaaa gctctgttgt ttatgacgaa cgtgcagtgt gtgaacaatg cattgcaatg 480

acggtagtaa acgaggaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg 540

tggcgagcgt tgtccggaat tattgggcgt aaagagcatg taggcggctt aataagtcga 600

gcgtgaaaat gcggggctca accccgtatg gcgctggaaa ctgttaggct tgagtgcagg 660

agaggaaagg ggaattccca gtgtagcggt gaaatgcgta gatattggga ggaacaccag 720

tggcgaaggc gcctttctgg actgtgtctg acgctgagat gcgaaagcca gggtagcgaa 780

cgggattaga taccccggta gtcctggccg taaacgatgg gtactaggtg taggaggtat 840

cgacccccttc tgtgccggag ttaacgcaat aagtaccccg cctggggagt acggccgcaa 900

ggttgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagtatg tggtttaatt 960

cgacgcaacg cgaagaacct taccaaggct tgacattgat tgaacgctct agagatagag 1020

atttcccttc ggggacaaga aaacaggtgg tgcatggctg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccctatcct atgttaccag caagtaaagt 1140

tggggactca tgggagactg ccagggacaa cctggaggaa ggcggggatg acgtcaagtc 1200

atcatgcccc ttatgtcttg ggctacacac gtactacaat ggtcggaaac agagggaagc 1260

gaagccgcga ggcagagcaa accccagaaa cccgatctca gttcggatcg caggctgcaa 1320

cccgcctgcg tgaagtcgga atcgctagta atcgcaggtc agcatactgc ggtgaatacg 1380

tncccgggcc ttgtacacac cgcccgtcac accacgaaag ttggtaacac ccgaagccgg 1440

tgaggtaacc tattaggagc cagccgtcta aggtggngcc gatgattggg gtgaagtcgt 1500

aacaaggtag c 1511

<210> 1463
<211> 1449
<212> DNA
<213> Phascolarctobacterium sp. YIT 12068

<400> 1463
ttcttagtgg cgaacgggtg agtaacgcgt gggcaacctg ccctctagat ggggacaaca 60

tcccgaaagg ggtgctaata ccgaatgtga cagcaatctc gcatgaggat gctgtgaaag 120

atggcctcta tttataagct atcgctagag gatgggcctg cgtctgatta gctagttggt 180

ggggtaacgg cctaccaagg cgatgatcag tagccggtct gagaggatga acggccacat 240

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaatc ttccgcaatg 300

ggcgaaagcc tgacggagca atgccgcgtg agtgatgaag gaattcgttc cgtaaagctc 360

ttttgtttat gacgaatgtg cagattgtga ataatgatct gtaatgacgg tagtaaacga 420

ataagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc gagcgttgtc 480

cggaattatt gggcgtaaag agcatgtagg cggtttttta agtctggagt gaaaatgcgg 540

ggctcaaccc cgtatggctc tggatactgg aagacttgag tgcaggagag gaaaggggaa 600

ttcccagtgt agcggtgaaa tgcgtagata ttgggaggaa caccagtggc gaaggcgcct 660

ttctggactg tgtctgacgc tgagatgcga aagccagggt agcgaacggg attagatacc 720

ccggtagtcc tggccgtaaa cgatgggtac taggtgtagg aggtatcgac cccttctgtg 780

ccggagttaa cgcaataagt accccgcctg gggagtacgt ccgcaaggat gaaactcaaa 840

ggaattgacg ggggcccgca caagcggtgg agtatgtggt ttaattcgac gcaacgcgaa 900

gaaccttacc aaggcttgac attgaatgac cgctccagag atggagcttt cccttcgggg 960

acatgaaaac aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaacccc tatcctatgt taccagcggg taatgccggg gactcatagg 1080

agactgccaa ggacaacttg gaggaaggcg gggatgacgt caagtcatca tgccccttat 1140

gtcttgggct acacacgtac tacaatggtc ggcaacagag ggaagcaaag ccgtgaggca 1200

gagcaaaccc cagaaacccg atcccagttc ggattgcagg ctgcaactcg cctgcatgaa 1260

gtcggaatcg ctagtaatcg caggtcagca tactgcggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcacacca cgaaagttgg taacacccga agccggtggg gtaaccgtaa 1380

ggagccagcc gtctaaggtg gggccgatga ttggggtgaa gtcgtaacaa ggtagccgta 1440

tcggaaggt 1449

<210> 1464
<211> 1610
<212> DNA
<213> Phascolarctobacterium succinatutens

<400> 1464
gacgaacgct ggcggcatgc ctaacacatg caagtcgaac ggagaaagtt caacaccaag 60

tatttcatcc gctgaagtgt agcggtaaaa attgcgaagc aatttttact acgcattaaa 120

agcatgaact aacacggtgg ttgaagtatt aggtgttgaa ctttcttagt ggcgaacggg 180

tgagtaacgc gtgggcaacc tgccctctag atggggacaa catcccgaaa ggggtgctaa 240

taccgaatgt gacagcaatc tcgcatgagg atgctgtgaa agatggcctc tatttataag 300

ctatcgctag aggatgggcc tgcgtctgat tagctagttg gtggggtaac ggcctaccaa 360

ggcgatgatc agtagccggt ctgagaggat gaacggccac attgggactg agacacggcc 420

cagactccta cgggaggcag cagtggggaa tcttccgcaa tgggcgaaag cctgacggag 480

caatgccgcg tgagtgatga aggaattcgt tccgtaaagc tcttttgttt atgacgaatg 540

tgcagattgt aaataatgat ctgtaatgac ggtagtaaac gaataagcca cggctaacta 600

cgtgccagca gccgcggtaa tacgtaggtg gcgagcgttg tccggaatta ttgggcgtaa 660

agagcatgta ggcggttttt taagtctgga gtgaaaatgc ggggctcaac cccgtatggc 720

tctggatact ggaagacttg agtgcaggag aggaaagggg aattcccagt gtagcggtga 780

aatgcgtaga tattgggagg aacaccagtg gcgaaggcgc ctttctggac tgtgtctgac 840

gctgagatgc gaaagccagg gtagcgaacg ggattagata ccccggtagt cctggccgta 900

aacgatgggt actaggtgta ggaggtatcg accccttctg tgccggagtt aacgcaataa 960

gtaccccgcc tggggagtac gtccgcaagg atgaaactca aaggaattga cgggggcccg 1020

cacaagcggt ggagtatgtg gtttaattcg acgcaacgcg aagaacctta ccaaggcttg 1080

acattgaatg accgctccag agatggagct ttcccttcgg ggacatgaaa acaggtggtg 1140

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1200

cctatcctat gttaccagcg ggtaatgccg gggactcata ggagactgcc aaggacaact 1260

tggaggaagg cggggatgac gtcaagtcat catgcccctt atgtcttggg ctacacacgt 1320

actacaatgg tcggcaacag agggaagcaa agccgtgagg cagagcaaac cccagaaacc 1380

cgatcccagt tcggattgca ggctgcaact cgcctgcatg aagtcggaat cgctagtaat 1440

cgcaggtcag catactgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac 1500

cacgaaagtt ggtaacaccc gaagccggtg gggtaaccgt aaggagccag ccgtctaagg 1560

tggggccgat gattggggtg aagtcgtaac aaggtagccg tatcggaagg 1610

<210> 1465
<211> 1276
<212> DNA
<213> Phenylobacterium zucineum

<400> 1465
ctggcggcag gcctaataca tgcaagtcga gcgagcggcg gacgggtgag taacgcgtgg 60

gaatgtgccc tttggtacgg aacaacacag ggaaacttgt gctaataccg tatgtggaaa 120

gtcgccattg gagcagcccg cgttggatta ggtagttggt gaggtaaagg ctcaccaagc 180

cgacgatcca tagctggtct gagaggatga tcagccacac tgggactgag acacggccca 240

gactcctacg ggaggcagca gtagggaatc ttgcgcaatg ggcgaaagcc tgacgcagcc 300

atgccgcgtg aatgatgaag gtcttaggat tgtaaaattc tttcaccggg gaagatgacg 360

gtacccggag aagaagtccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg 420

ctagcgttgc tcggaattac tgggcgtaaa gggcgcgtag gcggatgttt aagtcggggg 480

tgaaagcccg gggctcaacc tcggaattgc cttcgatact ggacatcttg agtacgggag 540

aggtgagtgg aactccgagt gtagaggtga aattcgtaga tattcggaag aacaccagtg 600

gcgaaggcga ctcactggcc cgactgacgc tgaggcgcga aagcgtgggg agcaaacagg 660

attagatacc ctggtagtcc acgccgtaaa cgatgagtgc tagttgtcgg catgtcggtg 720

acgcagctaa cgcattaagc actccgcctg gggagtacgg tcgcaagatt aaaactcaag 780

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgca 840

gaaccttacc acctttttgac atgcacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 900

agatgttggg ttaagtcccg caacgagcgc aaccctcgcc attagttgcc atcatgggca 960

ctctaatggg accgccggtg gtaagccgga ggaaggtggg gatgacgtca agtcctcatg 1020

gcccttacgg ggtgggctac acacgtgcta caatggcgac cagagggttg cgatgctgcg 1080

aagcggagct aatccctgtc gtctcagttc ggatgcactc tgcaactcga gtgcagaagt 1140

cggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac 1200

acaccgcccg tcgcaccatg ggagttggct ttacccgaag gcggtcgcta ggcagccgac 1260

cacggtaggg tcagcg 1276

<210> 1466
<211> 1428
<212> DNA
<213> Photorhabdus asymbiotica

<400> 1466
acatgcaagt cgagcggtaa caggaaagtg cttgcacttt tgctgacgag cggcggacgg 60

gtgagtaatg tctggggatc tgcccgaggg cgggggataa ccactggaaa cggtggctaa 120

taccgcatga tgtcgcgaga ccaaagtggg ggacctgaaa gggcctcacg ccctcggatg 180

aacccagatg ggattagcta gtaggtaggg taatggccta cctaggcgac gatccctagc 240

tggtctgaga ggatgaccag ccacactggg actgagacac ggcccagact cctacgggag 300

gcagcagtgg ggaatattgc acaatgggcg caagcctgat gcagccatgc cgcgtgtatg 360

aagcaggcct tcgggttgta aagtactttc agcggggagg aagggtttgg cctgaagagg 420

gttaaatttt gacgttaccc gcagaagaag caccggctaa ctccgtgcca gcagccgcgg 480

taatacggag ggtgcaagcg ttaatcggaa tgactgggcg taaagcgcac gcaggcggtc 540

aattaagtta gatgtgaaat ccccgggctc aacctgggaa tggcatctaa gactggttgg 600

ctagagtctc gtagaggggg gtagaattcc atgtgtagcg gtgaaatgcg tagagatgtg 660

gaggaatacc ggtggcgaag gcggcccct ggacgaagac tgacgctcat gtgcgaaagc 720

gtggggagca aacaggatta gataccctgg tagtccacgc tgtaaacgat gtcgatttgg 780

aggttgtggc ctagagctgt ggcttccgga gctaacgcgt taaatcgacc gcctggggag 840

tacggccgca aggttaaaac tcaaatgaat tgacgggggc ccgcacaagc ggtggagcat 900

gtggtttaat tcgatgcaac gcgaagaacc ttacctactc ttgacatcca gagaagacct 960

cagagatgag gttgtgcctt cgggagctct gagacaggtg ctgcatggct gtcgtcagct 1020

cgtgttgtga aatgttgggt taagtcccgc aacgagcgca acccttatcc tttgttgcca 1080

gcacgttgag gtgggaactc aaaggagact gccggtgata aaccggagga aggtggggat 1140

gacgtcaagt catcatggcc ctgacgagta gggctacaca cgtgctacaa tggcggatac 1200

aaagtgaagc gacctcgcga gagcaagcgg aacacacaaa gtctgtcgta gtccggattg 1260

gagtctgcaa ctcgactcca tgaagtcgga atcgctagta atcgtagatc agcatgctac 1320

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatgggag tgggtggcaa 1380

aagaagtcgg tagcctaacc gcgaggggg cgctgaccac tttgtgat 1428

<210> 1467
<211> 1501
<212> DNA
<213> Pigmentiphaga daeguensis

<400> 1467
ctggctcaga ttgaacgcta gcggcatgcc ttacacatgc aagtcgaacg gcagcgcgga 60

cttcggtctg gcggcgagtg gcgaacgggt gagtaatgca tcggaacgta cccagtagcg 120

ggggataact acgcgaaagc gtagctaata ccgcatacgc cctacggggg aaaggggggg 180

atcgcaagac ctctcactat tggagcggcc gatgtcggat tagctagttg gtggggtaaa 240

ggcctaccaa ggcgacgatc cgtagctggt ttgagaggac gaccagccac actgggactg 300

agacacggcc cagactccta cgggaggcag cagtggggaa ttttggacaa tgggggcaac 360

cctgatccag ccatgccgcg tgtgcgaaga aggccttcgg gttgtaaagc acttttggcg 420

ggaaagaaac ggcgccggct aatacctggc gtaactgacg gtacccgcag aataagcacc 480

ggctaactac gtgccagcag ccgcggtaat acgtagggtg caagcgttaa tcggaattac 540

tgggcgtaaa gcgtgcgcag gcggttcgga aagaaagatg tgaaatccca gggctcaacc 600

ttggaactgc atttttaact cccgaactag agtgtgtcag agggaggtgg aattccacgt 660

gtagcagtga aatgcgtaga tatgtggagg aacaccgatg gcgaaggcag cctcctggga 720

taacactgac gctcatgcac gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 780

ccacgcccta aacgatgtca actagctgtt gggttcttcg gagcttggta gcgcagctaa 840

cgcgtgaagt tgaccgcctg gggagtacgg tcgcaagatt aaaactcaaa ggaattgacg 900

gggacccgca caagcggtgg atgatgtgga ttaattcgat gcaacgcgaa aaaccttacc 960

taccttgac atgtctggaa tcccgaagag atttgggagt gctcgaaaga gaaccggaac 1020

acaggtgctg catggccgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1080

gagcgcaacc cttgtcatta gttgctacga aagggcactc taatgagact gccggtgaca 1140

aaccggagga aggtggggat gacgtcaggt cctcatggcc cttatgggta gggcttcaca 1200

cgtcatacaa tggtcgggac agagggctgc caacccgcga gggggagcca atcccagaaa 1260

cccgatcgta gtccggattg cagtctgcaa ctcgactgca tgaagtcgga atcgctagta 1320

atcgcggatc agcatgtcgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac 1380

accatgggag tgggttctac cagaagtagg tagcctaacc gcaaggaggg cgcttaccac 1440

ggtagggttc atgactgggg tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg 1500

g 1501

<210> 1468

<211> 1506
<212> DNA
<213> Planomicrobium koreense

<400> 1468
gacgaacgct ggcggcatgc ctaatacatg caagtcgagc ggaacgttgg gagcttgctc 60

ccttcgttta gcggcggacg ggtgagtaac acgtgggcaa cctgccctgc agatcgggat 120

aactccggga aaccggtgct aataccgaat agtttttgc ccctcctggg gcggaacgga 180

aagacggttt cggctgtcac tgcaggatgg gcccgcggcg cattagctag ttggtggggt 240

aacggcccac caaggcgacg atgcgtagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttccg caatggacga 360

aagtctgacg gagcaatgcc gcgtgagtga cgaaggtttt cggatcgtaa aactctgttg 420

taagggaaga acaagtacca agtaactact ggtaccttga cggtacctta ccagaaagcc 480

acggctaact acgtgccagc agccgcggta atacgtaggt ggcaagcgtt gtccggaatt 540

attgggcgta aagcgcgcgc aggcggtccc ttaagtctga tgtgaaagcc cacggctcaa 600

ccgtggaggg tcattggaaa ctgggggact tgagtgcaga agaggaaagt ggaattccat 660

gtgtagcggt gaaatgcgta gagatgtgga ggaacaccag tggcgaaggc gactttctgg 720

tctgtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 780

gtccacgccg taaacgatga gtgctaagtg ttaggggtt tccgcccctt agtgctgcag 840

ctaacgcatt aagcactccg cctggggagt acggccgcaa ggctgaaact caaaggaatt 900

gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct 960

taccaggtct tgacatcccg ctgaccgcct aggagactag gctttccctt cggggacagc 1020

ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 1080

caacgagcgc aacccttgat cttagttgcc agcattcagt tgggcactct aaggtgactg 1140

ccggtgacaa accggaggaa ggtggggatg acgtcaaatc atcatgcccc ttatgacctg 1200

ggctacacac gtgctacaat ggacggtaca aagggctgca aacccgcgag ggggagccaa 1260

tcccagaaaa ccgttctcag ttcggattgc aggctgcaac tcgcctgcat gaagccggaa 1320

tcgctagtaa tcgtggatca gcatgccacg gtgaatacgt tcccgggcct tgtacacacc 1380

gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt gaggtaacca cttgtggagc 1440

cagccgccga aggtgggaca gatgattggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

aggtgc 1506

<210> 1469
<211> 1499
<212> DNA
<213> Plesiomonas shigelloides

<400> 1469
gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc aagtcgagcg 60

gtaacacaga ggagcttgct ccttgggtga cgagcggcgg acgggtgagt aatgcctggg 120

gatctgcccg atagaggggg ataactacgg gaaactgtag ctaataccgc ataatgtcta 180

cggaccaaag tgggggcttt cggacctcat gctatcggat gaacccaggt gggattagct 240

agttggtgag gtaatggctc accaaggcga cgatctctaa ctggtttgag agaatgacca 300

gtcacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt gaagaaggcc ttcgggttgt 420

aaagcacttt cagcggggag gaagggtcac tagttaatac ctagtggcat tgacgttact 480

cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga gggtgcaagc 540

gttaatcgga attactgggc gtaaagcgca cgcaggcggt ttgttaagtc agatgtgaaa 600

tccccgagct caacttggga actgcatttg aaactggcaa gctagagtct tgtagagggg 660

ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa 720

ggcggccccc tggacaaaga ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt 780

agataccctg gtagtccacg ctgtaaacga tgtcgatttg gaggttgtgc ccttgaggcg 840

tggcttccgg agctaacgcg ttaaatcgac cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa 960

cgcgaagaac cttacctact cttgacatcc acagaacttt ccagagatgg attggtgcct 1020

tcgggaactc tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg 1080

ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcgattcgg tcgggaactc 1140

aaaggagact gccggtgata aaccggagga aggtggggat gacgtcaagt catcatggcc 1200

cttacgagta gggctacaca cgtgctacaa tggcatatac aaagggcggc aagctagcga 1260

tagtgagcga atcccataaa gtatgtcgta gtccggattg gagtctgcaa ctcgactcca 1320

tgaagtcgga atcgctagta atcgcggatc agaatgccgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcac accatgggag tgggttgcaa aagaagtagg tagcttaacc 1440

ttcgggaggg cgcttaccac tttgtgattc atgactgggg tgaagtcgta acaaggtaa 1499

<210> 1470
<211> 1296
<212> DNA
<213> Porphyromonadaceae bacterium NML 060648

<400> 1470
caggcttaac acatgcaagt cgagggaccg gcgcacgggt gagtaacgcg tatgcaacct 60

acctatcaga ggggaataac ccggcgaaag tcggactaat accgcataaa taaagtcgct 120

gatagatggg catgcgttcc attaggtagt tggtgaggta acggctcacc aagccgacga 180

tggatagggg aactgagagg ttggtccccc acactggtac tgagacacgg accagactcc 240

tacgggaggc agcagtgagg aatattggtc aatgggcggg agcctgaacc agccaagtcg 300

cgtgaaggaa gaaggattat ggttcgtaaa cttcttttgc aggggaatat gtatgtaccc 360

tgagaataag gatcggctaa ctccgtgcca gcagccgcgg taatacggag gatccgagcg 420

ttatccggat ttattgggtt taaagggtgc gtaggtggtt tgataagtca gcggtgaaag 480

tttgcagctt aactgtaaaa atgccgttga aactgtcgga cttgagtgta aatgaggtag 540

gcggaatgcg tggtgtagcg gtgaaatgca tagatatcac gcagaactcc gattgcgaag 600

gcagcttact aagctaactg acactgaagc acgaaagcgt ggggatcaaa caggattaga 660

taccctggta gtccacgcag taaacgatga ttactagctg tttgcgagta agcggcacag 720

cgaaagcgtt aagtaatcca cctggggagt acgccggcaa cggtgaaact caaaggaatt 780

gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg cgaggaacct 840

tacccgggtt tgaacgtacg aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt 900

cggcttaagt gccataacga gcgcaaccct tatttycagt tactaacagc tgaggactct 960

ggagagactg ccagcgtaag ctggaggaag gtggggatga cgtcaaatca gcacggccct 1020

tacatccggg gcgacacacg tgttacaatg gtaagcaaag ggcagctacc gggcgaccgg 1080

atgcgaatct ctcttatctc agttcggacg gagtctgcaa ctcgactccg gaagctggat 1140

tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc ttgtacacac 1200

cgcccgtcaa gccatgggag ccgggggtac ctgaagttcg tatcgaccta gggtaaaact 1260

ggtgactggg gctaagtcgt aacaaggtag ccgtac 1296

<210> 1471
<211> 1531
<212> DNA
<213> Porphyromonas asaccharolytica

<400> 1471
acaatggaga gtttgactct ggctcaggat gaacgctagc gataggctta acacatgcaa 60

gtcgaggggc agcgagatgt agcaatacgt cgtcggcgac cggcgaatgg gtgagtaaca 120

cgtatgcaac ttacctctta gtggtgaata acccgatgaa agtcggacta atacaccata 180

tactccttag atcccatgag aagaggagga aagattaatc gctaagagat gggcctgcgt 240

tccattagct agttggtaag gtaacggctt accaaggcaa cgatggatag ggggactgag 300

aggttgaccc cccacattga cactgagata cgggtcaaac tcctacggga ggcagcagtg 360

aggaatattg gtcaatgggc gagagcctga accagccaag tcgcgtgaag gaagactgcc 420

cgcaagggtt gtaaacttct tttgtatggg attaaagtca cctacgtgta ggtgtttgca 480

gttaccatac gaataagcat cggctaactc cgtgccagca gccgcggtaa tacggaggat 540

gcgagcgtta tccggaatta ttgggtttaa agggtgcgta ggttgcaagg gaagtcaggg 600

gtgaaaagct gtagctcaac tatggtcttg cctttgaaac tctctagcta gagtgtactg 660

gaggtacgtg gaacgtgtgg tgtagcggtg aaatgcatag atatcacaca gaactccgat 720

tgcgcaggca gcgtactaca ttacaactga cactgaagca cgaaagcgtg ggtatccaac 780

aggattagat accctggtag tccacgcagt aaacgatgaa tactagatct atgcgatata 840

cagtatgggt ctaagcgaaa gcgataagta ttccacctgg ggagtacgcc ggcaacggtg 900

aaactcaaag agattggcgg gggtccgcac aagcggagga acatgtggtt taattcgatg 960

atacgcgagg aaccttaccc gggattgaaa tgtagatgca tgaggctgag aggtctcttc 1020

ccttcggggc ttctatgtag gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtcg 1080

gcttaagtgc cataacgagc gcaacccgcg tcgatagtta ctaacgagtc aagtcgagga 1140

ctctatcgag acagccgtcg taagacgtga ggaaggagcg gatgacgtca aatcagcacg 1200

gcccttacat ccggggcgac acacgtgtta caatggtagg gacagcgagc agccatctgg 1260

tgacagagag ctaatctata aaccctatcc cagttcggat cggagtctgc aactcgactc 1320

tgtgaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1380

accttgcaca caccgcccgt caagccatgg gagtcggggg tacctgaaga gcgtgaccgt 1440

cacaggagcg cttgagggta aaactggtga ctggggctaa gtcgtaacaa ggtagccgta 1500

ccggaaggtg cggctggaac acctcctttc t 1531

<210> 1472
<211> 1533
<212> DNA
<213> Porphyromonas endodontalis

<400> 1472
acaatggaga gtttgatcct ggctcaggat gaacgctagc gataggctta acacatgcaa 60

gtcgaggggc agcattattt tagcttgcta agatagatgg cgaccggcgc acgggtgcgt 120

aacgcgtatg caacctgcct gtaattaggg aataacccgg tgaaagtcgg actaataccc 180

tatattcttc tttctccgca tggaggagga cggaaagatt tattgattac agatgggcat 240

gcgtcccatt agctggttgg taaggtaacg gcttaccaag gcaacgatgg gtaggggac 300

tgagaggttg acccccccaca ctggtactga gacacggacc agactcctac gggaggcagc 360

agtgaggaat attggtcaat gggcgagagc ctgaaccagc caagtcgcgt gaaggacgac 420

ggttctatgg attgtaaact tcttttgtag aggaataatg gcagctacgt gtagctgaga 480

tgcatgtact ctacgaataa gtatcggcta actccgtgcc agcagccgcg gtaatacgga 540

ggatacgagc gttatccgga attattgggt ttaaagggtg cgtaggtggc gtattaagtc 600

agtggtgaaa agctgcagct caactgtagt cttgccgttg aaactgatat gctagagagg 660

agacgaggta tgcggaatgt gtggtgtagc ggtgaaatgc atagatatca cacagaacgc 720

cgattgcgaa ggcagcgtac caggctccgt ctgacactga agcacgaaag cgtggggatc 780

aaacaggatt agataccctg gtagtccacg cagtaaacga tgaatactag atttttgcga 840

tatactgtaa gagtctaagc gaaagcgata agtattccac ctggggagta cgccggcaac 900

ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc 960

gatgatacgc gaggaacctt acccgggatt gaaatttaga tgatggcaga tgagagtttg 1020

ctttccttcg ggacatctaa gtaggtgctg catggttgtc gtcagctcgt gccgtgaggt 1080

gtcggcttaa gtgccataac gagcgcaacc cgcgtcgata gttactaaca ggttatgctg 1140

aggactctat cgagacagcc gtcgtaagac gcgaggaagg ggcggatgac gtcaaatcag 1200

cacggccctt acatccgggg cgacacacgt gttacaatgg cagggacaaa gggaagcgac 1260

atggtgacat gaagcggatc tccaaaccct gtcccagttc ggatcggagt ctgcaactcg 1320

actccgtgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcaagcc atggaagttg ggagtacctg aagagcgtaa 1440

ccgcaagggg cgcttaaggg taataccagt gactggggct aagtcgtaac aaggtagccg 1500

taccggaagg tgcggctgga atacctcctt tct 1533

<210> 1473
<211> 1475
<212> DNA
<213> Porphyromonas gingivalis

<400> 1473
acagtggaga gtttgatcct ggctcaggat gaacgctagc gataggctta acacatgcaa 60

gtcgaggggc agcatgatct tagcttgcta aggttgatgg cgaccggcgc acgggtgcgt 120

aacgcgtatg caacttgcct tacagagggg gataacccgt tgaaagacgg actaaaaccg 180

catacacttg tattattgca tgatattaca aggaaatatt tatagctgta agataggcat 240

gcgtcccatt agcttgttgg tgaggtaacg gctcaccaag gcgacgatgg gtaggggaac 300

tgagaggttt atcccccaca ctggtactga gacacggacc agactcctac gggaggcagc 360

agtgaggaat attggtcaat gggcgagagc ctgaaccagc caagtcgcgt gaaggaagac 420

agtcctaagg attgtaaact tcttttatac gggaataacg ggcgatacga gtattgcatt 480

gaatgtaccg taagaataag catcggctaa ctccgtgcca gcagccgcgg taatacggag 540

gatgcgagcg ttatccggat ttattgggtt taaagggtgc gtaggttgtt cggtaagtca 600

gcggtgaaac ctgagcgctc aacgttcagc ctgccgttga aactgccggg cttgagttca 660

gtggcggcag gcggaattcg tggtgtagcg gtgaaatgca tagatatcac gaggaactcc 720

gattgcgaag gcagcttgcc atactgcgac tgacactgaa gcacgaaggc gtgggtatca 780

aacaggatta gataccctgg tagtccacgc agtaaacgat gattactagg agtttgcgat 840

ataccgtcaa gcttccacag cgaaagcgtt aagtaatcca cctggggagt acgccggcaa 900

cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt 960

cgatgatacg cgaggaacct tacccgggat tgaaatgtag atgacggatg gtgaaaaccg 1020

tcttcccttc ggggcttcta tgtaggtgct gcatggttgt cgtcagctcg tgccgtgagg 1080

tgtcggctta agtgccataa cgagcgcaac ccacatcggt agttactaac agttttcgct 1140

gaggactcta ccgagactgc cgtcgtaagg cgtgaggaag gtgtggatga cgtcaaatca 1200

gcacggccct tacatccggg gcgacacacg tgttacaatg ggagggacaa agggcagcta 1260

ccgggcgacc ggatgcgaat ctctaaaccc ttccccagtt cggatcggag tctgcaactc 1320

gactccgtga agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcaagc catgggagtc gggggtacct gaagggcgta 1440

accgcaaggg gcgcactagg gtaataccgg tgact 1475

<210> 1474
<211> 1476
<212> DNA
<213> Porphyromonas levii

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (49)..(49)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (341)..(341)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (541)..(541)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (645)..(645)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (811)..(811)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (963)..(963)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (973)..(974)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1021)..(1023)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1116)..(1116)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1293)..(1293)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1448)..(1448)
<223> a, c, t, g, unknown or other

<400> 1474

acaatggaga gtttgatcct ggctcaggat naacgctagc gataggctna acacatgcaa 60

gtcgaggggt aacatgggag tagcttgctg cttctgatga cgaccggcgg atgggtgagt 120

aacgcgtatg caacttgcct cttagtgggg aataacccgg agaaatccgg actaataccg 180

catacactta gttatccgca tggatgatta aggaaagatt tattgctaag agataggcat 240

gcgttccatt agttagttgg tgaggtaacg gctcaccaag gcatcgatgg ataggggagc 300

tgagaggctt atcccccaca ttgggactga gacacggccc naactcctac gggaggcagc 360

agtgaggaat attggtcaat ggaggaaact ctgaaccagc caagtcgcgt gaaggatgac 420

tgtcctatgg attgtaaact tctttagtag gcgagtaaac gtaggtacga gtacctacct 480

gcaagtagcc taagaataag tatcggctaa ctccgtgcca gcagccgcgg taatacggag 540

natacgagcg ttatccggat ttattgggtt taaagggtgc gtaggtggca gattaagtca 600

gtggtgaaaa gctgtggctc aaccatagtc ttgccgttga aactngtttg cttgagtaca 660

gttgatgtag gcggaatgcg tagtgtagcg gtgaaatgca tagatattac gcagaactcc 720

gattgcgaag gcagcttaca aaagtgtaac tgacactgat gcacgaaagc gtgggtatca 780

aacaggatta gataccctgg tagtccacgc ngtaaactat gattactcag agtatgcgat 840

ataatgtatg ctctcaagcg aaagcattaa gtaatccacc tggggagtac gtcggcaacg 900

atgaaactca aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg 960

atnatacgcg agnnacctta cctgggattg aaatgtatag gacaggggat ggaaacattc 1020

nnnttctctt cggagactta tatgtaggtg ctgcatggtt gtcgtcagct cgtgccgtga 1080

ggtgtcggct taagtgccat aacgagcgca accctnatcg ttagttacta gcaggtagtg 1140

ctgaggactc tagcgagact gccgtcgtaa gacgagagga aggtggggat gacgtcaaat 1200

cagcacggcc cttatatcca gggcgacaca cgtgttacaa tggtgaggac aaagggtagc 1260

tacctggtga caggatgcca atctccaaac ctnatctcag ttcggatcga agtctgcaac 1320

tcgacttcgt gaagctggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcaa gccatgggag ctgggggtac ctgaagtacg 1440

tgaccgcnag gagcgtccga gggtaagacc ggtgac 1476

<210> 1475
<211> 1473
<212> DNA
<213> Porphyromonas macacae

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (49)..(49)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (174)..(174)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (392)..(392)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (440)..(440)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (455)..(455)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (475)..(475)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (507)..(507)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (530)..(530)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (544)..(544)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1318)..(1318)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1408)..(1408)
<223> a, c, t, g, unknown or other

<400> 1475
acagagaaga gtttgatcct ggctcaggat naacgctagc gataggctna acacatgcaa 60

gtcgaggggc agcatggtct tagcttgcta agattgatgg cgaccggcgc acgggtgcgt 120

aacgcgtatg taacttgcct gatagaaagg gataacccgg tgaaagtcgg actnatacct 180

tatggtcttg ggttattgca tgatgattca agtaaagatt aattgctatc agataggcat 240

gcgttccatt agttggttgg tgaggtaacg gctcaccaag gctacgatgg ataggggaat 300

gagaggttta tcccccacac tggtactgag acacggacca gactcctacg ggaggcagca 360

gtgaggaata ttggtcaatg ggcgagagcc tnaaccagcc acgtcgcgtg aaggaagacg 420

gttctatgga ttgtaaactn cttttatagg ggatnaagtt atccacgtgt ggatntttgc 480

aagtacccta tgaataagca tcggctnact ccgtgccagc agccgcggtn atacggagga 540

tgcnagcgtt atccggattt attgggttta aagggtgcgt aggtggcctg ataagtcggg 600

ggtgaaaagc tgtggctcaa ccacagtctt gccttcgaaa ctgtttggct tgagtataga 660

tgaagtaggc ggaatttgtg gtgtagcggt gaaatgcata gatatcacga ggaactccga 720

ttgcgaaggc agcttactaa gttatgactg acactgaagc acgaaagcgt gggtatcaaa 780

caggattaga taccctggta gtccacgcag taaacgatga taactgggcg tatgcgatat 840

acagtatgct cctgagcgaa agcgttaagt tatccacctg gggagtacgc cggcaacggt 900

gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat 960

gatacgcgag gaaccttacc cgggattgaa atttagcgga ctatgtatga aagtacatat 1020

cctgtcacaa ggccgctaag taggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg 1080

tcggcttaag tgccataacg agcgcaaccc acgttgtcag ttactatcgg gtaaagccga 1140

ggactctgac aagactgccg tcgtaaggcg cgaggaaggt gtggatgacg tcaaatcagc 1200

acggccctta catccggggc gacacacgtg ttacaatggt ggggacaaag ggcagctact 1260

tggtgacaag atgcgaatct ccaaacccca tcccagttcg gatcgtagtc tgcaactnga 1320

ctatgtgaag ctggattcgc tagtaatcgc gcatcagcca tggcgcggtg aatacgttcc 1380

cgggccttgt acacaccgcc cgtcaagnca tgggagtcgg gagtacctaa agcacgtaac 1440

cgcgaggggc gtgtcagggt aataccggtg act 1473

<210> 1476
<211> 1486
<212> DNA
<213> Porphyromonas somerae

<400> 1476
tggctcagga tgaacgctag cgataggctt aacacatgca agtcgagggg taacatggag 60

agaagcttgc ttcactctga tgacgaccgg cggatgggtg agtaacgcgt atgcaacttg 120

cctcttagtg ggggataacc cggagaaatc cggactaata ccgcatattc ttaatttctc 180

gcatgagtta ttaaggaaag atttattgct aagagatagg catgcgttcc attagttagt 240

tggtgaggta acggctcacc aaggcatcga tggatagggg agctgagagg ctgatccccc 300

acattgggac tgagacacgg cccaaactcc tacgggaggc agcagtgagg aatattggtc 360

aatggaggaa actctgaacc agccaagtcg cgtgaaggat gacggtccta tggattgtaa 420

acttctttag taggtgagta aggataggta cgtgtaccta ttagaaagta gcctaagaat 480

aagtatcggc taactccgtg ccagcagccg cggtaatacg gaggatacga gcgttatccg 540

gatttattgg gtttaaaggg tgcgtaggtg gctgattaag tcagtggtga aaagctatgg 600

ctcaaccata gtcttgccgt tgatactggt tagcttgagt gtagatgatg taggcggaat 660

gcgtagtgta gcggtgaaat gcatagatat tacgcagaac tccgattgcg aaggcagctt 720

acaaaactac tactgacact gaggcacgaa agcgtgggta tcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac tatgattact cagagtatgc gatatacagt atgctctcaa 840

gcgaaagcat taagtaatcc acctggggag tacgtcggca acgatgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac gcgaggaacc 960

ttacctggga ttgaaatgta taggctggca actggaaaca gatgctgttc acttcggtga 1020

cttatatgta ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc ggcttaagtg 1080

ccataacgag cgcaaccctt atcgttagtt gctaacaggt taagctgagg actctggcga 1140

gactgccgtc gtaaggcgag aggaaggtgg ggatgacgtc aaatcagcac ggcccttata 1200

tccagggcga cacacgtgtt acaatggtga ggacaaaggg tagctacctg gtgacaggat 1260

gccaatctcc aaacctcatc tcagttcgga tcgaagtctg caactcgact tcgtgaagct 1320

ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg ggccttgtac 1380

acaccgcccg tcaagccatg gaagctgggg gtacctgaag tgcgtgaccg cgaggagcgt 1440

ccgagggtaa gaccggtgac tggggctaag tcgtaacaag gtaacc 1486

<210> 1477
<211> 1482
<212> DNA
<213> Porphyromonas sp. UQD 301

<400> 1477
gctcaggatg aacgctagcg ataggcttaa cacatgcaag tcgaggggca gcatggtctt 60

agcttgctaa gactgatggc gaccggcgca cgggtgcgta acgcgtatgc aacttgcctt 120

acagaggggg ataacccgtt gaaagacgga ctaacaccgc atatgctcag gggtctgcat 180

gggcctttga ggaaatattt atagctgtaa gataggcatg cgtcccatta gcttgttggt 240

gaggtaacgg ctcaccaagg caacgatggg taggggaact gagaggttta tcccccacac 300

tggtactgag acacggacca gactcctacg ggaggcagca gtgaggaata ttggtcaatg 360

ggcgagagcc tgaaccagcc aagtcgcgtg aaggatgaag gccctatggg tcgtaaactt 420

cttttatacg ggaataacga gccttacggg tagggcgctg aatgtaccgt aggaataagc 480

atcggctaac tccgtgccag cagccgcggt aatacggagg atgcgagcgt tatccggatt 540

tattgggttt aaagggtgcg taggttgctt ggtaagtcag cggtgaaaac tgaacgctca 600

acgttcagcg tgccgttgaa actgtcaggc ttgagtgcag tggcggcagg cggaattcgt 660

ggtgtagcgg tgaaatgcat agatatcacg aggaactccg attgcgaagg cagcttgcca 720

tactgtaact gacactgaag cacgaaggcg tgggtatcaa acaggattag ataccctggt 780

agtccacgca gtaaacgatg attactagga gtttgcgata taccgataag cttccacagc 840

gaaagcgtta agtaatccac ctggggagta cgccggcaac ggtgaaactc aaaggaattg 900

acgggggccc gcacaagcgg aggaacatgt ggtttaattc gatgatacgc gaggaacctt 960

acccgggatt gaaatgtaga tgacagatgg tgaaagccgt tcttccttcg ggacatctat 1020

gtaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa gtgccataac 1080

gagcgcaacc cacattggta gttactaaca ggtcaagctg aggactctac cgagactgcc 1140

gtcgtaaggc gcgaggaagg tgtggatgac gtcaaatcag cacggccctt acatccgggg 1200

cgacacacgt gttacaatgg gagggacaaa gggcagctac cgggcgaccg gatgcgaatc 1260

tcgaaaccct tccccagttc ggatcggagt ctgcaactcg actccgtgaa gctggattcg 1320

ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcaagcc atgggagtcg ggggtacctg aaggacgtaa ccgcaagggg cgtactaggg 1440

taataccggt gactggggct aagtcgtaac aaggtaaccg ta 1482

<210> 1478
<211> 1509
<212> DNA
<213> Porphyromonas sp. oral clone BB134

<400> 1478
gagagtttga ttctggctca ggatgaacgc tagcgatagg cttaacacat gcaagtcgag 60

gggcagcatt attttagctt gctaagatag atggcgaccg gcgcacgggt gcgtaacgcg 120

tatgcaacct gcctgtaatt agggaataac ccggtgaaag tcggactaat accctatatt 180

cttctttttc cgcatgggga aagacggaaa gatttattga ttacagatgg gcatgcgtcc 240

cattagctcg ttggtaaggt aacggcttac caaggcaacg atgggtaggg ggactgagag 300

gttgaccccc cacactggta ctgagacacg gaccagactc ctacgggagg cagcagtgag 360

gaatattggt caatgggcga gagcctgaac cagccaagtc gcgtgaagga cgacggttct 420

atggattgta aacttctttt gtagaggaat aatggcagct acgcgtagct gagatgcatg 480

tactctacga ataagtatcg gctaactccg tgccagcagc cgcggtaata cggaggatac 540

gagcgttatc cggaattatt gggtttaaag ggtgcgtagg tggcgtatta agtcagtggt 600

gaaaagctgc agctcaactg tagtcttgcc gttgaaactg atatgctaga gaggagacga 660

ggtatgcgga atgtgtggtg tagcggtgaa atgcatagat atcacacaga acgccgattg 720

cgaaggcagc gtaccaggct ccgtctgaca ctgaagcacg aaagcgtggg gatcaaacag 780

gattagatac cctggtagtc cacgcagtaa acgatgaata ctagattttt gcgatatagt 840

gtaagagtct aagcgaaagc gataagtatt ccacctgggg agtacgccgg caacggtgaa 900

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 960

acgcgaggaa ccttacccgg gattgaaatt tagatggtgg cagatgagag tttgctttcc 1020

ttcgggacat ctaagtaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aacccgcgtc gatagttact aacaggttaa gctgaggact 1140

ctatcgagac agccgtcgta agacgtgagg aaggggcgga tgacgtcaaa tcagcacggc 1200

ccttacatcc ggggcgacac acgtgttaca atggcaggga caaagggaag cgacatggtg 1260

acatgaagcg gatctccaaa ccctgtccca gttcggatcg gagtctgcaa ctcgactccg 1320

tgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatggaa gttgggagta cctgaagagc gtaaccggaa 1440

ggggcgctta agggtaatac cagtgactgg ggctaagtcg taacaaggta gccgtaccgg 1500

aaggtgcgg 1509

<210> 1479
<211> 1465
<212> DNA
<213> Porphyromonas sp. oral clone F016

<220>
<221> modified_base
<222> (629)..(629)
<223> a, c, t, g, unknown or other

<400> 1479
cctggctcag gatgaacgct agcgataggc ttaacacatg caagtcgagg ggcagcatta 60

ttttagcttg ctaagataga tggcgaccgg cgcacgggtg cgtaacgcgt atgcaacctg 120

cctgtaatta gggaataacc cggtgaaagt cggactaata ccctatattc atcgttaacc 180

gcatggttgg tgatggaaag atttattgat tacagatggg catgcgtccc attagctagt 240

tggtaaggta acggcttacc aaggcaacga tgggtagggg gactgagagg ttgacccccc 300

acactggtac tgagacacgg accagactcc tacgggaggc agcagtgagg aatattggtc 360

aatgggcgga agcctgaacc agccaagtcg cgtgaaggaa gacggttcta tggattgtaa 420

acttcttttg tagaggaata atggcagcta cgtgtagctg agatgcatgt actctacgaa 480

taagtatcgg ctaactccgt gccagcagcc gcggtaatac ggaggatacg agcgttatcc 540

ggaattattg ggtttaaagg gtgcgtaggt ggcgtattaa gtcagtggtg aaaagctgca 600

gctcaactgt agtcttgccg ttgaaactna tatgctagag aggagacgag gtatgcggaa 660

tgtgtggtgt agcggtgaaa tgcatagata tcacacagaa cgccgattgc gaaggcagcg 720

taccaggctc cgtctgacac tgaagcacga aagcgtgggg atcaaacagg attagatacc 780

ctggtagtcc acgcagtaaa cgatgaatac tagatttttg cgatatacag taagagtcta 840

agcgaaagcg ataagtattc cacctgggga gtacgccggc aacggtgaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata cgcgaggaac 960

cttacccggg attgaaattt agatggcggc agatgagagt ttgctttcct tcgggacatc 1020

taagtaagtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcggct taagtgccat 1080

aacgagcgca acccgcgttg atagttacta acaggttaag ctgaggactc tatcgagaca 1140

gccgtcgtaa gacgagagga aggggcggat gacgtcaaat cagcacggcc cttacatccg 1200

gggcgacaca cgtgttacaa tggcagggac aaagggaagc gacatggtga catgaagcgg 1260

atctccaaac cctgtcccag ttcggatcgg agtctgcaac tcgactccgt gaagctggat 1320

tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcaa gccatggaag ttgggagtac ctgaagagcg taaccgcaag gggcgcttaa 1440

gggtaatacc agtgactggg gctaa 1465

<210> 1480
<211> 1286
<212> DNA

<213> Porphyromonas sp. oral clone P2PB_52 P1

<220>
<221> modified_base
<222> (1230)..(1230)
<223> a, c, t, g, unknown or other

<400> 1480
gatgaacgct agcgataggc ttaacacatg caagtcgagg gaccggcgca cgggtgcgta 60

acgcgtatgc aacctgcctg taattaggga ataacccggt gaaagtcgga ctaataccct 120

atattgaaag ttgattacag atgggcatgc gtcccattag ctagttggta aggtaacggc 180

ttaccaaggc aacgatgggt agggggactg agaggttgac cccccacact ggtactgaga 240

cacggaccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcgagagcct 300

gaaccagcca agtcgcgtga aggacgacgg tttatggatt gtaaacttct tttgtagagg 360

aatatgcatg tactctacga ataagtatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggatac gagcgttatc cggaattatt gggtttaaag ggtgcgtagg tggcatatta 480

agtcagtggt gaaaagctgc agctcaactg tagtcttgcc gttgaaactg atatgctaga 540

gaggagacga ggtatgcgga atgtgtggtg tagcggtgaa atgcatagat atcacacaga 600

acgccgattg cgaaggcagc gtaccaggct ctctgacact gaagcacgaa agcgtgggga 660

tcaaacagga ttagataccc tggtagtcca cgcagtaaac gatgaatact agatttttgc 720

gtgtaagagt ctaagcgaaa gcgataagta ttccacctgg ggagtacgcc ggcaacggtg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggattgaaa ttagtaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcggct taagtgccat aacgagcgca acccgcgtcg atagttacta 960

acagctgagg actctatcga gacagccgtc gtaagacgga ggaaggggcg gatgacgtca 1020

aatcagcacg gcccttacat ccggggcgac acacgtgtta caatggcagg caaagggaag 1080

cgacatggtg acatgaagcg gatctcccct gtcccagttc ggacggagtc tgcaactcga 1140

ctccggaagc tggattcgct agtaatcgcg catcagccat ggcgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccan ggagttggga gtacctgaag agcgtagcgc 1260

ttaagggtaa taccagtgac tggggc 1286

<210> 1481
<211> 1285
<212> DNA
<213> Porphyromonas sp. oral clone P4GB_100 P2

<400> 1481
gatgaacgct agcgataggc ttaacacatg caagtcgagg gaccggcgca cgggtgcgta 60

acgcgtatgc aacctgcctg taattaggga ataacccggt gaaagtcgga ctaataccct 120

atattgaaag ttgattacag atgggcatgc gtcccattag ctggctggta aggtaacggc 180

ttaccaaggc aacgatgggt agggggactg agaggttgac ctcccacact ggtactgaga 240

cacggaccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcgagagcct 300

gaaccagcca agtcgcgtga aggacgacgg tttatggatt gtaaacttct tttgtagagg 360

aatatgcatg tactctacga ataagtatcg gctaactccg tgccagcagc cgcggtaata 420

cggaggatac gagcgttatc cggaattatt gggtttaaag ggtgcgtagg tggcgtatta 480

agtcagtggt gaaaagctgc agctcaactg tagtcttgcc gttgaaactg atatgctaga 540

gaggagacga ggtatgcgga atgtgtggtg tagcggtgaa atgcatagat atcacacaga 600

acgccgattg cgaaggcagc gtaccaggct ctctgacact gaagcacgaa agcgtgggga 660

tcaaacagga ttagataccc tggtagtcca cgtagtaaac gatgaatact agatttttgc 720

gtgtaagagt ctaagcgaaa gcgataagta ttccacctgg ggagtacgcc ggcaacggtg 780

aaactcaaag gaattgaggg ggcccgcaca agcggaggaa catgtggttt aattcgatga 840

tacgcgagga acttaccggg gattgaattt agtaggtgct gcatggttgt cgtcagctcg 900

tgccgtgagg tgtcggctta agtgccataa cgagcgcaac ccgcgtcgat agttactaac 960

agctgaggac tctatcgaga cagccgtcgt aagacggagg aaggggcgga tgacgtcaaa 1020

tcagcacggc ccttacatcc ggggcgacac acgtgttaca atggcaggca aagggaagcg 1080

acatggtgac atgaagcgga tctcccctgt cccagttcgg acggagtctg caactcgact 1140

ccggaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt caagccatgg gagtcggggg tacctgaagg gcgtagcgca 1260

ctagggtaat accggtgact ggggc 1285

<210> 1482
<211> 1532
<212> DNA
<213> Porphyromonas uenonis

<400> 1482
acaatggaga gtttgactct ggctcaggat gaacgctagc gataggctta acacatgcaa 60

gtcgaggggc agcgagatgt agcaatacgt cgtcggcgac cggcgaatgg gtgagtaaca 120

cgtatgcaac ttacctctta gtggtgaata actcgatgaa agtcggacta atacaccata 180

ctctccttag atcacatgag aagaggagga aagattaatc gctaagagat aggcctgcgt 240

tccattagct agttggtaag gtaacggctt accaaggcaa cgatggatag ggggactgag 300

aggttgaccc cccacattga cactgagata cgggtcaaac tcctacggga ggcagcagtg 360

aggaatattg gtcaatgggc gagagcctga accagccaag tcgcgtgaag gaagactgcc 420

cgcaagggtt gtaaacttct tttgtatggg attaaagtcg tctacgtgta gacgtttgca 480

gttaccatac gaataagcat cggctaactc cgtgccagca gccgcggtaa tacggaggat 540

gcgagcgtta tccggaatta ttgggtttaa agggtgcgta ggttgcaagg gaagtcaggg 600

gtgaaaagct atagctcaac tatggtcttg cctttgaaac tctctagcta gagtgtactg 660

gaggtacgtg gaacgtgtgg tgtagcggtg aaatgcatag atatcacaca gaactccgat 720

tgcgcaggca gcgtactaca ttacaactga cactgaagca cgaaagcgtg ggtatcaaac 780

aggattagat accctggtag tccacgcagt aaacgatgaa tactagatct atgcgatatg 840

acagtatggg tctaagcgaa agcgataagt attccacctg gggagtacgc cggcaacggt 900

gaaactcaaa gagattggcg ggggtccgca caagcggagg aacatgtggt ttaattcgat 960

gatacgcgag gaaccttacc cgggattgaa atgtagatgc atgaggctga gaggtctctt 1020

cccttcgggg cttctatgta ggtgctgcat ggttgtcgtc agctcgtgcc gtgaggtgtc 1080

ggcttaagtg ccataacgag cgcaacccgc gtcgatagtt actaacgagt taagtcgagg 1140

actctatcga gacagccgtc gtaagacgag aggaaggagc ggatgacgtc aaatcagcac 1200

ggcccttaca tccggggcga cacacgtgtt acaatggtag ggacagcgag cagccatctg 1260

gcgacagaga gctaatctat aaaccctatc ccagttcgga tcggagtctg caactcgact 1320

ctgtgaagct ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa tacgttcccg 1380

gaccttgcac acaccgcccg tcaagccatg ggagtcgggg gtacctgaag agcgtgaccg 1440

tcacaggagc gcttgagggt aaaactggtg actggggcta agtcgtaaca aggtagccgt 1500

accggaaggt gcggctggaa cacctccttt ct 1532

<210> 1483
<211> 1495
<212> DNA
<213> Prevotella albensis

<400> 1483
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggaaacgaca gagagtgctt gcacactttg ggcgtcgacc ggcgaatggg tgagtaacgc 120

gtatccaacc tgcccttgac agagggatag cccagtgaaa actgaattaa tacctcatgt 180

cctcctccga cggcatcaga cgaggagtaa agatttatcg gtcaaggatg gggatgcgtc 240

tgattaggta gtaggcgggg taacggccca cctagccgac gatcagtagg ggttctgaga 300

ggaaggtccc ccacattggt actgagacac ggaccaaact cctacgggag gcagcagtga 360

ggaatattgg tcaatgggcg gaagcctgaa ccagccaagt agcgtgcagg acgacggccc 420

tatgggttgt aaactgcttt tataggggaa taaagttatc cacgtgtgga tatttgcatg 480

taccctatga ataaggaccg gctaattccg tgccagcagc cgcggtaata cggaaggtcc 540

gggcgttatc cggatttatt gggtttaaag ggagcgtagg cggtatatta agcgtgttgt 600

gaaatgtagg tgctcaacat ctgacttgca gcgcgaactg gtttacttga gtacgcacaa 660

cgtaggcgga attcgtcgtg tagcggtgaa atgcttagat atgacgaaga actccgattg 720

cgaaggcagc ttacgggagc gccactgacg ctgaagctcg aaagtgcggg tatcgaacag 780

gattagatac cctggtagtc cgcacggtaa acgatggatg cccgctctga gtccttttgg 840

atttggggcc aagcgaaagc attaagcatc ccacctgggg agtacgccgg caacggtgaa 900

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 960

acgcgaggaa ccttacccgg gcttgaattg caggagaacg atccagagat ggtgaggccc 1020

ttcggggctc ctgtgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aacccctctc cttagttgcc atcaggtaat gctgggcact 1140

ctggggacac tgccaccgta aggtgtgagg aaggtgggga tgacgtcaaa tcagcacggc 1200

ccttacgtcc ggggctacac acgtgttaca atggcgtgta cagagagttg gtgacatgca 1260

aatgtcatct aatcctaaaa gcacgtctca gttcggactg gggtctgcaa cccgacccca 1320

cgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc gtgaccggaa 1440

ggatcggcct agggcaaaac tggtaattgg ggctaagtcg taacaaggta gccgt 1495

<210> 1484
<211> 1491
<212> DNA
<213> Prevotella amnii

<400> 1484
agagtttgat cctggctcag gatgaacgct agctataggc ttaacacatg caagtcgagg 60

ggcagcatat agattgcttg caatttatga tggcgaccgg cgcacgggtg agtaacgcgt 120

atccaaccta cccattacta gggaataacc cagcgaaagt tggcctaatg ccctatgtag 180

tcgtttgatc gcctgagatt tcgacgaaag atttatcggt attggatggg gatgcgtctg 240

attagcttgt tggcggggta aaggcccacc aaggcgacga tcagtagggg ttctgagagg 300

aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg 360

aatattggtc aatgggcgag agcctgaacc agccaagtag cgtgcaggat gacggcccta 420

tgggttgtaa actgctttta tatgggaata aagtgaggga cgtgtccctt attgcatgta 480

ccatatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg gaaggtccag 540

gcgttatccg gatttattgg gtttaaaggg agcgtaggct gtttgttaag cgtgttgtga 600

aatgtaagag ctcaactttt agattgcagc gcgaactggc agacttgagt gcgcacaacg 660

taggcggaat tcatggtgta gcggtgaaat gcttagatat catgacgaac tccgattgcg 720

aaggcagctt acgggagcgc aactgacgct aaagctcgaa ggtgcgggta tcgaacagga 780

ttagataccc tggtagtccg cacagtaaac gatggatgcc cgctgttagc acctagtgtt 840

agcggctaag cgaaagcatt aagcatccca cctggggagt acgccggcaa cggtgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg 960

cgaggaacct tacccgggct tgaattgcag atgtttatat cagagatgat atattccctt 1020

cggggcattt gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt 1080

aagtgccata acgagcgcaa ccccttttt tagttgccat caggtagtgc tgggcactct 1140

agagatactg ccaccgtaag gtgtgaggaa ggtggggatg acgtcaaatc agcacggccc 1200

ttacgtccgg ggctacacac gtgttacaat gggtggtaca gagagttggt tgtacgcaag 1260

tgcgatctaa tcctaaaaac cattctcagt tcggactggg gtctgcaacc cgaccccacg 1320

aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaag ccatgaaagc cgggggtgcc tgaagttcgt gaccgtaagg 1440

atcgacctag ggcaaaactg gtaattgggg ctaagtcgta acaaggtaac c 1491

<210> 1485
<211> 1537
<212> DNA
<213> Prevotella bergensis

<400> 1485
ttacaatgga gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gaaacggcat ttggtgcttg caccatttgg acgtcgaccg gcgcacgggt 120

gagtaacgcg tatccaacct gcccataagt agggtataac ccgcagaaat gcggactaat 180

cccctatgtt gttcaaagac ggcatcagat ttgaaccaaa ggcttgccgc ttatggatgg 240

ggatgcgtcc gattagcttg ttggtgaggt aacggctcac caaggcttcg atcggtaggg 300

gttctgagag gaaggccccc cacataggaa ctgagacacg gtcctaactc ctacgggagg 360

cagcagtgag gaatattggt caatgggcga gagcctgaac cagccaagta gcgtgcagga 420

cgacggccct atgggttgta aactgctttt atgcggggat aaccggcctc acgtgtgagg 480

ccctgcaggt accgcatgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac 540

ggaaggtccg ggcgttatcc ggatttattg ggtttaaagg gagcgtaggc cgtgggttaa 600

gtgtgttgtg aaatccggtt gctcaacatc cggtttgcag cgcatactgt cccacttgag 660

tgcgcacaac gcaggcggaa ttcgtcgtgt agcggtgaaa tgcttagata tgacgaggaa 720

ccccgattgc gaaggcagct tgcgggagcg caactgacgc ttaagctcga aggtgcgggt 780

atcaaacagg attagatacc ctggtagtcc gcacggtaaa cgatggatgc ccgctgtttg 840

ccctttttgg gcatgcggcc aagcgaaagc attaagcatc ccacctgggg agtacgccgg 900

caacggtgaa actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta 960

attcgatgat acgcgaggaa ccttacccgg gcttgaactg ccagtgaacg atacagagat 1020

gttgaggccc ttcggggcgc tggtggaggt gctgcatggt tgtcgtcagc tcgtgccgtg 1080

aggtgtcggc ttaagtgcca taacgagcgc aacccttttc cacagttgcc atcaggtcat 1140

gctgggcact ctgtggatac tgccgccgca aggtgtgagg aaggtgggga tgacgtcaaa 1200

tcagcacggc ccttacgtcc ggggctacac acgtgttaca atgggggggca cagcgtgccg 1260

tacgtgcgca agcacgttcc aatcatgaaa tccccccctca gttcggactg gggtctgcaa 1320

cccgacccca cgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc 1440

gtaaccgcaa ggggcggcct agggcaagac cggtgattgg ggctaagtcg taacaaggta 1500

gccgtaccgg aaggtgcggc tggaacacct cctttct 1537

<210> 1486
<211> 1533
<212> DNA

<213> Prevotella bivia

<400> 1486
ttacaatgga gagtttgatc ctggctcagg atgaacgcta gctataggct taacacatgc 60

aagtcgaggg gcagcgaata gatagcttgc tatttatgtc ggcgaccggc gcacgggtga 120

gtaacgcgta tccaacctac ccataactaa gggataaccc agcgaaagtt ggactaatac 180

cttatgtatt cgtttgatct catgagatta cgaataaaga tttatcggtt atggatgggg 240

atgcgtctga ttagcttgtt ggcggggtaa cggcccacca aggcaacgat cagtaggggt 300

tctgagagga aggtccccca cattggaact gagacacggt ccaaactcct acgggaggca 360

gcagtgagga atattggtca atggacgcaa gtctgaacca gccaagtagc gtgcaggatg 420

acggccctat gggttgtaaa ctgcttttat atggggataa agtggggaac gtgttccctt 480

ttgcaggtac catatgaata aggaccggct aattccgtgc cagcagccgc ggtaatacgg 540

aaggttcggg cgttatccgg atttattggg tttaaaggga gcgtaggccg tttggtaagc 600

gtgttgtgaa atgtagtagc tcaacttcta gattgcagcg cgaactgtca gacttgagtg 660

cgcacaacgt aggcggaatt catggtgtag cggtgaaatg cttagatatc atgaagaact 720

ccgattgcga aggcagctta cgggagcgca actgacgctg aagctcgaag gtgcgggtat 780

cgaacaggat tagataccct ggtagtccgc acagtaaacg atggatgccc gctgttagca 840

cctagtgtta gcggctaagc gaaagcatta agcatcccac ctggggagta cgccggcaac 900

ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc 960

gatgatacgc gaggaacctt acccgggctt gaattgcaga tgaacgattt agagataatg 1020

aggtccttcg ggacatctgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt 1080

gtcggcttaa gtgccataac gagcgcaacc cctttcttta gttgccatca ggttctgctg 1140

ggcactctgg agatactgcc accgtaaggt gtgaggaagg tggggatgac gtcaaatcag 1200

cacggccctt acgtccgggg ctacacacgt gttacaatgg gtggtacaga tagttggtcg 1260

tgtgcaaata cgatctaatc cttaaaacca ttctcagttc ggactggggt ctgcaacccg 1320

accccacgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcaagcc atgaaagccg ggggtgcctg aagttcgtga 1440

ccgtaaggat cgacctaggg caaaactggt aattggggct aagtcgtaac aaggtagccg 1500

taccggaagg tgcggctgga acacctcctt tct 1533

<210> 1487
<211> 1493
<212> DNA
<213> Prevotella brevis

<400> 1487
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcatcattt cgaaagcttg cttttgaaga tggcgaccgg cgcacgggtg agtaacgcgt 120

atccaacctt ccccttagta gggcatagcc cggcgaaagt cggattaata ccctatgttc 180

tttayggatg gcatctgaaa taaagcaaag atttatcgct aagggatggg gatgcgtctg 240

attaggttgt tggcggggta acggcccacc aagcctacga tcagtagggg ttctgagagg 300

aaggtccccc acattggtac tgagacacgg accaaactcc tacgggaggc agcagtgagg 360

aatattggtc aatgggcgag agcctgaacc agccaagtag cgtgcaggat gacggcccta 420

tgggttgtaa actgcttttg tcaggggata aaaaagrraa cgtgttyyct attgcatgta 480

cctgaagaat aaggaccggc taattccgtg ccagcagccg cggtaatacg gaaggtccag 540

gcgttatccg gatttattgg gtttaaaggg agcgcaggct ggagattaag cgtgacgtga 600

aatgccgcgg ctcaaccgtg gaagtgcgtc gcgaactggt ttccttgagt gtattcgacg 660

tcagcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac tccgattgcg 720

aaggcagctg gcgaggctat aactgacgct aaagctcgaa ggtgcgggta tcgaacagga 780

ttagataccc tggtagtccg cacggtaaac gatggatgcc cgctgttggc gatatacggt 840

cagcggccaa gcgaaagcgt taagcatccc acctggggag tacgccggca acggtgaaac 900

tcaaaggawt tgacsggggc ccgcacaagc ggasgaacat gtggtttaat tcgatgatac 960

gcgaggaacc ttacccgggc ttgaactgca ggcgaacgat tcagagatga tgaggccctt 1020

cggggcgcct gtggakgtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt 1080

aagtgccata acgagcgcaa cccctctctt cagttgccat caggtgawgc tgggcactct 1140

ggagacactg ccaccgtaag gtgtgaggaa ggtggggatg acgtcaaatc agcacggccc 1200

ttacgtccgg ggctacacac gtgttacaat gggaggtaca gagagacggt gtcyygcaar 1260

rtgcatcaaa tccttaaagc cttcctcagt tcggattggg gtctgcaacc cgaccccatg 1320

aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaag ccatgaaagc cgggggcgct tgaagtccgt gaccgcaagg 1440

atcggcctag agcgaaactg gtaattgggg ctaagtcgta acaaggtagc cgt 1493

<210> 1488
<211> 1537
<212> DNA
<213> Prevotella buccae

<400> 1488
ttacaatgga gagtttgatc ctggctcagg atgaacgctg gctacaggct taacacatgc 60

aagtcgaggg gcagcatgcc ggttgcttgc aaccggtgat ggcgaccggc gcacgggtga 120

gtaacgcgta tccaaccttc ccgcgaccaa gggataacct gccgaaaggc agactaatac 180

cttatgtcct cctttgaagg catctgacga ggagcaaaga tccgtcggtc acggatgggg 240

atgcgtccga ttagcttgtt ggcggggcaa cggcccacca aggcatcgat cggtaggggt 300

tctgagagga aggcccccca cactggaact gagacacggt ccagactcct acgggaggca 360

gcagtgagga atattggtca atgggcggaa gcctgaacca gccaagtagc gtgcaggacg 420

acggccctac gggttgtaaa ctgcttttat gcggggataa agttgcccac gcgtgggttt 480

ttgcaggtac cgcatgaata aggaccggct aattccgtgc cagcagccgc ggtaatacgg 540

aaggtccggg cgttatccgg atttattggg tttaaaggga gcgcaggccg ccgtgcaagc 600

gtgccgtgaa aagcagcggc ccaaccgctg ccctgcggcg cgaactgctt ggcttgagtg 660

cgccggaagc gggcggaatt cgtggtgtag cggtgaaatg cttagatatc acgaagaacc 720

ccgattgcga aggcagcccg ctgtggcgcc actgacgctg aggctcgaag gtgcgggtat 780

cgaacaggat tagataccct ggtagtccgc acggtaaacg atggataccc gctgtccggc 840

ccgtacggtc tgggcggcca agcgaaagcg ttaagtatcc cacctgggga gtacgccggc 900

aacggtgaaa ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa 960

ttcgatgata cgcgaggaac cttacccggg cttgaattgc aggagaatga ttcagagatg 1020

atgaagtccc tcgggactcc tgtgaaggtg ctgcatggtt gtcgtcagct cgtgccgtga 1080

ggtgtcggct caagtgccat aacgagcgca acccctctcc gcagttgcca tcgggtgatg 1140

ccgggcactc tgcggacact gccgccgcaa ggtgcgagga aggtggggat gacgtcaaat 1200

cagcacggcc cttacgtccg gggccacaca cgtgttacaa tggccggtac agagggctgt 1260

ccgcgcgcaa gtgcgggtga atcccctaaa tccggtccca gttcggactg gggtctgcaa 1320

cccgacccca cgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc 1440

gtgaccgcga gggtcggcct agggcaaaac cggtgattgg ggctaagtcg taacaaggta 1500

gccgtaccgg aaggtgcggc tggaacacct cctttct 1537

<210> 1489
<211> 1264
<212> DNA
<213> Prevotella buccalis

<400> 1489
ggctcaggat gaacgctagc tacaggctta acacatgcaa gtcgcaggac tggcgcacgg 60

gtgagtaacg cgtatccaac cttcccatga ccacgggata acccgttgaa agacggacta 120

ataccgtatg actaaagcgg tgatggatgg ggatgcgtct gattagcttg ttggcggggt 180

aacggcccac caaggcgacg atcagtaggg gttctgagag gaaggtcccc cacattggaa 240

ctgagacacg gtccaaactc ctacgggagg cagcagtgag gaatattggt caatgggcga 300

gagcctgaac cagccaagta gcgtgcagga tgacggccta tgggttgtaa actgctttta 360

tgcggggata tgcaggtacc gcatgaataa ggaccggcta attccgtgcc agcagccgcg 420

gtaatacgga aggtccgggc gttatccgga tttattgggt ttaaagggag cgtaggccgc 480

caggtaagcg tgttgtgaaa tgtaccggct caaccggtga attgcagcgc gaactgtctg 540

gcttgagtgc acggtaagca ggcggaattc atggtgtagc ggtgaaatgc ttagatatca 600

tgaagaactc cgattgcgaa ggcagcttgc tgcagtgact gacgctgatg ctcgaaggtg 660

cgggtatcaa acaggattag ataccctggt agtccgcacg gtaaacgatg gatgcccgct 720

gtccgccggc gggtggccaa gcgaaagcgt taagcatccc acctggggag tacgccggca 780

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 840

tcgatgatac gcgaggaacc ttacccgggc ttgaactgtg gaggtgctgc atggttgtcg 900

tcagctcgtg ccgtgaggtg tcggcttaag tgccataacg agcgcaaccc ctttttcag 960

ttgccatcag ctgggcactc tggagatact gccaccgcaa ggtggaggaa ggtggggatg 1020

acgtcaaatc agcacggccc ttacgtccgg ggctacacac gtgttacaat ggggcacaga 1080

gtgttggctt aacgcaagtt tggtctaatc ttctgtctcc cagttcggat ggggtctgca 1140

acccgacccc agaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac 1200

gttcccrggc cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc 1260

gtag 1264

<210> 1490
<211> 862
<212> DNA
<213> Prevotella copri

<220>
<221> modified_base
<222> (185)..(185)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (637)..(637)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (836)..(836)
<223> a, c, t, g, unknown or other

<400> 1490
cgtatccaac ctgcccacca cttggggata accttgcgaa agtaagacta atacccaatg 60

acgtctctag aagacatctg aaagagatta aagatttatc ggtgatggat ggggatgcgt 120

ctgattagct tgttggcggg gtaacggccc accaaggcaa cgatcagtag gggttctgag 180

agganggtcc cccacattgg aactgagaca cggtccaaac tcctacggga ggcagcagtg 240

aggaatattg gtcaatggac gagagcctga accagccaag tagcgtgcag gatgacggcc 300

ctatgggttg taaactgctt ttataaggga ataaagtgag tctcgtgaga ctttttgcat 360

gtaccttatg aataaggacc ggctaattcc gtgccagcag ccgcggtaat acggaaggtc 420

cgggcgttat ccggatttat tgggtttaaa gggagcgtag gccggagatt aagcgtgttg 480

tgaaatgtag acgctcaacg tctgcactgc agcgcgaact ggtttccttg agtacgcaca 540

aagtgggcgg aattcgtggt gtagcggtga aatgcttaga tatcacgaag aactccgatt 600

gcgaaggcag ctcactggag cgcaactgac gctgaanctc gaaagtgcgg gtatcgaaca 660

ggattagata ccctggtagt ccgcacggta aacgatggat gcccgctgtt ggtctgaata 720

ggtcagcggc caagcgaaag cattaagcat cccacctggg gagtacgccg gcaacggtga 780

aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcnatga 840

tacgcgagga accttacccg gg 862

<210> 1491
<211> 1473
<212> DNA
<213> Prevotella corporis

<220>
<221> modified_base
<222> (32)..(32)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (444)..(444)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (480)..(480)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (879)..(879)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1024)..(1024)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1114)..(1115)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1420)..(1420)
<223> a, c, t, g, unknown or other

<400> 1491
tacaatggag agtttgatcc tggctcagga tnaacgctag ctacaggctt aacacatgca 60

agtcgagggg aaacggcatt aagtgcttgc acttttgga cgtcgaccgg cgcacgggtg 120

agtaacgcgt atccaacctg ccccttacca gggaataacc cgttgaaaga cggactaatg 180

ccctatggag tcctttgacg gcatcagatt aggactaaag attcatcggt atgggatggg 240

gatgcgtctg attagcttgt tggcggggta acggcccacc aaggcatcga tcagtagggg 300

ttctgagagg aaggtccccc acataggaac tgagacacgg tcctaactcc tacgggaggc 360

agcagtgagg aatattggtc aatgggcgct agcctgaacc agccaagtag cgtgcaggat 420

gacggcccta tgggttgtaa actncttta tgcggggata aagtcaccca cgtgtgggtn 480

tttgcaggta ccgcatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg 540

gaaggtccgg gcgttatccg gatttattgg gtttaaaggg agtgtaggcg gcctgttaag 600

cgtgttgtga aatgtagatg ctcaacatct gaactgcagc gcgaactggc tggcttgagt 660

acacgcaacg tgggcggaat tcatggtgta gcggtgaaat gcttagatat catgaggaac 720

tcctattgcg aaggcagctc acgggagtgt cactgacgct taagctcgaa ggtgcgggta 780

tcaaacagga ttagataccc tggtagtccg cacggtaaac gatggatgcc cgctgttggc 840

gctttgcgtc agcggctaag cgaaagcatt aagcatccna cctggggagt acgccggcaa 900

cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt 960

cgatgatacg cgaggaacct tacccgggct tgaattgcag aggaaagatc cagagatggt 1020

gatnccccttc ggggtctctg tgaaggtgct gcatggttgt cgtcagctcg tgccgtgagg 1080

tgtcggctta agtgccataa cgagcgcaac cccnntttcc ggttgccatc aggtgatgct 1140

gggcactccg gggacactgc caccgtaagg tgtgaggaag gtggggatga cgtcaaatca 1200

gcacggccct tacgtccggg gctacacacg tgttacaatg gccggtacag agggcaggtg 1260

caatgcaaat tgcatcaaat ctataaatcc ggtctcagtt cggactgggg tctgcaaccc 1320

gaccccacga agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcaagc catgaaagcn gggggtgcct gaagttcgta 1440

accgcaagga gcgacctagg gcaaaactgg tga 1473

<210> 1492
<211> 1483
<212> DNA
<213> Prevotella dentalis

<400> 1492
tggctcagga tgaacgctgg ctacaggctt aacacatgca agtcgagggg cagcatggcg 60

gatgcttgca tctgccgatg gcgaccggcg cacgggtgag taacgcgtat ccaacctacc 120

ttcaagcagg ggacaatccg tagaaatgcg gtctgatacc ctatgtattc caacgaggtc 180

ctccgtgttg gaagaaaggt ttatccgctt gttgatgggg atgcgtccga ttagcttgtt 240

ggcggggcaa cggcccacca aggcaacgat cggtaggggt tctgagagga aggtccccca 300

cactggaact gagacacggt ccagactcct acgggaggca gcagtgagga atattggtca 360

atgggcgtaa gcctgaacca gccaagtagc gtgcaggatg acggccctat gggttgtaaa 420

ctgcttttat acggggataa agtgcgccac gtgtggtgtt ttgcaggtac cgtatgaata 480

aggaccggct aattccgtgc cagcagccgc ggtaatacgg aaggtccggg cgttatccgg 540

atttattggg tttaaaggga gcgtaggccg catgtcaagc gtgttgtgaa atgcaggtgc 600

tcaacacctg gattgcagcg cgaactgtcg tgcttgagtg tgcgcaacgt tggcggaatt 660

cgtcgtgtag cggtgaaatg cttagatatg acgaggaacc ccgattgcga aggcagctga 720

cgggagcata actgacgctg aagctcgaag gtgcgggtat cgaacaggat tagataccct 780

ggtagtccgc acggtaaacg atggatgccc gccgtccgcc cttttattgg gcgtgtggcc 840

aagcgaaagc attaagcatc ccacctgggg agtacgccgg caacggtgaa actcaaagga 900

attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat acgcgaggaa 960

ccttacccgg gcttgaattg cagaggaacg atccagagat ggtgaggccc ttcggggctt 1020

ctgcgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc tcaagtgcca 1080

taacgagcgc aacccctctc cgcagttgcc atcgggtcat gccgggcact ctgtggacac 1140

tgccgccgca aggtgtgagg aaggtgggga tgacgtcaaa tcagcacggc ccttacgtcc 1200

ggggctacac acgtgttaca atgggggggca cagcaagccg gccgcgtgca aacgcggtcc 1260

aatcctgaaa tccccccctca gttcggactg gggtctgcaa cccgacccca cgaagctgga 1320

ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc gtgaccggaa ggatcggcct 1440

agggcaaaac tggtgattgg ggctaagtcg taacaaggta acc 1483

<210> 1493
<211> 1535
<212> DNA
<213> Prevotella denticola

<400> 1493
ttacagtgga gagtttgatc ctggctcagg atgaacgctg gctacaggct taacacatgc 60

aagtcgaggg gaaacggcat tgagtgcttg cactgaatgg acgtcgaccg gcgcacgggt 120

gagtaacgcg tatccaacct tcccgttact gcgggataac ctgccgaaag gcagactaat 180

accgcatgtt cttcgatgac ggcatcagat tcgaagcaaa gatccgtcgg taacggaggg 240

ggatgcgtct gattagctag ttggcggggc gacggcccac caaggcgacg atcagtaggg 300

gttctgagag gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg 360

cagcagtgag gaatattggt caatgggcgg aagcctgaac cagccaagta gcgtgcagga 420

tgacggccct acgggttgta aactgctttt atgcggggat aaagtgaggg acgcgtccct 480

ttttgcaggt accgcatgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac 540

ggaaggtccg ggcgttatcc ggatttattg ggtttaaagg gagcgtaggc cggggattaa 600

gtgtgttgtg aaatgtaggc gcccaacgtc tgacttgcag cgcatactgg ttcccttgag 660

tacgcgcaac gccggcggaa ttcgtcgtgt agcggtgaaa tgcttagata tgacgaagaa 720

ccccgattgc gaaggcagcc ggcgggagcg caactgacgc tgaagctcga aggtgcgggt 780

atcgaacagg attagatacc ctggtagtcc gcacggtaaa cgatggatgc ccgctgtcgg 840

cgccttgcgc cggcggccaa gcgaaagcgt taagcatccc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttgaatcgca ggagaacgat acagagatgt 1020

tgaggtcctt cgggactcct gcgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag 1080

gtgtcggctt aagtgccata acgagcgcaa cccctctccc cagttgccat cgggtgatgc 1140

cgggcactcc ggggacactg ccgccgcaag gtgcgaggaa ggcggggatg acgtcaaatc 1200

agcacggccc ttacgtccgg ggctacacac gtgttacaat ggccggcaca gagtgccggt 1260

gcggcgcgag ccgcatccaa tcttgaaaac cggtctcagt tcggactggg gtctgcaacc 1320

cgaccccacg aagctggatt cgctagtaat cgcgcatcag ccacggcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc cgggagtgcc tgaagtccgt 1440

gaccgcgagg atcggcctag ggcaaaactg gtgattgggg ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gaacacctcc tttct 1535

<210> 1494
<211> 1535
<212> DNA
<213> Prevotella disiens

<400> 1494
ttacaatgga gagtttgatc ctggctcagg atgaacgcta gctataggct taacacatgc 60

aagtcgaggg gaaacggcag agagtgcttg cacactttgg acgtcgaccg gcgcacgggt 120

gagtaacgcg tatccaacct gcccttttact tggggataac ccgttgaaag acggactaat 180

acccaatgat attcattgat gacatctgat ttgaattaaa gatttatcgg tataggatgg 240

ggatgcgtct gattagcttg ttggtgaggt aacggctcac caaggccacg atcagtaggg 300

gttctgagag gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg 360

cagcagtgag gaatattggt caatggacga gagtctgaac cagccaagta gcgtgcagga 420

tgacggccct atgggttgta aactgctttt gtttgggaat aatcgacatt acgtgtaatg 480

ttttgcatgt accattcgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac 540

ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg gagtgtaggc ggttggttaa 600

gcgtgttgtg aaatgtagat gctcaacatc tgacttgcag cgcgaactgg ctgacttgag 660

tacacacaac gtaggcggaa ttcatggtgt agcggtgaaa tgcttagata tcatgaagaa 720

ctccgattgc gaaggcagct tacgggagtg ttactgacgc ttaagctcga aggtgcgggt 780

atcgaacagg attagatacc ctggtagtcc gcacagtaaa cgatggatgc ccgctgttag 840

cacctggtgt tagcggctaa gcgaaagcat taagcatccc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttgaattgta ggagcacgat acagagatgt 1020

tgaggtcctt cgggactcct atgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag 1080

gtgtcggctt aagtgccata acgagcgcaa ccccttcct tagttgccat caggtaatgc 1140

tgggcactct gaggatactg ccaccgtaag gtgtgaggaa ggtggggatg acgtcaaatc 1200

agcacggccc ttacgtccgg ggctacacac gtgttacaat ggccggtaca gaatgttggt 1260

tgcatgtaaa tgtaatctaa tctttaaagc cggtcccagt tcggactgag gtctgcaacc 1320

cgacctcacg aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc cgggggtgcc tgaagttcgt 1440

aaccgcaagg agcgacctag ggcaaaactg gtaattgggg ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gaacacctcc tttct 1535

<210> 1495
<211> 1310
<212> DNA
<213> Prevotella genomosp. C1

<400> 1495
gatgaacgct agctacaggc ttaacacatg caagtcgcgg gaccggcgca cgggtgagta 60

acgcgtatcc aacctgccct tcaccacggg ataacccggc gaaagtcgga ctaataccgt 120

atgttgaaag gcggtgaggg atggggatgc gtccgattag cttgacggcg gggtaacggc 180

ccaccgtggc gacgatcggt aggggttctg agaggaaggt cccccacact ggaactgaga 240

cacggtccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcggaagcct 300

gaaccagcca agtagcgtgc aggatgacgg cctatgggtt gtaaactgct tttatgcggg 360

gatatgcagg taccgcatga ataaggaccg gctaattccg tgccagcagc cgcggtaata 420

cggaaggtcc gggcgttatc cggatttatt gggtttaaag ggagcgtagg ccgcccctta 480

agcgtgttgt gaaatgcggg tgctcaacat ccgacttgca gcgcgaactg gggggcttga 540

gtgcgccgaa agtaggcgga attcgtggtg tagcggtgaa atgcttagat atcacgaaga 600

actccgattg cgaaggcagc ttactgtagt gactgacgct gatgctcgaa agcgtgggta 660

tcgaacagga ttagataccc tggtagtcca cgcggtaaac gatggatgct cgttgtcggc 720

cggtcggtga ccaagcgaaa gcgttaagca tcccacctgg ggagtacgcc ggcaacggtg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggcttgaac tgcggaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcggct taagtgccat aacgagcgca acccccgtct tcagttgcca 960

tcggccgggc actctggaga tactgccacc gcaaggtgga ggaaggtggg gatgacgtca 1020

aatcagcacg gcccttacgt ccggggctac acacgtgtta caatggcgca cagagagtcg 1080

gtggcatgcg agtgccatcc aatcctttgc gtctcagttc ggatggggtc tgcaacccga 1140

ccccagaagc tggattcgct agtaatcgcg catcagccat ggcgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccat gaaagccggg ggcgcctgaa gtccgtgtcg 1260

gcctagggtg aaaccggtga ttggggctaa gtcgtaacaa ggtagccgta 1310

<210> 1496
<211> 1318
<212> DNA
<213> Prevotella genomosp. C2

<400> 1496
gatgaacgct agctacaggc ttaacacatg caagtcgagg gaccggcgca cgggtgagta 60

acgcgtatcc aaccttccca taactaagga ataccccgta gaaatgcggc ctaatccctt 120

atggttaaag tcggttatgg atggggatgc gtctgattag cttgctggcg gggtaacggc 180

ccaccagggc atcgatcagt aggggttctg agaggaaggt cccccacatt ggaactgaga 240

cacggtccaa actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcgagagcct 300

gaaccagcca agtagcgtgc aggatgacgg cctatgggtt gtaaactgct ttttaagggg 360

aatatgcatg tacccttaga ataaggaccg gctaattccg tgccagcagc cgcggtaata 420

cggaaggtcc aggtgttatc cggatttatt gggtttaaag ggagcgtagg ccgcaggtta 480

agtgtgttgt gaaaagcagt cgcccaacgt ctgccttgca gcgcaaactg tcctgcttga 540

gtgcgcacaa cgcaggcgga atccgtcgtg tagcggtgaa atgcttagat atgacgaaga 600

actccgattg cgaaggcagc ttgcgggagc gactgacgct gaagctcgaa agtgcgggta 660

tcgaacagga ttagataccc tggtagtccg cacggtaaac gctggatgcc cgtttttggc 720

tagtcagaga ccaagcgaaa gcattaagca tcccacctgg ggagtacgcc ggcaacggtg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggcttgaat tgtgaaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcggct taagtgccat aacgagcgca acccctttct tcagttgcca 960

tcggccgggc actctgtaga tactgccgcc gtaaggtgga ggaaggtggg gatgacgtca 1020

aatcagcacg gcccttacgt ccggggctac acacgtgtta caatgggggg cagcgagcgg 1080

gatgccgcaa ggtcattcaa atcaaccccc ctcagttcgg atggggtctg caacccgacc 1140

ccagaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt caagccatga aagccggggg tgcctgaagt ccgttcggcc 1260

tagggcaaaa ctggtaattg gggctaagtc gtaacaaggt agccgtaccg gaaggtgc 1318

<210> 1497
<211> 1286
<212> DNA
<213> Prevotella genomosp. P7 oral clone MB2_P31

<400> 1497
gatgaacgct ggctacaggc ttaacacatg caagtcgagg gaccggcgca cgggtgagta 60

acgcgtatcc aaccttcccg tcactgcggg ataacctgcc gaaaggcaga ctaataccgc 120

atggctaaag gcggtgacgg acggggatgc gtctgattag ctggttggcg gggcgacggc 180

ccaccaaggc tacgatcagt aggggttctg agaggaaggt cccccacatt ggaactgaga 240

cacggtccaa actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcgcaagcct 300

gaaccagcca agtagcgtgc aggacgacgg cctatgggtt gtaaactgct tttgtacggg 360

gatatgcagg taccgtacga ataaggaccg gctaattccg tgccagcagc cgcggtaata 420

cggaaggtcc gggcgttatc cggatttatt gggtttaaag ggagcgtagg ccggggatta 480

agtgtgttgt gaaatgtaga cgctcaacgt ctgacttgca gcgcatactg gttcccttga 540

gtacgcacaa cgttggcgga attcgtcgtg tagcggtgaa atgcttagat atgacgaaga 600

actccgattg cgaaggcagc tgacgggggc gactgacgct taagctcgaa ggtgcgggta 660

tcgaacagga ttagataccc tgctagtccg cacggtaaac gatggatgcc cgctgttggt 720

atatcagcgg ctaagcgaaa gcattaagca tcccacctgg ggagtacgcc ggcaacggtg 780

gaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggcttgaat tgtgaaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcggct taagtgccat aacgagcgca acccctctct tcagttgcca 960

tcagctgggc actctggaga cactgccacc gtaaggtgga ggaaggtggg gatgacgtca 1020

aatcagcacg gcccttacgt ccggggctac acacgtgtta caatggccgg cagagggacg 1080

gtgcaacgca agttgcatcc aatcttgccg gtcccagttc ggatggggtc tgcaacccga 1140

ccccagaagc tggattcgct agtaatcgcg catcagccat ggcgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccat gaaagccggg ggtgcctgaa gtccgttcgg 1260

cctagggcaa aactggtgat tggggc 1286

<210> 1498
<211> 1287
<212> DNA
<213> Prevotella genomosp. P8 oral clone MB3_P13

<400> 1498
gatgaacgct ggctacaggc ttaacacatg caagtcgagg gaccggcgaa tgggtgagta 60

acgcgtatcc aacctgcccc cggccggggt ataacccgtc gaaaggcggc ctaatccccc 120

atgccgaaag ccggccgggg atggggatgc gtccgattag cttgctggcg gggtaacggc 180

ccaccagggc ttcgatcggt aggggttctg agaggaaggt cccccacact ggtactgaga 240

cacggaccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcgcaagcct 300

gaaccagcca agtagcgtgc gggatgaagg cctatgggtc gtaaaccgct ttttcacggg 360

gatatgcagg taccgtgcga ataaggaccg gctaattccg tgccagcggc cgcggtaata 420

cggaaggtcc tggcgttatc cggatttatt gggtttaaag ggagcgcagg ccgcccctta 480

agcgtgttgt gaaaaccggg cgcccaacgc ccggcgtgca gcgcgaactg gggggcttga 540

gtgcgcgcga cgccggcgga attcgtcgtg tagcggtgaa atgcttagat atgacgagga 600

accccgattg cgaaggcagc cggcgagggc gactgacgct gatgctcgaa ggcgcgggta 660

tcgaacagga ttagatacca tggtagtccg cgctgtaaac gatggatgcc cgccgccggc 720

atgtcggcgg ccaagcgaaa gcgttaagca tcccacctgg ggagtacgcc ggcaacggtg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt taattcgatg 840

atacgcgagg aaccttaccc gggcttgaac tgcggaggtg ctgcatggtt gtcgtcagct 900

cgtgccgtga ggtgtcggct caagtgccat aacgagcgca acccctctcc gcagttgcca 960

tcggccgggc actctgcgga cactgccgcc gcaaggtgga ggaaggtggg gacgacgtca 1020

aatcagcacg gcccttacgt ccggggctac acacgtgtta caatggccgg cagagagccg 1080

tccgggcgcg agcccggtcc aatccctccg gcctcagttc ggatggggtc tgcaacccga 1140

ccccagaagc tggattcgct agtaatcgcg catcagccat ggcgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcaagccat gaaagccggg ggcgcctgaa gtccgtgtcg 1260

gcctagggcg ataccggtga ttggggc 1287

<210> 1499
<211> 1282
<212> DNA
<213> Prevotella genomosp. P9 oral clone MB7_G16

<400> 1499
gatgaacgct agctacaggc ttaacacatg caagtcgagg gaccggcgca cgggtgagta 60

acgcgtatcc aaccttcccg ctgcaggggg ataacccggt gaaagccgga ctaataccgc 120

ataatcaaag cggcagcgga tggggatgcg tccgattagt tagttggtga ggtaacggct 180

caccaaggct ttgatcggta ggggttctga gaggaaggcc ccccacattg ggactgagac 240

acggcccaaa ctcctacggg aggcagcagt gaggaatatt ggtcaatggg cgcaagcctg 300

aaccagccaa gtagcgtgga ggacgactgc ctatgggttg taaactcctt ttatgcgggg 360

atatgcaggt accgcatgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac 420

ggaaggtccg ggcgttatcc ggatttattg ggtttaaagg gagcgcagac tgcttgtcaa 480

gcgtgcagtg aaacgccgtg gcccaaccac ggtcctgctg cgcgaactgg cttgcttgag 540

tgggaggtac gcggaattcg tggtgtagcg gtgaaatgct tagatatcac gaggaactcc 600

gattgtgaag gcagcgtacc atatccactg acgtttaggc tcgaaggtgc gggtatcgaa 660

caggattaga taccctggta gtccgcacag taaaccatgg atgctcgctg tcggcgtgcc 720

ggtggcctag cgaaagcgtt aagcatccca cctggggagt acgccggcaa cggtgaaact 780

caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg 840

cgaggaacct tacccgggct tgaattgtga aggtgctgca tggttgtcgt cagctcgtgc 900

cgtgaggtgt cggcttaagt gccataacga gcgcaacccc tctgcgtagt tgccatcggc 960

cgggcactct gcgcacactg ccaccgcaag gtggaggaag gtggggatga cgtcaaatca 1020

gcacggccct tacgtccggg gctacacacg tgttacaatg gcaggcagcg agtcgggagc 1080

atgcaaatgt tctccaatcc cccctgcctc agttcggatg gggtctgcaa cccgacccca 1140

gaagctggat ccgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc 1200

ttgtacacac cgcccgtcaa gccatgaaag ccgggggcgc ctgaagtccg tgtcggccta 1260

gggcgagacc ggtgattggg gc 1282

<210> 1500
<211> 1502
<212> DNA
<213> Prevotella heparinolytica

<400> 1500
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

gcagcatggg cttagcttgc taagcccgat ggcgaccggc gcacgggtga gtaacacgta 120

tccaaccttc cggtaactcc ggtatagcct ttcgaaagaa agattaatcc cggatagtat 180

ggtgattccg catggtttct ccattaaagg attccggtta ccgatgggga tgcgttccat 240

taggcagttg gcggggtaac ggcccaccaa acctacgatg gatagggggtt ctgagaggaa 300

ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag cagtgaggaa 360

tattggtcaa tgggcggaag cctgaaccag ccaagtagcg tgaaggatga ctgccctatg 420

ggttgtaaac ttcttttata agggaataat tgtgggtacg cgtacccatt tgcatgtacc 480

ttatgaataa ggatcggcta actccgtgcc agcagccgcg gtaatacgga ggatccgagc 540

gttatccgga tttattgggt ttaaagggag cgtaggcggg cgcttaagtc agctgtgaaa 600

gtttggggct caaccttaaa attgcagttg atactgggtg ccttgagtgc agtataggca 660

ggcggaattc gtggtgtagc ggtgaaatgc ttagatatca cgaagaactc ctattgcgaa 720

ggcagcttgc tggagtgtaa ctgacgctga tgctcgaaag tgtgggtatc aaacaggatt 780

agataccctg gtagtccaca cagtaaacga tgaatactcg ctgtttgcga tatactgcaa 840

gcggccaagc gaaagcgtta agtattccac ctggggagta cgccggcaac ggtgaaactc 900

aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc gatgatacgc 960

gaggaacctt acccgggctt gaattgcaac cgaattatcc ggaaacgggt aagccgcaag 1020

gcggttgtga aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt cggcttaagt 1080

gccataacga gcgcaaccct tatccacagt taccatcagg tgatgctggg gactctgtgg 1140

agactgccgt cgtaagatgc gaggaagggg gggatgacgt caaatcagca cggcccttac 1200

gtccggggct acacacgtgt tacaatgggg ggtacagcag gcagctcggc ggcgacgccc 1260

ggccaatccc taaatcccct ctcagttcgg actggagtct gcaacccgac tccacgaagc 1320

tggattcgct agtaatcgcg catcagccac ggcgcggtga atacgttccc gggccttgta 1380

cacaccgccc gtcaagccat gaaagccggg ggtacctgaa gtgcgtaacc gtccaggagc 1440

gccctagggt aaaaccggtg attggggcta agtcgtaaca aggtagccgt accggaaggt 1500

gc 1502

<210> 1501
<211> 1266
<212> DNA
<213> Prevotella histicola

<400> 1501
ggctcaggat gaacgctagc tacaggctta acacatgcaa gtcgagggac cggcgcacgg 60

gtgagtaacg cgtatccaac cttcccatga ctaagggata acctgccgaa aggcagacta 120

ataccttatr gttaaagtcg gttatggatg gggatgcgtc tgattagctt gttggcgggg 180

taacggccca ccaaggcrac gatcagtagg ggttctgaga ggaaggtccc ccacattgga 240

actgagacac ggtccaaact cctacgggag gcagcagtga ggaatattgg tcaatgggcg 300

agagcctgaa ccagccaagt agcgtgcagg atgacggcct atgggttgta aactgctttt 360

gtatggggat atgcaggtac catacgaata aggaccggct aattccgtgc cagcagccgc 420

ggtaatacgg aaggtccggg cgttatccgg atttattggg tttaaaggga gcgtaggctg 480

gagattaagt gtgttgtgaa atgtagacgc tcaacgtctg acttgcagcg catactggtt 540

tccttgagta cgcacaacgt tggcggaatt cgtcgtgtag cggtgaaatg cttagatatg 600

acgaagaact ccgattgcga aggcagctga cgggagcgac tgacgctgaa gctcgaaggt 660

gcgggtatcg aacaggatta gataccctgg tagtccgcac agtaaacgat ggatgcccgc 720

tgttggtata tcagcggcta agcgaaagca ttaagcatcc cacctgggga gtacgccggc 780

aacggtgaaa ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa 840

ttcgatgata cgcgaggaac cttacccggg cttgaattgt gaaggtgctg catggttgtc 900

gtcagctcgt gccgtgaggt gtcggcttaa gtgccataac gagcgcaacc cctgtcttta 960

gttgccatca gctgggcact ctggagatac tgccaccgta aggtggagga aggtggggat 1020

gacgtcaaat cagcacggcc cttacgtccg gggctacaca cgtgttacaa tggccggcag 1080

agggacggtg taatgtaaat tgcatccaat cttgccggtc ccagttcgga tggggtctgc 1140

aacccgaccc cagaagctgg attcgctagt aatcgcgcat cagccatggc gcggtgaata 1200

cgttcccggg ccttgtacac accgcccgtc aagccatgaa agccgggggt gcctgaagtc 1260

cgtacc 1266

<210> 1502
<211> 1364
<212> DNA
<213> Prevotella intermedia

<400> 1502
gatgaacgct agctataggc ttaacacatg caagtcgagg ggaaacggca ttatgtgctt 60

gcacattctg gacgtcgacc ggcgcacggg tgagtatcgc gtatccaacc ttccctccac 120

tcggggatac cccgttgaaa gacggcctaa tacccgatgt tgtccacata tggcatctga 180

cgtggaccaa agattcatcg gtggaggatg gggatgcgtc tgattagctt gttggtgcgg 240

gtaacggccc accaaggcga cgatcagtag gggttctgag aggaaggtcc cccacattgg 300

aactgagaca cggtccaaac tcctacggga ggcagcagtg aggaatattg gtcaatggac 360

ggaagtctga accagccaag tagcgtgcag gattgacggc cctatgggtt gtaaactgct 420

tttgttgggg agtaaagtgg ggcacgcgtg ccctttgca tttacccttc gaataaggac 480

cggctaattc cgtgccagca gccgcggtaa tacggaaggt ccaggcgtta tccggattta 540

ttgggtttaa agggagtgta ggcggtctgt taagcgtgtt gtgaaattta ggtgctcaac 600

atctaacttg cagcgcgaac tggcggactt gagtgcacgc aacgtatgcg gaattcatgg 660

tgtagcggtg aaatgcttag atatcatgac gaactccgat tgcgaaggca gcgtacggga 720

gtgttactga cgcttaagct cgaaggtgcg ggtatcgaac aggattagat accctggtag 780

tccgcacggt aaacgatgga tgcccgctgt tagcgcctgg cgttagcggc taagcgaaag 840

cattaagcat cccacctggg gagtacgccg gcaacggtga aactcaaagg aattgacggg 900

ggcccgcaca agcggaggaa catgtggttt aattcgatga tacgcgagga accttacccg 960

ggcttgaatt gcagacgcag gatacagaga tgttgactcc cttcggggcg tctgtgaagg 1020

tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg cttaagtgcc ataacgagcg 1080

caacccctttt ccttagttgc catcaggtga tgctgggcac tctggggata ctgccaccgc 1140

aaggtgtgag gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca 1200

cacgtgttac aatggccggt acagagggac ggtgcgatgc aaatcgcatc caatcttgaa 1260

agccggtccc agttcggact gaggtctgca acccgacctc acgaagctgg attcgctagt 1320

aatcgcgcat cagccatggc gcggtgaata cgttcccggg cctt 1364

<210> 1503
<211> 1200
<212> DNA
<213> Prevotella loescheii

<400> 1503
taacgcgtat ccaacctgcc cttcaccacg ggataacccg gcgaaagtcg gactaatacc 60

gtatgttgaa agcggtgarg gatggggatg cgtccgatta gctkgacggc ggggtaacgg 120

cccaccgtgg ctacgatcgg taggggttct gagaggaagg tcccccacac tggaactgag 180

acacggtcca gactcctacg ggaggcagca gtgaggaata ttggtcaatg ggcgtaagcc 240

tgaaccagcc aagtagcgtg caggatgacg gcctatgggt tgtaaactgc ttttatgcgg 300

ggatatgcag gtaccgcatg aataaggacc ggctaattcc gtgccagcag ccgcggtaat 360

acggaaggtc cgggcgttat ccggatttat tgggtttaaa gggagcgtag gccgcgcctt 420

aagcgtgttg tgaaatccgg gtgctcaaca tccggcttgc agcgcgaact ggggcgcttg 480

agtgcgcwga aagtaggcgg aattcgtggt gtagcggtga aatgcttaga tatcacgagg 540

aactccgatt gcgaaggcag cctactgtag cgactgacgc tgatgctcga aagcgtgggt 600

atcgaacagg attagatacc ctggtagtcc acgcggtaaa cgatggatgc tcgttgtcgg 660

ccggtcggtg accaagcgaa agcgttaagc atcccacctg gggagtacgc cggcaacggt 720

gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt ttaattcgat 780

gatacgcgag gaaccttacc cgggcttgaa ctgcggaggt gctgcatggt tgtcgtcagc 840

tcgtgccgtg aggtgtcggc ttaagtgcca taacgagcgc aacccccgtc ttcagttgcc 900

atcggccggg cactctggag atactgccac cgcaaggtgg aggaaggtgg ggatgacgtc 960

aaatcagcac ggcccttacg tccggggcta cacacgtgtt acaatggcgc acagagagtc 1020

ggtggcatgc gaatgccatc caatcctctg cgtctcagtt cggatggggt ctgcaacccg 1080

accccagaag ctggattcgc tagtaatcgc gcatcagcca tggcgcggtg aatacgttcc 1140

cgggccttgt acacaccgcc cgtcaagcca tgaaagccgg gggcgcctga agtccgtacc 1200

<210> 1504
<211> 1520
<212> DNA
<213> Prevotella maculosa

<400> 1504
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggaaacgatg agagagcttg ctctcttagg tgtcgaccgg cgcacgggtg agtaacgcgt 120

atccaacctg cctctgacca agggataacc cgtcgaaagt cggactaata ccttatgcag 180

tcgtcggaag tcatctgatg acgacgaaag atttcatcgg tgagggatgg ggatgcgtct 240

gattagcttg ttggcggggt aacggcccac caaggcaacg atcagtaggg gttctgagag 300

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 360

gaatattggt caatgggcgc gagcctgaac cagccaagta gcgtgcagga tgacggccct 420

atgggttgta aactgctttt atgcggggat aaagtgaggg acgtgtcctt cattgcaggt 480

accgcatgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac ggaaggtccg 540

ggcgttatcc ggatttattg ggtttaaagg gagcgtaggc cgtggattaa gcgtgttgtg 600

aaatgtagac gctcaacgtc tgacttgcag cgcgaactgg tccacttgag tgtgcacaac 660

gcaggcggaa ttcgtcgtgt agcggtgaaa tgcttagata tgacgaagaa ccccgattgc 720

gaaggcagct tgcgggagca cgactgacgc tgaagctcga aagtgcgggt atcgaacagg 780

attagatacc ctggtagtcc gcacggtaaa cgatggatgc ccgttgtcag gctgtatcag 840

tctggtgacc aagcgaaagc attaagcatc ccacctgggg agtacgccgg caacggtgaa 900

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 960

acgcgaggaa ccttacccgg gcttgaattg cagacgaacg attcagagat gaagaggccc 1020

ttcggggcgt ctgtgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aacccctatt ctcggttgcc atcgggtaat gccgggcact 1140

ccgtggagac tgccaccgta aggtgtgagg aaggtgggga cgacgtcaaa tcagcacggc 1200

ccttacgtcc ggggctacac acgtgttaca atggccggta cagcgagtcg gccgcatgca 1260

aatgcggtcc aatcctgaaa gccggtccca gttcggaccg gggtctgcaa cccgaccccg 1320

cgaagccgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc gttaccgcga 1440

gggtcggcct aaggcaaaac cggtgattgg ggctaagtcg taacaaggta gccgtaccgg 1500

aaggtgcggc tggaacacct 1520

<210> 1505
<211> 1534
<212> DNA
<213> Prevotella marshii

<400> 1505
ttacaatgta gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgcggg gcagcatggg gattgcttgc aatctctgat ggcgaccggc gcacgggtga 120

gtaacacgta tccaacctgc ctattaccac ggtataaccc gatgaaagtc ggcctaatcc 180

cgtatgtagt cttccaatgg catcagcagt agacgaaagg tttagcggta atggatgggg 240

atgcgtccga ttagctagtc ggtgaggtaa cggctcaccg aggcaacgat cggtaggggt 300

tctgagagga aggtccccca cactggaact gagacacggt ccagactcct acgggaggca 360

gcagtgagga atattggtca atgggcgaga gcctgaacca gccaagtagc gtgcaggatg 420

acggccttat gggttgtaaa ctgcttttat gcgaggataa agttacccac gtgtgggtgt 480

ttgcaggtat cgcatgaata aggaccggct aattccgtgc cagcagccgc ggtaatacgg 540

aaggttctgg cgttatccgg atttattggg tttaaaggga gcgtaggctg ttttttaagc 600

gtgttgtgaa atgtaccggc tcaaccggtg atgtgcagcg cgaactggaa gacttgagtg 660

tgttgtaagt aggcggaatt cgtggtgtag cggtgaaatg cttagatatc acgaggaact 720

ccgattgcgt aggcagctta ctgtctcact actgacgctg atgctcgaaa gcgcgggtat 780

cgaacaggat tagataccct ggtagtccgc gcggtaaacg atggatgctc gttgttggta 840

tatatatatc agtgacttag cgaaagcgtt aagcatccca cctggggagt acgccggcaa 900

cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt 960

cgatgatacg cgaggaacct tacccgggct tgaactgccg gcgaacgatt cagagatgat 1020

gaggcctttc ggggcgccgg tggaggtgct gcatggttgt cgtcagctcg tgccgtgagg 1080

tgtcggctta agtgccataa cgagcgcaac ccctttttat agttgccatc gggtaatgcc 1140

gggcactctg tagatactgc caccgtaagg tgtgaggaag gtggggatga cgtcaaatca 1200

gcacggccct tacgtccggg gctacacacg tgttacaatg gcgcatacag agagttggtt 1260

gtatgtaaat acggtctaat cttgaaagtg cgtctcagtt cggactgggg tctgcaaccc 1320

gaccccacga agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcaagc catgaaagcc gggggcgcct gaagtccgtg 1440

accgcgaggg tcggcctagg gtgaaaccgg tgattggggc taagtcgtaa caaggtagcc 1500

gtaccggaag gtgcggctgg aacacctcct ttct 1534

<210> 1506
<211> 1535
<212> DNA
<213> Prevotella melaninogenica

<400> 1506
ttacaatgga gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagttgaggg gaaacggcat tgagtgcttg cactctttgg acgtcgaccg gcgcacgggt 120

gagtaacgcg tatccaacct tcccattact gtgggataac ctgccgaaag gcagactaat 180

accgcatagt cttcgatgac ggcatcagat ttgaagtaaa gatttatcgg taatggatgg 240

ggatgcgtct gattagcttg ttggcggggt aacggcccac caaggcaacg atcagtaggg 300

gttctgagag gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg 360

cagcagtgag gaatattggt caatggacgg aagtctgaac cagccaagta gcgtgcagga 420

tgacggccct atgggttgta aactgctttt gtatggggat aaagttaggg acgtgtccct 480

atttgcaggt accatacgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac 540

ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg gagcgtaggc tggagattaa 600

gtgtgttgtg aaatgtagac gctcaacgtc tgaattgcag cgcatactgg tttccttgag 660

tacgcacaac gttggcggaa ttcgtcgtgt agcggtgaaa tgcttagata tgacgaagaa 720

ctccgattgc gaaggcagct gacgggagcg caactgacgc ttaagctcga aggtgcgggt 780

atcaaacagg attagatacc ctggtagtcc gcacagtaaa cgatggatgc ccgctgttgg 840

tacctggtat cagcggctaa gcgaaagcat taagcatccc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttgaattgca gaggaaggat ttagagataa 1020

tgacgccctt cggggtctct gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag 1080

gtgtcggctt aagtgccata acgagcgcaa cccctctctt cagttgccat caggttaagc 1140

tgggcactct ggagacactg ccaccgtaag gtgtgaggaa ggtggggatg acgtcaaatc 1200

agcacggccc ttacgtccgg ggctacacac gtgttacaat ggccggtaca gagggacggt 1260

gtaatgcaaa ttgcatccaa tcttgaaagc cggtcccagt tcggactggg gtctgcaacc 1320

cgaccccacg aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc cgggggtgcc tgaagtccgt 1440

gaccgcaagg atcggcctag ggcaaaactg gtgattgggg ctaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gaacacctcc tttct 1535

<210> 1507
<211> 1517
<212> DNA
<213> Prevotella micans

<400> 1507
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcagcataa ttattgcttg caataattga tggcgaccgg cgcacgggtg agtatcgcgt 120

atccaacttt cccataacta ggggataatc cgtcgaaagg cggtctaata ctctatgttg 180

tctatttatg gcctcatatt tagacgaaag atttatcggt tatggttagg gatgcgtccg 240

attaggtagt aggcggggta atagcccacc tagcctacga tcggtagggg ttctgcgagg 300

aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg 360

aatattggtc aatggacgcg agtctgaacc agccaagtag cgtgcaggat gacggcccta 420

tgggttgtaa actgctttta tgcgggaata aagtgattta cgtgtatatc attgcatgta 480

ccgcatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg gaaggttcgg 540

gcgttatccg gatttattgg gtttaaaggg agcgtaggct gaatattaag cgtgttgtga 600

aatgtagttg ctcaacatct gcactgcagc gcgaactggt attcttgagt gtgcgcgacg 660

taggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac tccgattgcg 720

aaggcagctt acgagagcac aactgacgct taagctcgaa ggtgcgggta tcgaacagga 780

ttagataccc tggtagtccg cacagtaaac gatggatgcc cgctattgga cttttagttc 840

agtggctaag cgaaagcgtt aagcatccca cctggggagt acgccggcaa cggtgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg 960

cgaggaacct tacccgggct tgaactgccg gtgaacgata cagagatgtt gaggcccttc 1020

ggggcgccgg tggaggtgct gcatggttgt cgtcagctcg tgccgtgagg tgtcggctta 1080

agtgccataa cgagcgcaac cccattttct agttgccatc gggtaatgcc gggcactctg 1140

gagatactgc caccgtaagg tgtgaggaag gttgggatga cgtcaaatca gcacggccct 1200

tacgtccggg gctacacacg tgttacaatg gcgcatacag agtgtcggtt gtatgtaaat 1260

gcaatccaat cttgaaagtg cgtctcagtt cggactgggg tctgcaaccc gaccccacga 1320

agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt cccgggcctt 1380

gtacacaccg cccgtcaagc catgaaagcc gggggtgcct gaagtccgtg accgcaaggg 1440

tcggcctagg gcaaaaccgg tgattggggc taagtcgtaa caaggtagcc gtaccggaag 1500

gtgcggctgg aacacct 1517

<210> 1508
<211> 1537
<212> DNA
<213> Prevotella multiformis

<400> 1508
ttacagtgga gagtttgatc ctggctcagg atgaacgctg gctacaggct taacacatgc 60

aagtcgaggg gaaacggcgt tgagtgctcg cactcttcgg acgtcgaccg gcgcacgggt 120

gagtaacgcg tatccaacct tcccgtcact gcgggataac ctgccgaaag gcagactaat 180

accgcatggc cttcactgac ggcatcagag gtgaagtaaa gctttttagc ggtgacggac 240

ggggatgcgt ctgattagct ggttggcggg gcgacggccc accaaggcta cgatcagtag 300

gggttctgag aggaaggtcc cccacattgg aactgagaca cggtccaaac tcctacggga 360

ggcagcagtg aggaatattg gtcaatgggc ggaagcctga accagccaag tagcgtgcag 420

gaggacggcc ctacgggttg taaactgctt ttatgcgggg ataaagtgag ggacgcgtcc 480

ctttttgcag gtaccgcatg aataaggacc ggctaattcc gtgccagcag ccgcggtaat 540

acggaaggtc cgggcgttat ccggatttat tgggtttaaa gggagcgtag gccggggatt 600

aagtgtgttg tgaaatgtag gcgctcaacg tctgatgtgc agcgcatact ggttcccttg 660

agtacgcgca acgccggcgg aattcgtcgt gtagcggtga aatgcttaga tatgacgaag 720

aaccccgatt gcgaaggcag ccggcgggag cgcaactgac gctgaagctc gaaggtgcgg 780

gtatcgaaca ggattagata ccctggtagt ccgcacggta aacgatggat gcccgctctc 840

ggcgcctggc gccgggggcc aagcgaaagc gttaagcatc ccacctgggg agtacgccgg 900

caacggtgaa actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta 960

attcgatgat acgcgaggaa ccttacccgg gcttgaattg caggagaacg atacagagat 1020

gttgaggtcc ttcgggactc ctgcgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg 1080

aggtgtcggc tcaagtgcca taacgagcgc aacccctctc cccagttgcc atcgggttat 1140

gccgggcact ccggggacac tgccgccgca aggtgcgagg aaggtgggga tgacgtcaaa 1200

tcagcacggc ccttacgtcc ggggctacac acgtgttaca atggccggta cagagggctg 1260

gcgctccgcg aggcgcgccg aatctataaa gccggtctca gttcggactg gggtctgcaa 1320

cccgacccca cgaagctgga ttcgctagta atcgcgcatc agccacggcg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc 1440

gtgaccgcga ggatcggcct agggcaaaac tggtgattgg ggctaagtcg taacaaggta 1500

gccgtaccgg aaggtgcggc tggaacacct cctttct 1537

<210> 1509
<211> 1516
<212> DNA
<213> Prevotella multisaccharivorax

<400> 1509
agagtttgat cctggctcag gatgaacgct agctacaggc ctaacacatg caagtcgagg 60

ggaaacgaag cgggagcttg cttctgctgt cgtcgaccgg cgcacgggtg agtaacgcgt 120

atccaacctg gcctgaggta agggataatc cgcagaaatg tggtctaata ccttatgtgc 180

tcctatgagg tcatctgaag aggagcaaag atttatcgcc ttaggatggg gatgcgtctg 240

attagatagt tggcggggca acggcccacc aagtcatcga tcagtagggg ttctgagagg 300

aaagtccccc acattggaac tgagacacgg tccagactcc tacgggaggc agcagtgagg 360

aatattggtc aatgggcgag agcctgaacc agccaagtag cgtgcaggat gacggcccta 420

tgggttgtaa actgctttta tgcgggtata aaggagcata cgtgtatgtt tttgcagtta 480

ccgcatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg gaaggttctg 540

gtgttatccg gatttattgg gtttaaaggg agcgcaggct gtcagataag cgtgttgtga 600

aatgcggttg ctcaacatcc gcactgcagc gcgaactgtt tgacttgagt acgcacgacg 660

ttggtggaat ttgccgtgta gcggtgaaat gcttagatat ggcgaagaac tccgattgcg 720

aaggcagctg acgggagcgc tactgacgct catgctcgaa agtgcgggta tcgaacagga 780

ttagataccc tggtagtccg cacggtaaac gctggatgcc cgctatatgc ccctttaggg 840

tatgtggcca agtgaaaacg ttaagcatcc cacctgggga gtacgccggc aacggtgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 960

cgcgaggaac cttacccggg cttgaattgc tgaggaaggc ttcagagatg gagctgccct 1020

tcggggcttc agtgaaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcggct 1080

taagtgccat aacgagcgca acccttttct tcagttgcca tcaggtagtg ctgggccctc 1140

tggagatact gccgccgtaa ggtgtgagga aggtggggat gacgtcaaat cagcacggcc 1200

cttacgtccg gggctacaca cgtgttacaa tgggtggtac agcgagcagg gttaccgcaa 1260

ggtatcccga atcattaaat ccgccctcag ttcggactgg ggtctgcaac ccgaccccac 1320

gaagctggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcaa gccatgaaag ccgggggggtg cctgaagtcc gtgaccgcaa 1440

ggatcggcct agggcaaaaa cttgggtaat tgggggctaa gtcgtaacaa ggtagccgta 1500

ccggaaggtg cggctg 1516

<210> 1510
<211> 1268
<212> DNA
<213> Prevotella nanceiensis

<400> 1510
ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg accggcgcac 60

gggtgagtaa cgcgtatcca acctacccaa tactcaggca taacccgttg aaagacggac 120

taattcctga tggttaaagt cggtattgga tggggatgcg tctgattagt ttgttggtga 180

ggtaacggct caccaagact tcgatcagta ggggttctga gaggaaggtc ccccacattg 240

gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt ggtcaatgga 300

tggaaatctg aaccagccaa gtagcgtgca ggatgacggc ctatgggttg taaactgctt 360

ttatgtgaga atatgcatgt atcacatgaa taaggaccgg ctaattccgt gccagcagcc 420

gcggtaatac ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg gtgcgtaggc 480

cgtttgataa gcgtgctgtg aaatatagtg gctcaacctc tatcgtgcag cgcgaactgt 540

tgaacttgag tgcgtagtag gtaggcggaa ttcgtggtgt agcggtgaaa tgcttagata 600

tcacgaagaa ctccgattgc gaaggcagct taccgtaacg actgacgctt aagcacgaag 660

gtgcgggtat cgaacaggat tagataccct ggtagtccgc acagtaaacg atggatgctc 720

gctgttggcc ggtcagtggc ttagcgaaag cgttaagcat cccacctggg gagtacgccg 780

gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt 840

aattcgatga tacgcgagga accttacccg ggcttgaact gtggaggtgc tgcatggttg 900

tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa ccccttttct 960

tagttgccat cagctgggca ctctgggaat actgccaccg taaggtggag gaaggtgggg 1020

atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac aatggcgcac 1080

agagtgttgg tttcatgcaa atgagatcta atcttctgcg tctcagttcg gatggggtct 1140

gcaacccgac cccagaagct ggattcgcta gtaatcgcgc atcagccatg gcgcggtgaa 1200

tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg gcgcctaaag 1260

tccgtacc 1268

<210> 1511
<211> 1520
<212> DNA
<213> Prevotella nigrescens

<400> 1511
agagtttgat cctggctcag gatgaacgct ggctacaggc ttaacacatg caagtcgtgg 60

ggaaacggca ttatgtgctt gcacattctg gacgtcgacc ggcgcacggg tgagtatcgc 120

gtatccaacc tgccccttac ttggggatac cccgttgaaa gacggcctaa tacccgatgt 180

gtttcattga cggcatccga tatgaaacaa aggttttccg gtaagggatg gggatgcgtc 240

tgattagcta gttggcgggg caacggccca ccaaggcgac gatcagtagg ggttctgaga 300

ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag gcagcagtga 360

ggaatattgg tcaatggacg caagtctgaa ccagccaagt agcgtgcagg atgacggccc 420

tatgggttgt aaactgcttt tatgtgggaa taaattggcg cacgtgtgcg ccattgcatg 480

tacctcatga ataaggaccg gctaattccg tgccagcagc cgcggtaata cggaaggtcc 540

gggcgttatc cggatttatt gggtttaaag ggagtgtagg cggtctgtta agcgtgttgt 600

gaaatttagg tgctcaacat ttaacttgca gcgcgaactg tcagacttga gtacacgcag 660

cgcaggcgga attcatggtg tagcggtgaa atgcttagat atcatgagga actccgatcg 720

cgaaggcagc ctgcgggagt gttactgacg cttaagctcg aaggtgcggg tatcgaacag 780

gattagatac cctggtagtc cgcactgtaa acgatggatg cccgccgttg gcgccctgcg 840

cctgcggcca agcgaaagca ttaagcatcc cacctgggga gtacgccggc aacggtgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 960

cgcgaggaac cttacccggg cttgaattgc agtcgcagcc cacagagacg tgggcttccc 1020

ttcggggcgt ctgtgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aacccccttt cccagttgcc atcgggttat gccgggcact 1140

ctggggacac tgccaccgca aggtgcgagg aaggtgggga tgacgtcaaa tcagcacggc 1200

ccttacgtcc ggggctacac acgtgttaca atggccggta cagagggacg gtgcaatgca 1260

agttgcatcc aatcttgaaa tccggtccca gttcggactg gggtctgcaa cccgacccca 1320

cgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagttc gtgaccgcga 1440

ggagcgacct agggcaagac cggtgattgg ggctaagtcg taacaaggta gccgtaccgg 1500

aaggtgcggc tggaacacct 1520

<210> 1512
<211> 1539
<212> DNA
<213> Prevotella oralis

<400> 1512
ttacaatgta gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgcggg gcatcatgga ggttgttttc aacttttgat ggcgaccggc gcacgggtga 120

gtaacgcgta tccaaccttc ccattactac ggcatacccc gttgaaaggc ggcctaattc 180

cgtatgcagt ccgaagcagt catctaattt ggacgaaagg tatattctat cggtaatgga 240

tggggatgcg tccgattagc cagccggcgg ggtaacggcc caccggggca tcgatcggta 300

ggggttctga gaggaaggtc ccccacactg gaactgagac acggtccaga ctcctacggg 360

aggcagcagt gaggaatatt ggtcaatggg cgtaagcctg aaccagccaa gtagcgtgca 420

ggatgacggc cctatgggtt gtaaactgct tttatgcggg gataaagttg gggacgtgtc 480

ccttttgca ggtaccgcat gaataaggac cggctaattc cgtgccagca gccgcggtaa 540

tacggaaggt ccgggcgtta tccggattta ttgggtttaa agggagcgta ggcagttttt 600

taagcgtgct gtgaaatgta ccggctcaac cggtgatgtg cagcgcgaac tgggaatctt 660

gagtacgcag taagcaggcg gaattcgtgg tgtagcggtg aaatgcttag atatcacgaa 720

gaactccgat tgcgtaggca gcttgctgta gcgtaactga cgctgaagct cgaaagtgcg 780

ggtatcgaac aggattagat accctggtag tccgcacggt aaacgatgga tgcccgctgt 840

cggccttttt tggtcggtgg ccaagcgaaa gcgttaagca tcccacctgg ggagtacgcc 900

ggcaacggtg aaactcaaag gaattgacgg gggcccgcac aagcggagga acatgtggtt 960

taattcgatg atacgcgagg aaccttaccc gggcttgaac tgccattgac ttgaatagag 1020

atattcattc ccttcggggc attggtggag gtgctgcatg gttgtcgtca gctcgtgccg 1080

tgaggtgtcg gcttaagtgc cataacgagc gcaacccctt ttttcagttg ccatcggtta 1140

aagccgggca ctctgtgaat actgccgccg taaggtgtga ggaaggtggg gatgacgtca 1200

aatcagcacg gcccttacgt ccggggctac acacgtgtta caatggcgcg tacagcgagt 1260

cggccgtatg taaatgcggt ccaatcctta aaacgtgcct cagttcggac tggggtctgc 1320

aacccgaccc cacgaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt caagccatga aagccggggg tgcctgaagt 1440

ccgtgaccgc aagggtcggc ctaaggcaat actggtaatt ggggctaagt cgtaacaagg 1500

tagccgtacc ggaaggtgcg gctggaacac ctcctttct 1539

<210> 1513
<211> 1536
<212> DNA
<213> Prevotella oris

<400> 1513
ttacaatgga gagtttgatc ctggctcagg atgaacgctg gctacaggct taacacatgc 60

aagtcgaggg gaaacgacgg ggaagcttgc ttccccgggc gtcgaccggc gcacgggtga 120

gtaacgcgta tccaacctgc ctctgactga gggataaccc gtcgaaagtc ggcctaatac 180

ctcatggcat cgtctgcggg catccaacga cgattaaaga tttcatcggt cagggatggg 240

gatgcgtctg attagcttgt tggcggggta acggcccacc aaggctacga tcagtagggg 300

ttctgagagg aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc 360

agcagtgagg aatattggtc aatgggcgag agcctgaacc agccaagtag cgtgcaggat 420

gacggcccta tgggttgtaa actgctttta tgcggggata aagtgaggga cgtgtccttc 480

attgcaggta ccgcatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg 540

gaaggtccgg gcgttatccg gatttattgg gtttaaaggg agcgtaggcc gtggattaag 600

cgtgttgtga aatgcaggtg ctcaacgtct gcactgcagc gcgaactggt ccacttgagt 660

gtgcgcaacg caggcggaat tcgtcgtgta gcggtgaaat gcttagatat gacgaagaac 720

tccgattgcg aaggcagctt gcgggagcac aactgacgct gaagctcgaa agtgcgggta 780

tcgaacagga ttagataccc tggtagtccg cacggtaaac gatggatgcc cgttgtcagg 840

ctgtttcagc ctggtgacca agcgaaagca ttaagcatcc cacctgggga gtacgccggc 900

aacggtgaaa ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa 960

ttcgatgata cgcgaggaac cttacccggg cttgaattgc agacgaaggc ttcagagatg 1020

aagcggccct tcggggcgtc tgtgaaggtg ctgcatggtt gtcgtcagct cgtgccgtga 1080

ggtgtcggct taagtgccat aacgagcgca acccctttct tcagttgcca tcaggtgatg 1140

ctgggcactc tggagacact gccaccgcaa ggtgtgagga aggtggggat gacgtcaaat 1200

cagcacggcc cttacgtccg gggctacaca cgtgttacaa tggccggtac agagagttga 1260

ttttgtgcaa acacgatcta atccttaaat ccggtcccag ttcggactgg ggtctgcaac 1320

ccgaccccac gaagctggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcaa gccatgaaag ccgggggtgc ctgaagtctg 1440

tgaccgcaag gaacggccta gggcaaaacc ggtgattggg gctaagtcgt aacaaggtag 1500

ccgtaccgga aggtgcggct ggaacacctc ctttct 1536

<210> 1514
<211> 1513
<212> DNA
<213> Prevotella oulorum

<220>
<221> modified_base
<222> (3)..(3)
<223> a, c, t, g, unknown or other

<400> 1514
acnatggaga gtttgatcct ggctcaggat gaacgctagc tacaggctta acacatgcaa 60

gtcgagggga aacgatgacg agagcttgct ctcttaggcg tcgaccggcg cacgggtgag 120

taacgcgtat ccaacctgcc cattacaggg gaataacctt gcgaaagtaa gactaatgcc 180

ccatggtatt ctcagcagac atctaatgag gattaaagat ttatcggtaa tggatgggga 240

tgcgtctgat tagcttgttg gcggggtaac ggcccaccaa ggcaacgatc agtaggggtt 300

ctgagaggaa ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag 360

cagtgaggaa tattggtcaa tgggcgagag cctgaaccag ccaagtagcg tgcaggaaga 420

cggccctatg ggttgtaaac tgcttttata ggggaataaa gtgatctacg tgtagtttat 480

tgtatgtacc ctatgaataa ggaccggcta attccgtgcc agcagccgcg gtaatacgga 540

aggttcgggc gttatccgga tttattgggt ttaaagggag cgtaggccgt agattaagcg 600

tgttgtgaaa tgtagatgct caacatctga cttgcagcgc gaactggttt acttgagtgt 660

gcacaacgta ggcggaattc gtcgtgtagc ggtgaaatgc ttagatatga cgaagaactc 720

cgattgcgaa ggcagcttac gggagcacaa ctgacgctga agctcgaagg tgcgggtatc 780

aaacaggatt agataccctg gtagtccgca cagtaaacgc tggatgcccg ctgttggctc 840

attagagtca gcggccaagc gaaagcatta agcatcccac ctggggagta cgccggcaac 900

ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc 960

gatgatacgc gaggaacctt acccgggctt gaattgcaga cgaacgattc agagatgaag 1020

aggcccttcg gggcgtctgt gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt 1080

gtcggcttaa gtgccataac gagcgcaacc ccttttctta gttgccatca ggtcatgctg 1140

ggcactctgg gaatactgcc accgtaaggt gtgaggaagg tggggatgac gtcaaatcag 1200

cacggccctt acgtccgggg ctacacacgt gttacaatgg ccggtacaga gggcaggttg 1260

catgtaaatg cgatcgaatc ttaaaagccg gtcccagttc ggactgaggt ctgcaacccg 1320

acctcacgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcaagcc atgaaagccg ggggtgccta aagtccgtta 1440

ccgcaaggat cggcctaggg caaaactggt aattggggct aagtcgtaac aaggtagccg 1500

taccggaagg tgc 1513

<210> 1515
<211> 1519
<212> DNA
<213> Prevotella pallens

<400> 1515
agagtttgat cctggctcag gatgaacgct agctataggc ttaacacatg caagtcgagg 60

ggaaacggca ttatgtgctt gcacattttg gacgtcgacc ggcgcacggg tgagtatcgc 120

gtatccaacc tgcccttac ttggggatac cccgttgaaa gacggcctaa tacccgatgt 180

aattcattga tggcatcaga tatgaataaa agatttatcg gtaaaggatg gggatgcgtc 240

tgattagctt gttggtgagg taaaggctca ccaaggcaac gatcagtagg ggttctgaga 300

ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag gcagcagtga 360

ggaatattgg tcaatgggcg caagcctgaa ccagccaagt agcgtgcagg aagacggccc 420

tatgggttgt aaactgcttt tatacgagaa taatttgatg cacgtgtgcg ttattgcatg 480

tatcgtatga ataaggaccg gctaattccg tgccagcagc cgcggtaata cggaaggtcc 540

aggcgttatc cggatttatt gggtttaaag ggagtgtagg cggtttgtta agcgtgttgt 600

gaaatttagg tgctcaacat ttaacttgca gcgcgaactg tcagacttga gtacacgcaa 660

cgtatgcgga attcatggtg tagcggtgaa atgcttagat atcatgaaga actccgattg 720

cgaaggcagc atacgggagt gtaactgacg cttaagctcg aaggtgcggg tatcgaacag 780

gattagatac cctggtagtc cgcacagtaa acgatggatg cccgctgtta gcgcctggcg 840

ttagcggcta agcgaaagca ttaagcatcc cacctgggga gtacgccggc aacggtgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 960

cgcgaggaac cttacccggg cttgaattgc agaggaatta tttagagata aatatgccct 1020

tcggggtctc tgtgaaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcggct 1080

taagtgccat aacgagcgca acccctttc ttagttgcca tcaggtaatg ctgggcactc 1140

tgggaacact gccaccgcaa ggtgtgagga aggtggggat gacgtcaaat cagcacggcc 1200

cttacgtccg gggctacaca cgtgttacaa tggccggtac agagggatgg tgtaatgtaa 1260

attgcatcaa atcttaaaag ccggtcccag ttcggactga ggtctgcaac ccgacctcac 1320

gaagctggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcaa gccatgaaag ccgggggtgc ctgaagttcg taaccgtaag 1440

gagcgaccta gggcaaaact ggtaattggg gctaagtcgt aacaaggtag ccgtaccgga 1500

aggtgcggct ggaacacct 1519

<210> 1516
<211> 1534
<212> DNA
<213> Prevotella ruminicola

<400> 1516
ttacaatgaa gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcatcagatc gaaagcttgc ttttgatgct ggcgaccggc gcacgggtga 120

gtaacgcgta tccaaccttc cctatagtag agaatagccc ggcgaaagtc ggattaatgc 180

tctatgttgt atttagagga catctgaaga ataccaaagg tttaccgcta taggatgggg 240

atgcgtctga ttaggtagta ggcggggtaa cggcccacct agccgacgat cagtaggggt 300

tctgagagga aggtccccca cattggaact gagacacggt ccaaactcct acgggaggca 360

gcagtgagga atattggtca atggacggaa gtctgaacca gccaagtagc gtgcaggatg 420

acggccctat gggttgtaaa ctgcttttat atagggataa agtcggggac gtgtccccgt 480

ttgtaggtac tatatgaata aggaccggct aattccgtgc cagcagccgc ggtaatacgg 540

aaggtccagg cgttatccgg atttattggg tttaaaggga gcgcaggctg atgattaagc 600

gtgacgtgaa atgtagccgc tcaacggctg aactgcgtcg cgaactggtt atcttgagtg 660

agttcgatgt tggcggaatt cgtggtgtag cggtgaaatg cttagatatc acgaagaact 720

ccgattgcga aggcagccaa caaggccttt actgacgcta aagctcgaag gtgcgggtat 780

cgaacaggat tagataccct ggtagtccgc acggtaaacg atggatgccc gctgtttgcg 840

atatactgtg agcggccaag agaaatcgtt aagcatccca cctggggagt acgccggcaa 900

cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt 960

cgatgatacg cgaggaacct tacccgggct tgaactgcca gcgaacgatt cagagatgat 1020

gaggtccttc gggacgctgg tggaggtgct gcatggttgt cgtcagctcg tgccgtgagg 1080

tgtcggctta agtgccataa cgagcgcaac ccttttcttt agttgccatc aggtaatgct 1140

gggcactctg gagatactgc caccgtaagg tgtgaggaag gtggggatga cgtcaaatca 1200

gcacggccct tacgtccggg gctacacacg tgttacaatg gggggtacag agagtcggat 1260

atacgcaagt atgttctaat ccttaaagcc ttcctcagtt cggattgggg tctgcaaccc 1320

gaccccatga agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcaagc catgaaagcc gggggcgctt gaagtccgtg 1440

accgcaagga tcggcctaga gcgaaactgg taattggggc taagtcgtaa caaggtagcc 1500

gtaccggaag gtgcggctgg aacacctcct ttct 1534

<210> 1517
<211> 1493
<212> DNA
<213> Prevotella salivae

<400> 1517
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggaaacgaca ttgaagcttg cttcgatggg cgtcgaccgg cgcacgggtg agtaacgcgt 120

atccaacctg cctctgacta agggataacc cggcgaaagt cggactaata ccttatgagg 180

ttttcagcag acatctaacg aaaacgaaag atttatcggt cagtgatggg gatgcgtctg 240

attagcttgt tggcggggta acggcccacc aaggcaacga tcagtagggg ttctgagagg 300

aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg 360

aatattggtc aatgggcgag agcctgaacc agccaagtag cgtgcaggat gacggcccta 420

tgggttgtaa actgctttta tgtggggata agtgagcta cgtgtagttt attgcaggta 480

ccacatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg gaaggtccag 540

gcgttatccg gatttattgg gtttaaaggg agcgtaggcc gtggattaag cgtgttgtga 600

aatgtagacg ctcaacgtct gaattgcagc gcgaactggt tcacttgagt atgcacaacg 660

taggcggaat tcgtcgtgta gcggtgaaat gcttagatat gacgaagaac tccgattgcg 720

aaggcagctt acgggagcac aactgacgct gaagctcgaa ggtgcgggta tcaaacagga 780

ttagataccc tggtagtccg cacagtaaac gatggatgcc cgttgttagt tcacttatga 840

attagcgacc aagcgaaagc attaagcatc ccacctgggg agtacgccgg caacggtgaa 900

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 960

acgcgaggaa ccttacccgg gcttgaattg cagacgaacg attcagagat gatgaggccc 1020

ttcggggcgt ctgtgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aaccccttt ttcagttgcc atcaggtgat gctgggcact 1140

ctggagatac tgccaccgta aggtgtgagg aaggtgggga tgacgtcaaa tcagcacggc 1200

ccttacgtcc ggggctacac acgtgttaca atggccggta cagagcgttg gtcgtgtgca 1260

aatacgatct aatccttaaa gccggtccca gttcggactg gggtctgcaa cccgacccca 1320

cgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtct gtgaccgcaa 1440

ggaacggcct agggcaaaac tggtgattgg ggctaagtcg taacaaggta acc 1493

<210> 1518
<211> 1327
<212> DNA
<213> Prevotella sp. BI-42

<220>
<221> modified_base
<222> (529)..(529)
<223> a, c, t, g, unknown or other

<400> 1518
tgagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

gaccggcgca cgggtgagta acgcgtatcc aacctgccca ccacttgggg ataaccttgc 120

gaaagtaaga ctaataccca atgattaaag tcggtgatgg atggggatgc gtctgattag 180

cttgttggcg gggtaacggc ccaccaaggc aacgatcagt aggggttctg agaggaaggt 240

cccccacatt ggaactgaga cacggtccaa actcctacgg gaggcagcag tgaggaatat 300

tggtcaatgg acgagagtct gaaccagcca agtagcgtgc aggatgacgg cctatgggtt 360

gtaaactgct tttataaggg aatatgcatg taccttatga ataaggaccg gctaattccg 420

tgccagcagc cgcggtaata cggaaggtcc gggcgttatc cggatttatt gggtttaaag 480

ggagcgtagg ccggagatta agcgtgttgt gaaatgtaga cgctcaacnt ctgcactgca 540

gcgcgaactg gtttccttga gtacgcacaa agtgggcgga attcgtggtg tagcggtgaa 600

atgcttagat atcacgaaga actccgattg cgaaggcagc tcactggagc gactgacgct 660

gaagctcgaa agtgcgggta tcgaacagga ttagataccc tggtagtccg cacggtaaac 720

gatggatgcc cgctgttggt cggtcagcgg ccaagcgaaa gcattaagca tcccacctgg 780

ggagtacgcc ggcaacggtg aaactcaaag gaattgacgg gggcccgcac aagcggagga 840

acatgtggtt taattcgatg atacgcgagg aaccttaccc gggcttgaat tgtgaaggtg 900

ctgcatggat gtcgtcagct cgtgccgtga ggtgtcggct taagtgccat aacgagcgca 960

acccctctcc ttagttgcca tcagctgggc actctgggga cactgccacc gtaaggtgga 1020

ggaaggtggg gatgacgtca aatcagcacg gcccttacgt ccggggctac acacgtgtta 1080

caatggcagg cagagagacg gtcccttgca aaatggatca aatccttcct gtctcagttc 1140

ggatggggtc tgcaacccga ccccagaagc tggattcgct agtaatcgcg catcagccat 1200

ggcgcggtga atacgtcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gcgcctaaag tccgtgcggc ctagggcgaa actggtaatt ggggctaagt cgtaacaagg 1320

tagccgt 1327

<210> 1519
<211> 1459
<212> DNA
<213> Prevotella sp. CM38

<400> 1519
ctcaggatga acgctagcta caggcttaac acatgcaagt cgcggggcag catgggggtt 60

gcttgcaacc cctgatggcg accggcgcac gggtgagtaa cgcgtatcca acctgccctt 120

caccacggga taacccggcg aaagtcggac taataccgta tgttgtccat tgacggcatc 180

cgatttggac gaaaggctta gcggtgaggg atggggatgc gtccgattag ctcgacggcg 240

gggtaacggc ccaccgtggc aacgatcggt aggggttctg agaggaaggt cccccacact 300

ggaactgaga cacggtccag actcctacgg gaggcagcag tgaggaatat tggtcaatgg 360

gcggaagcct gaaccagcca agtagcgtgc aggatgacgg ccctatgggt tgtaaactgc 420

ttttatgcgg ggataaaggg gcccacgtgt gggtttttgc aggtaccgca tgaataagga 480

ccggctaatt ccgtgccagc agccgcggta atacggaagg tccgggcgtt atccggattt 540

attgggttta aagggagcgt aggccgcccc ttaagcgtgt tgtgaaatgc gggtgctcaa 600

catccgactt gcagcgcgaa ctgggggggct tgagtgcgcc gaaagtaggc ggaattcgtg 660

gtgtagcggt gaaatgctta gatatcacga agaactccga ttgcgaaggc agcttactgt 720

agcgcaactg acgctgatgc tcgaaagcgt gggtatcgaa caggattaga taccctggta 780

gtccacgcgg taaacgatgg atgctcgttg tcggcctttg aggccggtga ccaagcgaaa 840

gcgttaagca tcccacctgg ggagtacgcc ggcaacggtg aaactcaaag gaattgacgg 900

gggcccgcac aagcggagga acatgtggtt taattcgatg atacgcgagg aaccttaccc 960

gggcttgaac tgcggcggaa cgattccgag aggatgaggc ccttcggggc tgccgcggag 1020

gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtcg gcttaagtgc cataacgagc 1080

gcaacccccg tcttcagttg ccatcggatg atgccgggca ctctggagat actgccaccg 1140

caaggtgtga ggaaggtggg gatgacgtca aatcagcacg gcccttacgt ccggggctac 1200

acacgtgtta caatggcgca tacagagagt aggtggcatg cgagtgccat ccaatcctta 1260

aagtgcgtct cagttcggac tggggtctgc aacccgaccc cacgaagctg gattcgctag 1320

taatcgcgca tcagccatgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

caagccatga aagccggggg cgcctgaagt ccgtgaccgc gagggtcggc ctagggtgaa 1440

accggtgatt ggggctaag 1459

<210> 1520
<211> 1452
<212> DNA
<213> Prevotella sp. ICM1

<400> 1520
aggatgaacg ctagctacag gcttaacaca tgcaagtcga ggggaaacgg cattgagtgc 60

ttgcactctt tggacgtcga ccggcgcacg ggtgagtaac gcgtatccaa ccttcccatt 120

actgtgggat aacctgccga aaggcagact aataccgcat agtcttcgat gacggcatca 180

gatttgaagt aaagatttat cggtaatgga tggggatgcg tctgattagc ttgttggcgg 240

ggtaacggcc caccaaggcg acgatcagta ggggttctga gaggaaggtc ccccacattg 300

gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt ggtcaatgga 360

cggaagtctg aaccagccaa gtagcgtgca ggatgacggc cctatgggtt gtaaactgct 420

tttgtatggg gataaagtta gggacgtgtc cctatttgca ggtaccatac gaataaggac 480

cggctaattc cgtgccagca gccgcggtaa tacggaaggt ccaggcgtta tccggattta 540

ttgggtttaa agggagcgta ggctggagat taagtgtgtt gtgaaatgta gacgctcaac 600

gtctgaattg cagcgcatac tggttttctt gagtacgcac aacgttggcg gaattcgtcg 660

tgtagcggtg aaatgcttag atatgacgaa gaactccgat tgcgaaggca gctgacggga 720

gcgcaactga cgcttaagct cgaaggtgcg ggtatcaaac aggattagat accctggtag 780

tccgcacagt aaacgatgga tgcccgctgt tggtacctgg tatcagcggc taagcgaaag 840

cattaagcat cccacctggg gagtacgccg gcaacggtga aactcaaagg aattgacggg 900

ggcccgcaca agcggaggaa catgtggttt aattcgatga tacgcgagga accttacccg 960

ggcttgaatt gcagaggaag gatttagaga taatgacgcc cttcggggcc tctgtgaagg 1020

tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg cttaagtgcc ataacgagcg 1080

caacccctct cttcagttgc catcaggtta agctgggcac tctggagaca ctgccaccgt 1140

aaggtgtgag gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca 1200

cacgtgttac aatggccggt acagagggat ggtgtaatgc aaattgcatc aaatcttgaa 1260

agccggtccc agttcggact ggggtctgca acccgacccc acgaagctgg attcgctagt 1320

aatcgcgcat cagccatggc gcggtgaata cgttcccggg ccttgtacac accgcccgtc 1380

aagccatgaa agccgggggt gcctgaagtc cgtgaccgca aggatcggcc tagggcaaac 1440

tggtgattgg gg 1452

<210> 1521
<211> 1458
<212> DNA
<213> Prevotella sp. ICM55

<400> 1521
acgctagcta caggcttaac acatgcaagt cgaggggaaa cgacattgaa gcttgcttcg 60

atgggcgtcg accggcgcac gggtgagtaa cgcgtatcca acctgcctct gactaaggga 120

taacccggcg aaagtcggac taatacctta tgaggttttc agcagacatc taatgaaaac 180

gaaagattta tcggtcagtg atggggatgc gtctgattag cttgttggcg gggtaacggc 240

ccaccaaggc aacgatcagt aggggttctg agaggaaggt cccccacatt ggaactgaga 300

cacggtccaa actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcgagagcct 360

gaaccagcca agtagcgtgc aggatgacgg ccctatgggt tgtaaactgc ttttatgtgg 420

ggataaagtg agctacgtgt agtttattgc aggtaccaca tgaataagga ccggctaatt 480

ccgtgccagc agccgcggta atacggaagg tccaggcgtt atccggattt attgggttta 540

aagggagcgt aggccgtgga ttaagcgtgt tgtgaaatgt agacgctcaa cgtctgaatt 600

gcagcgcgaa ctggttcact tgagtatgca caacgtaggc ggaattcgtc gtgtagcggt 660

gaaatgctta gatatgacga agaactccga ttgcgaaggc agcttacggg agcacaactg 720

acgctgaagc tcgaaggtgc gggtatcaaa caggattaga taccctggta gtccgcacag 780

taaacgatgg atgcccgttg ttagttcact taagaattag cgaccaagcg aaagcattaa 840

gcatcccacc tggggagtac gccggcaacg gtgaaactca aaggaattga cgggggcccg 900

cacaagcgga ggaacatgtg gtttaattcg atgatacgcg aggaacctta cccgggcttg 960

aattgcagac gaacgattca gagatgatga ggcccttcgg ggcgtctgtg aaggtgctgc 1020

atggttgtcg tcagctcgtg ccgtgaggtg tcggcttaag tgccataacg agcgcaaccc 1080

ctttttcag ttgccatcag gtgatgctgg gcactctgga gatactgcca ccgtaaggtg 1140

tgaggaaggt ggggatgacg tcaaatcagc acggccctta cgtccggggc tacacacgtg 1200

ttacaatggc cggtacagag cgttggttgt atgcaaatac gatctaatcc ttaaagccgg 1260

tcccagttcg gactggggtc tgcaacccga ccccacgaag ctggattcgc tagtaatcgc 1320

gcatcagcca tggcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagcca 1380

tgaaagccgg gggtgcctga agtctgtgac cgcaaggaaa cggcctaggg caaaactggt 1440

gattggggct aagtcgta 1458

<210> 1522
<211> 1479
<212> DNA
<213> Prevotella sp. JCM 6330

<400> 1522
ggctcaggat gaacgctagc tacaggctta acacatgcaa gtcgagggga aacggcgttt 60

agtgcttgca ctgttcggac gtcgaccggc gcacgggtga gtaacgcgta tccaaccttc 120

ccataactaa gggataacct gccgaaaggc agactaatac cttatgtaat tcttagatga 180

catcagaaga gaatgaaaga tttatcggtt atggatgggg atgcgtctga ttagcttgtt 240

ggcggggtaa cagcccacca aggcgacgat cagtaggggt tctgagagga aggtccccca 300

cattggaact gagacacggt ccaaactcct acgggaggca gcagtgagga atattggtca 360

atgggcgaga gcctgaacca gccaagtagc gtgcaggaag acggccctat gggttgtaaa 420

ctgcttttgt atggggataa agtcaatcac gtgtgattgt ttgcaggtac catacgaata 480

aggaccggct aattccgtgc cagcagccgc ggtaatacgg aaggttcggg cgttatccgg 540

atttattggg tttaaaggga gcgtaggccg gagattaagt gtgttgtgaa atgtagacgc 600

tcaacgtctg acttgcagcg catactggtt tccttgagta cgcacaacgt tggcggaatt 660

cgtcgtgtag cggtgaaatg cttagatatg acgaagaact ccgattgcga aggcagctga 720

cgggagcgcc actgacgctt aagctcgaag gtgcgggtat cgaacaggat tagataccct 780

ggtagtccgc acagtaaacg atggatgccc gctgttggta cctggtatca gcggctaagc 840

gaaagcatta agcatcccac ctggggagta cgccggcaac ggtgaaactc aaaggaattg 900

acgggggccc gcacaagcgg aggaacatgt ggtttaattc gatgatacgc gaggaacctt 960

acccgggctt gaattgcaga ggaaggattt agagataatg acgcccttcg gggtctctgt 1020

gaaggtgctg catggttgtc gtcagctcgt gccgtgaggt gtcggcttaa gtgccataac 1080

gagcgcaacc cctctcttca gttgccatca ggtaatgctg ggcactctgg agacactgcc 1140

accgtaaggt gtgaggaagg tggggatgac gtcaaatcag cacggccctt acgtccgggg 1200

ctacacacgt gttacaatgg ccggtacaga gggacggtgt aatgcaaatt gcatccaatc 1260

ttgaaagccg gtcccagttc ggactggggt ctgcaacccg accccacgaa gctggattcg 1320

ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcaagcc atgaaagccg ggggtgcctg aagtccgtga ccggaaggat cggcctaggg 1440

caaaactggt gattggggct aagtcgtaac aaggtaacc 1479

<210> 1523
<211> 1374
<212> DNA
<213> Prevotella sp. SEQ053

<400> 1523
tgcaagtcgc ggggcagcat gagggttgct tgcaaccttt gatggcgacc ggcgcacggg 60

tgagtaacac gtatccaacc tactccttac aacggaataa cccggcgaaa gtcggactaa 120

taccgtatga tatcctatgc aggcatctaa ytaggattaa aggtttagcg gtaagggatg 180

gggatgcgtc tgattaggca gttggcgggg taacggccca ccaaaccgac gatcagtagg 240

ggttctgaga ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag 300

gcagcagtga ggaatattgg tcaatggacg gaagtctgaa ccagccaagt agcgtgcagg 360

atgacggccc tatgggttgt aaactgcttt tatacgggga taaagttagg gacgtgtccc 420

tatttgcagg taccgtatga ataaggaccg gctaattccg tgccagcagc cgcggtaata 480

cggaaggtcc gggcgttatc cggatttatt gggtttaaag ggagcgtagg ccgtagatta 540

agtgtgttgt gaaatgtaga cgctcaacgt ctgacttgca gcgcatactg gtttacttga 600

gtttgcacaa cgttggcgga attcgtcgtg tagcggtgaa atgcttagat atgacgaaga 660

actccgattg cgaaggcagc ttgcgggagc aaaactgacg ctgaagctcg aaagtgcggg 720

tatcgaacag gattagatac cctggtagtc cgcacggtaa acgatggatg cccgttgtat 780

ggcctttcgg ctatgtgacc aagcgaaagc attaagcatc ccacctgggg agtacgccgg 840

caacggtgaa actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta 900

attcgatgat acgcgaggaa ccttacccgg gcttgaactg taggygaacg atctagagat 960

agtgaggccc ttcggggcgc ctacggaggt gctgcatggt tgtcgtcagc tcgtgccgtg 1020

aggtgtcggc ttaagtgcca taacgagcgc aacccctgtt ctcagttgcc atcgggtgat 1080

gccgggcact ctgaggatac tgcctccgca aggagtgagg aaggtgggga tgacgtcaaa 1140

tcagcacggc ccttacgtcc ggggctacac acgtgttaca atggccggta cagagcgtcg 1200

gtcgtatgca aatacgatct aatctttaaa accggtctca gttcggactg gggtctgcaa 1260

cccgacccca cgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca agccatgaaa gccgggggcg cctg 1374

<210> 1524
<211> 1227
<212> DNA
<213> Prevotella sp. SEQ065

<400> 1524
agtcgaggga ccggcgcacg ggtgagtaac gcgtatccaa cctwcccatt actgtgggat 60

aacctgccga aaggcagact aataccgcat rgttaaagtc ggtaatggat ggggatgcgt 120

ctgattagct tgttggcggg gtaacggccc accaaggcaa cgatcagtag gggttctgag 180

aggaaggtcc cccacattgg aactgagaca cggtccaaac tcctacggga ggcagcagtg 240

aggaatattg gtcaatggac gagagtctga accagccaag tagcgtgcag gatgacggcc 300

tatgggttgt aaactgcttt tgtatgggga tatgcaggta ccatacgaat aaggaccggc 360

taattccgtg ccagcagccg cggtaatacg gaaggtccgg gcgttatccg gatttattgg 420

gtttaaaggg agcgtaggcy ggagattaag tgtgttgtga aatgtagacg ctcaacgtct 480

gacttgcagc gcatactggt ttccttgagt acgcacaacg ttggcggaat tcgtcgtgta 540

gcggtgaaat gcttagatat gacgaagaac tccgattgcg aaggcagctg acgggagcga 600

ctgacgctta agctcgaagg tgcgggtatc gaacaggatt agataccctg gtagtccgca 660

cagtaaacga tggatgcccg ctgttggtat atcagcggct aagcgaaagc attaagcatc 720

ccacctgggg agtacgccgg caacggtgaa actcaaagga attgacgggg gcccgcacaa 780

gcggaggaac atgtggttta attcgatgat acgcgaggaa ccttacccgg gcttgaattg 840

tgaaggtgct gcatggttgt cgtcagctcg tgccgtgagg tgtcggctta agtgccataa 900

cgagcgcaac ccctctcttc agttgccatc agctgggcac tctggagaca ctgccaccgt 960

aaggtggagg aaggtgggga tgacgtcaaa tcagcacggc ccttacgtcc ggggctacac 1020

acgtgttaca atggccggca gagggatggt gtaatgcaaa ttgcatcaaa tcttgccggt 1080

cccagttcgg atggggtctg caacccgacc ccagaagctg gattcgctag taatcgcgca 1140

tcagccatgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt caagccatga 1200

aagccggggg tgcctgaagt ccgtacc 1227

<210> 1525
<211> 1273
<212> DNA
<213> Prevotella sp. SEQ072

<400> 1525
tgatcctggc tcaggatgaa cgctagctac aggcttaaca catgcaagtc gcgggaccgg 60

cgcacgggtg agtaacgcgt atccaacctt cccattacta cggcataccc cgttgaaagg 120

cggcctaatt ccgtatgcag aaagtcggta atggatgggg atgcgtccga ttagccagtc 180

ggcggggtaa cggcccaccg aggcatcgat cggtaggggt tctgagagga aggtccccca 240

cactggaact gagacacggt ccagactcct acgggaggca gcagtgagga atattggtca 300

atgggcgtaa gcctgaacca gccaagtagc gtgcaggatg acggcctatg ggttgtaaac 360

tgcttttatg cggggatatg caggtaccgc atgaataagg accggctaat tccgtgccag 420

cagccgcggt aatacggaag gtccgggcgt tatccggatt tattgggttt aaagggagcg 480

taggcagttt tttaagcgtg ctgtgaaatg taccggctca accggtgatg tgcagcgcga 540

actgggaatc ttgagtacgc agtaagcagg cggaattcgt ggtgtagcgg tgaaatgctt 600

agatatcacg aagaactccg attgcgtagg cagcttgctg tagcgactga cgctgaagct 660

cgaaagtgcg ggtatcgaac aggattagat accctggtag tccgcacggt aaacgatgga 720

tgcccgctgt cggtcggtcg gtggccaagc gaaagcgtta agcatcccac ctggggagta 780

cgccggcaac ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt 840

ggtttaattc gatgatacgc gaggaacctt acccgggctt gaactgtgga ggtgctgcat 900

ggttgtcgtc agctcgtgcc gtgaggtgtc ggcttaagtg ccataacgag cgcaacccct 960

tttttcagtt gccatcggcc gggcactctg tgaatactgc cgccgtaagg tggaggaagg 1020

tggggatgac gtcaaatcag cacggccctt acgtccgggg stacacacgt gttacaatgg 1080

cgcgcagcga gtcggccgta tgtaaatacg gtccaatcct tcgcgcctca gttcggatgg 1140

ggtctgcaac ccgaccccag aagctggatt cgctagtaat cgcgcatcag ccatggcgcg 1200

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc cgggggtgcc 1260

tgaagtccgt acc 1273

<210> 1526
<211> 1274
<212> DNA
<213> Prevotella sp. SEQ116

<400> 1526
ttgatcctgg ctcaggatga acgctagcta caggcttaac acatgcaagt cgagggaccg 60

gcgcacgggt gagtaacgcg tatccaactt tcccattact gtggaataac ctgccgaaag 120

gcagactaat accgcatagt taaagtcggt aatggatggg gatgcgtctg attagcttgt 180

tggcggggta acggcccacc aaggcgacga tcagtagggg ttctgagagg aaggtccccc 240

acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg aatattggtc 300

aatgggcgag agcctgaacc agccaagtag cgtgcaggat gacggcctat gggttgtaaa 360

ctgcttttgt atggggatat gcaggtacca tacgaataag gaccggctaa ttccgtgcca 420

gcagccgcgg taatacggaa ggtccaggcg ttatccggat ttattgggtt taaagggagc 480

gtaggccgga gattaagtgt gttgtgaaat gtagacgctc aacgtctgac ttgcagcgca 540

tactggtttc cttgagtacg cacaacgttg gcggaattcg tcgtgtagcg gtgaaatgct 600

tagatatgac gaagaactcc gattgcgaag gcagctgacg ggagcgactg acgcttaagc 660

tcgaaggtgc gggtatcaaa caggattaga taccctggta gtccgcacag taaacgatgg 720

atgcccgctg ttggtatatc agcggctaag cgaaagcatt aagcatccca cctggggagt 780

acgccggcaa cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg 840

tggtttaatt cgatgatacg cgaggaacct tacccgggct tgaattgtga aggtgctgca 900

tggttgtcgt cagctcgtgc cgtgaggtgt cggcttaagt gccataacga gcgcaacccc 960

tctcttcagt tgccatcagc tgggcactct ggagacactg ccaccgtaag gtggaggaag 1020

gtggggatga cgtcaaatca gcacggccct tacgtccggg gctacacacg tgttacaatg 1080

gccggcagag ggacggtgta atgcaaattg catccaatct tgccggtccc agttcggatg 1140

gggtctgcaa cccgacccca gaagctggat tcgctagtaa tcgcgcatca gccatggcgc 1200

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcaa gccatgaaag ccgggggtgc 1260

ctgaagtccg tacc 1274

<210> 1527
<211> 1340
<212> DNA
<213> Prevotella sp. SG12

<400> 1527
cccctgatgg cgaccggcgc acgggtgagt aacgcgtatc caacctgccc ttcaccacgg 60

gataacccgg cgaaagtcgg actaataccg tatgttgtcc attgacggca tccgatttgg 120

acgaaaggct tagcggtgag ggatggggat gcgtccgatt agcttgacgg cggggtaacg 180

gcccaccgtg gcaacgatcg gtaggggttc tgagaggaag gtcccccaca ctggaactga 240

gacacggtcc agactcctac gggaggcagc agtgaggaat attggtcaat gggcggaagc 300

ctgaaccagc caagtagcgt gcaggatgac ggccctatgg gttgtaaact gcttttatgc 360

ggggataaag gggcccacgt gtgggttttt gcaggtaccg catgaataag gaccggctaa 420

ttccgtgcca gcagccgcgg taatacggaa ggtccgggcg ttatccggga tttattgggt 480

ttaaagggag cgtaggccgc cccttaagcg tgttgtgaaa tgcgggtgct caacatccga 540

cttgcagcgc gaactggggg gcttgagtgc gccgaaagta ggcggaattc gtggtgtagc 600

ggtgaaatgc ttagatatca cgaagaactc cgattgcgaa ggcagcttac tgtagcgcaa 660

ctgacgctga tgctcgaaag cgtgggtatc gaacaggatt agataccctg gtagtccacg 720

cggtaaacga tggatgctcg ttgtcggcct ttatggtcgg tgaccaagcg aaagcgttaa 780

gcatcccacc tggggagtac gccggcaacg gtgaaactca aaggaattga cggggcccg 840

cacaagcgga ggaacatgtg gtttaattcg atgatacgcg aggaacctta cccgggcttg 900

aactgcggcg gaacgattcc gagaggatga ggcccttcgg ggctgccgcg gaggtgctgc 960

atggttgtcg tcagctcgtg ccgtgaggtg tcggcttaag tgccataacg agcgcaaccc 1020

ccgtcttcag ttgccatcgg gttatgctgg gcactctgga gatactgcca ccgcaaggtg 1080

tgaggaaggt ggggacgacg tcaaatcagc acggcccttа cgtccggggc tacacacgtg 1140

ttacaatggc gcatacagag agtaggtggc atgcgaatgc catccaatcc ttaaagtgcg 1200

tctcagttcg gactggggtc tgcaacccga ccccacgaag ctggattcgc tagtaatcgc 1260

gcatcagcca tggcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagcca 1320

tgaaagccgg gggggcggcc 1340

<210> 1528
<211> 1451
<212> DNA
<213> Prevotella sp. oral clone AA020

<400> 1528
ttcaggatga acgctagcta caggcttaac acrtgcaagt cgaggggaaa cgacggggaa 60

gcttgcttct ccggtcgtcg accggcgcac gggtgagtaa cgcgtatcca acctgcctct 120

gaccaaggga taacccgtcg aaagtcggac taatacctta tgcagtcgtc ggaagtcatc 180

tgatgacgac gaaagatttc atcggtgaga gatggggatg cgtctgatta gcttgttggc 240

ggggtaacgg cccaccaagg cgacgatcag taggggttct gagaggaagg tcccccacat 300

tggaactgag acacggtcca aactcctacg ggaggcagca gtgaggaata ttggtcaatg 360

gacgagagtc tgaaccagcc aagtagcgtg caggatgacg gccctatggg ttgtaaactg 420

cttttatgcg gggataaagt gagggacgtg tccttcattg caggtaccgc atgaataagg 480

accggctaat tccgtgccag cagccgcggt aatacggaag gtccgggcgt tatccggatt 540

tattgggttt aaagggagcg taggccgtgg attaagcgtg ttgtgaaatg tagacgctca 600

acgtctgact tgcagcgcga actggtccac ttgagtgtgc acaacgcagg cggaattcgt 660

cgtgtagcgg tgaaatgctt agatatgacg aagaaccccg attgcgaagg cagcttgcgg 720

gagcacgact gacgctgaag ctcgaaagtg cgggtatcga acaggattag ataccctggt 780

agtccgcacg gtaaacgatg gatgcccgtt atcaggcttt ttagtctggt gaccaagcga 840

aagcattaag catcccacct ggggagtacg ccggcaacgg tgaaactcaa aggaattgac 900

gggggcccgc acaagcggag gaacatgtgg tttaattcga tgatacgcga ggaaccttac 960

ccgggcttga attgcagacg tacgattcag agatgaagag gcccttcggg gcgtctgtga 1020

aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt cggcttaagt gccataacga 1080

gcgcaacccc tattctcggt tgccatcggg taatgccggg cactccgtgg agactgccac 1140

cgtaagtgtg aggaagtggg gacgacgtca aatcagcacg gsccttacgt ccggggctac 1200

acacgtgtta caatggccgg tacagcgagt cggccgcatg caaatgcggt ccaatcctga 1260

aagccggtcc cagttcggac cggggtctgc aacccgaccc cgcgaagccg gattcgctag 1320

taatcgcgca tcagccatgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

caagccatga aagccggggg tgcctgaagt ccgttaccgc gagggtcggc ctaaggcaaa 1440

accggtgatt g 1451

<210> 1529
<211> 1365
<212> DNA
<213> Prevotella sp. oral clone ASCG10

<220>
<221> modified_base
<222> (1)..(1)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (259)..(259)
<223> a, c, t, g, unknown or other

<400> 1529
ngagtttgat cttggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

gaccggcgca cgggtgcgta acgcgtatca aacctgcctc atactcgggg atagccttgc 120

gaaagtaaga ttaatacccg atgttcaaag tcggtatgag atggtgatgc gtccgattag 180

gtagtaggcg gggtaacggc ccacctagcc ttcgatcggt aggggttctg agaggaaggt 240

cccccacact gtaactgana cacggtccag actcctacgg gaggcagcag tgaggaatat 300

tggtcaatgg acgcaagtct gaaccagcca agtagcgtga aggatgacgg cctctgggtt 360

gtaaactgct tttagttggg aatatgtatg taccttcaga aaaaggaccg gctaattccg 420

tgccagcagc cgcggtaata cggaaggtcc aggcgttatc cggatttatt gggtttaaag 480

ggagcgtagg cggattatta agtcagtggt gaaagacggt ggctcaacca tcgttagcca 540

ttgatactgg tagtcttgag tgcagcaggg gatgctggaa ctcgtggtgt agcggtgaaa 600

tgcttagata tcacgatgaa ctccgatcgc gaaggcaggt gtccgggctg actgacgctg 660

aggctcgaaa gtgtgggtat caaacaggat tagataccct ggtagtccac acagtaaacg 720

atgtatactc gcggtttgcg agtaagccgc caagcgaaag cattaagtat accacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaact atggaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

ccctttttct tggttgccat cagctgggca ctccagggat actgccatcg taagatggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatgggggc agaaggtcgc tacctggtga caggatgcta atctcacctc tctcagttcg 1140

gatggagtct gcaacccgac tccagaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg aaagtcggaa 1260

gtacccaaag ccggtgggta gccagccgtc taaggtaaag tcgatgattg gggtgaagtc 1320

gtaacaaggt agccgtatcg gaaggtgcgg ctggaacacc tcctt 1365

<210> 1530
<211> 1319
<212> DNA
<213> Prevotella sp. oral clone ASCG12

<220>
<221> modified_base
<222> (334)..(334)
<223> a, c, t, g, unknown or other

<400> 1530
gagtttgatc ttggctcagg atgaacgcta gctacaggct taacacatgc aagtcgcggg 60

accggcgcac gggtgagtaa cgcttatcca acctgccctt caccacggga taacccggcg 120

aaagtcggac taataccgta tgttgaaagg cggtgaagga tggggatgcg tccgattagc 180

tggacggcgg ggtaacggcc caccgtggca acgatcggta ggggttctga gaggaaggtc 240

ccccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatggg cgtaagcctg aaccagccaa gtancgtgca ggatgacggc cttatggttg 360

taaactgctt ttatgcgggg atatgcaggt accgcatgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtccg ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc cgcgccttaa gcgtgttgtg aaatccggtt gctcaacatc cggcttgcag 540

cgcgaactgg ggcgcttgag tgcgcagaaa gtaggcggaa ttcgtggtgt agcagtgaaa 600

tgcttagata tcacgaggaa ctccgattgc gaaggcagcc tactgtagcg actgacgctg 660

atgctcgaaa gcgtgggtat cgaacaggat tagataccct ggtagtccac gcggtaaacg 720

atggatgctc gttgtcggcc ggtcggtgac caagcgaaag cgttaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaact gcggaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccccgtctt cagttgccat cggccgggca ctctggagat actgccaccg caaggtggag 1020

gaaggtgggg atgacgtcaa atgagcacgg cccttacgtg ggctacacac gtgctacaat 1080

ggcgtacaga gggcgacgaa gccgcgaggt ggagtgaatc tcagtacgtc taagtccgga 1140

tggagtctgc aacccgaccc cagaagctgg attcgctagt aatcgcgcat cagccatggc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc aagccatgaa agccgggggc 1260

gcctgaagtc cgtgtcggcc tagggtgaaa ccggtgattg gggctaagtc gtaacaagg 1319

<210> 1531
<211> 1470
<212> DNA
<213> Prevotella sp. oral clone AU069

<400> 1531
agagtttgat catggctcag gatgaacgct agctacaggc ctaacacatg caagtcgtgg 60

ggcagcgggt atgcttgttt tcaagtatat gccggcgacc ggcgcacggg tgagtaacgc 120

gtatccaacc tgcccatcac aagggaataa cccgtcgaaa gtcggcctaa tgccctatgt 180

attccgatga agtcctctga atcggaataa agcatttgcg gtgatggatg gggatgcgtc 240

tgattagctt gtcggcgggg taacggccca ccgaggcaac gatcagtagg ggttctgaga 300

ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag gcagcagtga 360

ggaatattgg tcaatgggcg tgagcctgaa ccagccaagt agcgtgcagg atgacggccc 420

tatgggttgt aaactgcttt tatacgggga taaagtgagg gacgcgtccc tttttgcagg 480

taccgtatga ataaggaccg gctaattccg tgccagcagc cgcggtaata cggaaggtcc 540

tggcgttatc cggatttatt gggtttaaag ggagcgcagg ctgcacttta agcgtgttgt 600

gaaatgtacc ggctcaaccg gtaacgtgca gcgcgaactg gggtgcttga gtacgaagag 660

ggaaggcgga actcgtggtg tagcggtgaa atgcttagat atcacgagga actccgatcg 720

cgaaggcagc tttccgtttc ggaactgacg ctgaggctcg aaagtgcggg tatcgaacag 780

gattaggtac cctggtagtc cgcacggtaa acgatggatg cccgctgtcg gcgccttgcg 840

ccggcggcca agcgaaagcg ttaagcatcc cacctgggga gtacgccggc aacggtgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 960

cgcgaggaac cttacccggg cttgaatcgc aggaagaacg atacagagat gttgaggtcc 1020

ttcgggactc ctgcgaaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aacccctctc cccagttgcc atcgggtgat gccgggcact 1140

tcggggacac tgccgccgca aggtgcgaag aaggccggga tgacgtcaaa tcagcacggc 1200

ccttacgtcc ggggctacac acgtgttaca atggccggca cagaaggccg gtgcggcgcg 1260

agccgcatct aatcttgaaa accggtctta gttcggactg gggtctgcaa cccgacccca 1320

cgaagctgga ttcgctagta atcgcgcatc agccacggcg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatgaaa gccgggggtg cctgaagtcc gtgaccgcga 1440

ggatcggcct agggcaaaac tggtgattgg 1470

<210> 1532
<211> 1446
<212> DNA
<213> Prevotella sp. oral clone CY006

<400> 1532
gagtttgatt ctggctcagg atgaacgcta gctacaggcc taacacatgc gagtcgtggg 60

gcagcgggta tgcttgtttt caagtatatg ccggcgaccg gcgcacgggt gagtaacgcg 120

tatccaacct gcccatcaca agggaataac ccgtcgaaag tcggcctaat gccctatgta 180

ttccgatgaa gtcctctgaa tcggaataaa gcatttgcgg tgatggatgg ggatgcgtct 240

gattagcttg tcggcggggt aacggcccac cgaggcaacg atcagtaggg gttctgagag 300

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 360

gaatattggt caatgggcgt gagcctgaac cagccaagta gcgtgcagga tgacggccct 420

atgggttgta aactgctttt atacggggat aaaagggtga acgtgttctc ctttgcaggt 480

accgtatgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac ggaaggtcct 540

ggcgttatcc gggtttattg ggtttaaagg gagcgcaggc tgcactttaa gcgtgttgtt 600

aaatgtgccg gctcaaccgg taacgtgcag cgcgaactgg ggtgcttgag cacgaagagg 660

gaaggcggaa ctcgtggtgt agcggtgaaa tgcttagata tcattaggaa ctccgatcgc 720

gaaggcagct ttccgtttcg gaactgacgc tgaggctcga aagtgcgggt atcgaacagg 780

attagatacc ctggtagtcc gcacggtaaa cgatggatgc tcgctgttgg atatttttat 840

tcagtggcta agtgaaaacg ttaagcatcc cacctgggga gtacgccggc aacggtgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 960

cgcgaggaac cttacccggg cttgaattgc agctgaacga tccagagatg gtgaggccct 1020

tcggggcagc tgtgaaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcggct 1080

taagtgccat aacgagcgca acccctctcc gcagttgcca tcggttgatg ccgggcactc 1140

tgcggacact gcctccgcaa ggagtgagga aggtggggat gacgtcaaat cagcacggcc 1200

cttacgtccg gggctacaca cgtgttacaa tggcgcgtac agagtgtcgg tgctgtgcaa 1260

acagtatcta accaataaaa cgcgtcccag ttcggaccgg ggtctgcaac ccgaccccgc 1320

gaactggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaag ccatgaaagc cgmgggcgcc tgaagtccgt gaccgcaagg 1440

atcggc 1446

<210> 1533
<211> 1524
<212> DNA
<213> Prevotella sp. oral clone DA058

<400> 1533
gagtttgaty ctggctcagg atgaacgcta gctacaggct taacccatgc aagtcgaggg 60

gcatcaaatt ggttgcttgc aaccgatgtt gscgaccggc gcacgggtga gtaacgcgta 120

tccaaccttc cctttactct ggtatagccc agcgaaagtt ggattaatac cggatgttat 180

cgaaagctct catgagactt tgatcaaaga ttttatcggt aaaggatggg gatgcgtctg 240

attaggcagt tggcggggta acggcccacc aaaccgacga tcagtagggg ttctgagagg 300

aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc agcagtgagg 360

aatattggtc aatggacgta agtctgaacc agccaagtag cgtgcaggat gactgcccta 420

tgggttgtaa actgctttta tgcggggata agtcagcca cgtgtggttg tttgcaggta 480

ccgcatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg gaaggtccgg 540

gcgttatccg gatttattgg gtttaaaggg agcgtaggct gttggttaag cgtgttgtga 600

aatgtagatg ctcaacatct gaattgcagc gcgaactgtc cgacttgagt gcgcggaaag 660

caggcggaat tcgttgtgta gcggtgaaat gcttagatat gacgaagaac tccgattgcg 720

aaggcagctt gctgtagcgt aactgacgct gaagctcgaa agtgcgggta tcgaacagga 780

ttagataccc tggtagtccg cacggtaaac gatggatgct cgctgtgtgc ttatttttag 840

tatgcggcta agggaaacca ttaagcatcc cacctgggga gtacgccggc aacggtgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 960

cgcgaggaac cttacccggg cttgaactgc cggtgctggc atgagagatc atgctttcct 1020

tcgggacact ggtggaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcggct 1080

taagtgccat aacgagcgca acccctgtcg tcagttgcca tcaggtaatg ctgggcactc 1140

tggtgatact gccaccgtaa ggtgtgagga aggtggggat gacgtcaaat cagcacggcc 1200

cttacgtccg gggctacaca cgtgttacaa tggcgtgtac agcgagtcgg taccgggcaa 1260

ccggtatcca atcaatataa cacgtctcag ttcggactgg ggtctgcaac ccgaccccac 1320

gaagctggat tcgctagtaa tcgcgcatca gccatggcgc ggtgaatacg ttcccgggcc 1380

ttgtacacac cgcccgtcaa gccatgaaag ccgggggcgc ttgaagtccg tgaccgcaag 1440

gatcggccta gagcgaaact ggtaattggg gctaagtcgt aacaaggtag ccgtaccgga 1500

aggtgcggct ggaacacctc cttc 1524

<210> 1534
<211> 1356
<212> DNA
<213> Prevotella sp. oral clone FL019

<400> 1534
gagtttgatt ctggctcagg atgaacgcta gctacaggcc taacacatgc aagtcgtggg 60

accggcgcac gggtgagtaa cgcgtatcca acctgcccat cacaagggaa taacccgtcg 120

aaagtcggcc taatgcccta tgtgtaaagg cggtgatgga tggggatgcg tctgattagc 180

ttgtcggcgg ggtaacggcc caccgaggcg acgatcagta ggggttctga gaggaaggtc 240

ccccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatggg cgtgagcctg aaccagccaa gtagcgtgca ggatgacggc ctatgggttg 360

taaactgctt ttatacgggg atatgcaggt accgtatgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtcct ggcgttatcc ggatttattg ggtttaaagg 480

gagcgcaggc tgcactttaa gcgtgttgtg aaatgtaccg gctcaaccgg taacgtgcag 540

cgcgaactgg ggtgcttgag tacgaagagg gaaagcggaa ctcgtggtgt agcggtgaaa 600

tgcttagata tcacgaggaa ctccgatcgc gaaggcagct ttccgtttcg actgacgctg 660

aggctcgaaa gtgcgggtat cgaacagggt tagataccct ggtagtccgc acggtaaacg 720

atggatgctc gctgttggat attcagtggc taagtgaaaa cgttaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaatt gtgaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccctctccg cagttgccat cggccgggca ctctgcggac actgcctccg caaggaggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatggcgcgc agagtgtcgg tgctgtgcaa acagtatcta atcaatcgcg tcccagttcg 1140

gacggggtct gcaacccgac cccggaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gcgcctgaag tccgttcggc ctagggcgag accggtgatt ggggctaagt cgtaacaagg 1320

tagccgtacc ggaaggtgcg gctggatcac ctcctt 1356

<210> 1535
<211> 1356
<212> DNA
<213> Prevotella sp. oral clone FU048

<400> 1535
gagtttgatt ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgagtaa cgcgtatcca accttcccat tactgtggaa taacctgccg 120

aaaggcagac taataccgca tggttaaagt cggtaatgga tggggatgcg tctgattagc 180

ttgttggcgg ggtaacggcc caccaaggcg acgatcagta ggggttctga gaggaaggtc 240

ccccacatcg gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatgga cgtaagtctg aaccagccaa gtagcgtgca ggatgacggc ctatgggttg 360

taaactgctt ttgtatgggg atatgcaggt accatacgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc cggagattaa gtgtgttgtg aaatgtagac gctcaacgtc tgacttgcag 540

cgcatactgg tttccttgag tacgcacaac gttggcggaa ttcgtcgtgt agcggtgaaa 600

tgcttagata tgacgaagaa ctccgattgc gaaggcagct gacgggagcg actgacgctt 660

aagctcgaag gtgcgggtat caaacaggat tagataccct ggtagtccgc acagtaaacg 720

atggatgccc gctgttggta tatcagcggc taagcgaaag cattaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaatt gtgaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccctctctt cagttgccat cagctgggca ctctggagac actgccaccg taaggtggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatggccggc agagggacgg tgtaatgcaa attgcatcca atcttgccgg tcccagttcg 1140

gatggggtct gcaacccgac cccagaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gtgcctgaag tccgttcggc ctagggcaaa actggtgatt ggggctaagt cgtaacaagg 1320

tagccgtacc ggaaggtgcg gttggatcac ctcctt 1356

<210> 1536
<211> 1354
<212> DNA
<213> Prevotella sp. oral clone FW035

<400> 1536
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgaat gggtgagtaa cgcgtatcca acctgccccc ggctggggta taacccgtcg 120

aaaggcggcc taatccccca tggttaaagc cggccgggga tggggatgcg tccgattagc 180

ttgctggtga ggtaacggct caccagggca tcgatcggta ggggttctga gaggaaggtc 240

ccccacactg gtactgagac acggaccaga ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatggg cgcaagcctg aaccagccaa gtagcgtgca ggatgaaggc ctatgggtcg 360

taatctgctt ttatgtgggg atatgcaggt accacatgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtccg ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc cgcctcttaa gcgtgttgtg aaaaccgggc gctcaccgtc cggcttgcag 540

cgcgaactgg ggggcttgag tgcgtgcgac gccggcggaa ttcgtcgtgt agcggtgaaa 600

tgcttagata tgacgaggaa ctccgattgc gaaggcagct ggcgagtgcg actgacgcta 660

atgctcgaag gcgcgggtat cgaacaggat tagataccct ggtagtccgc gctgtaaacg 720

atggatgccc gccgtgggta tttccgcggc caagcgaaag cgttaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaatt gcgaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccctctccg cagttgccat cggccgggca ctctgcggac actgccgccg caaggtggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatggccggc agagagttgc gcgcgcaagc gttgccaatc cctccggcct cagttcggat 1140

ggggtctgca acccgacccc agaagctgga ttcgctagta atcgcgcatc agccatggcg 1200

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca agccatgaaa gctgggggcg 1260

cctgaagtcc gtgtcggcct agggcgaaac cggtgattgg ggctaagtcg taacaaggta 1320

gccgtaccgg aaggtgcggc tggatcacct cctt 1354

<210> 1537
<211> 1356
<212> DNA
<213> Prevotella sp. oral clone GI030

<400> 1537
gagtttgatt ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgagtaa cgcgtatcca acctacccat tactgtggga taacctgccg 120

aaaggcagac taataccgca tggttaaagt cggtaatgga tggggatgcg tctgattagc 180

ttgttggcgg ggtaacggcc caccaaggca acgatcagta ggggttctga gaggaaggtc 240

ccccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatgga cggaagtctg aaccagccaa gtagcgtgca ggatgacggc ctatgggttg 360

taaactgctt ttgtatgggg atatgcaggt accatacgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc cggagattaa gtgtgttgtg aaatgtagac gctcaacgtc tgacttgcag 540

cgcatactgg tttccttgag tacgcacaac gttggcggaa ttcgtcgtgt agcggtgaaa 600

tgcttagata tgacgaagaa ctccgattgc gaaggcagct gacgggagcg actgacgctt 660

aagctcgaag gtgcgggtat cgaacaggat tagataccct ggtagtccgc acagtaaacg 720

atggatgccc gctgttggta tatcagcggc taagcgaaag cattaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcctgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaatt gtgaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccctctctt cagttgccat cagctgggca ctctggagac actgccaccg taaggtggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatggccggc agagggatgg tgtaatgcaa attgcatcaa atcttgccgg tcccagttcg 1140

gatggggtct gcaacccgac cccagaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccacccg tcaagccatg aaagccgggg 1260

gtgcctgaag tccgttcggc ctagggcaaa actggtgatt ggggctaagt cgtaacaagg 1320

tagccgtacc ggaaggtgcg gctggatcac ctcctt 1356

<210> 1538
<211> 1356
<212> DNA
<213> Prevotella sp. oral clone GI032

<400> 1538
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgagtaa cgcgtatcca acctgcctct gactaaggga taacccggcg 120

aaagtcggac taatacctta tgaggaaagt cggtcagtga tggggatgcg tctgattagc 180

ttgttggcgg ggtaacggcc caccaaggca acgatcagta ggggttctga gaggaaggtc 240

ccccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatggg cgagagcctg aaccagccaa gtagcgtgca ggatgacggc ctatgggttg 360

taaactgctt ttatgtgggg atatgcaggt accacatgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc cgtggattaa gcgtgttgtg aaatgtagac gctcaacgtc tgaattgcag 540

tgcgaactgg ttcacttgag tatgcacaac gtaggcggaa ttcgtcgtgt agcggtgaaa 600

tgcttagata tgacgaagaa ctccgattgc gaaggcagct tacgggagca actgacgctg 660

aagctcgaag gtgcgggtat caaacaggat tagataccct ggtagtccgc acagtaaacg 720

atggatgccc gttgttagtt aattagcgac caagcgaaag cattaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaatt gtgaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgggcgcaa 960

cccctctctt cagttgccat cagctgggca ctctggagac actgccaccg taaggtggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatggccggc agagggacgg tgtaatgcaa attgcatcca atcttgccgg tcccagttcg 1140

gatggggtct gcaacccgac cccagaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gtgcctgaag tccgttcggc ctagggcaaa actggtaatt ggggctaagt cgtaacaagg 1320

tagccgtacc ggaaggtgcg gctggatcac ctcctt 1356

<210> 1539

<211> 1341
<212> DNA
<213> Prevotella sp. oral clone GI059

<400> 1539
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgagtaa cgcgtatcca accttcccat tactgtggga taacctgccg 120

gaaggcagac taatacctca tagttaaagt cggtaatgga tggggatgcg tctgattagc 180

ttgttggcgg ggtaacggcc caccaaggca acgatcagta ggggttctga gaggaaggtc 240

ccccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatgga cgtaagtctg aaccagccaa gtagcgtgca ggatgacggc ctatgggttg 360

taaactgctt ttgtatgggg atatgcaggt accatacgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggttcg ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc cggagattaa gtgtgttgtg aaatgtagac gctcaacgtc tgacttgcag 540

cgcatactgg tttccttgag tacgcacaac gttggcggaa ttcgtcgtgt agcggtgaaa 600

tgcttagata tgacgaagaa ctccgattgc gaaggcagct gacgggagcg actgacgctg 660

aagctcgaag gtgcgggtat cgaacaggat tagataccct ggtagtccgc acagtaaacg 720

atggatgccc gctgttggta tatcagcggc taagcgaaag cattaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaatt gtgaaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccctctctt cagttgccat cagctgggca ctctggagac actgccaccg taaggtggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatggccggc agagggacgg tgtaatgcaa attgcatcca atcttgccgg tcccagttcg 1140

gatggggtct gcaacccgac cccagaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gtgcctgaag tccgttcggc ctagggcaaa actggtaatt ggggctaagt cgtaacaagg 1320

tagccgtacc ggaaggtgcg g 1341

<210> 1540
<211> 1357
<212> DNA
<213> Prevotella sp. oral clone GU027

<400> 1540
gagtttgatt ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgcggg 60

accggcgcac gggtgagtaa cgcgtatcca acctgccctt caccacggga taacccggcg 120

aaagtcggac taataccgta tgttgaaagg cggtgaagga tggggatgcg tccgattagc 180

cagacggcgg ggtaacggcc caccgtggcg acgatcggta ggggttctga gaggaaggtc 240

ccccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatggg cgtaagcctg aaccagccaa gtagcgtgca ggatgacggc ctatgggttg 360

taaactgctt ttatgcgggg atatgcaggt accgcatgaa taaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtccg ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc cgcgccttaa gcgtgttgtg aaatccgggt gctcaacatc cggcttgcag 540

cgcgaactgg ggcgcttgag tgcgcagaaa gtaggcggaa ttcgtggtgt agcggtgaaa 600

tgcttagata tcacgaggaa ctccgattgc gaaggcagcc tactgtagcg actgacgctg 660

atgctcgaaa gcgtgggtat cgaacaggat tagataccct ggtagtccac gcggtaaacg 720

atggatgctc gttgtcggcc ggtcggtgac caagcgaaag cgttaagcat cccacctggg 780

gagtacgccg gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa 840

catgtggttt aattcgatga tacgcgagga accttacccg ggcttgaact gcggaggtgc 900

tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt aagtgccata acgagcgcaa 960

cccccgtctt cagttgccat cggccgggca ctctggagat actgccaccg caaggtggag 1020

gaaggtgggg atgacgtcaa atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatggcgcac agagagtcgg tggcatgcga gtgccatcca atcctctgcg tctcagttcg 1140

gatggggtct gcaacccgac cccagaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gcgcctgaag tccgtgtcgg cctagggtga aaccggtgat tggggctaag tcgtaacaag 1320

gtagccgtac cggaaggtgc ggctggatca cctcctt 1357

<210> 1541
<211> 1357
<212> DNA
<213> Prevotella sp. oral clone HF050

<400> 1541
gagtttgatt ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgcgtaa cgcgtatcaa acctgcctca tactcgggga tagccttgcg 120

aaagtaagat taatacccga tgttcaaagt cggtatgaga tggtgatgcg tccgattagg 180

tagtaggcgg ggtaacggcc cacctagcct tcgatcggta ggggttctga gaggaaggtc 240

ccccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatgga cgcaagtctg aaccagccaa gtagcgtgca ggatgacggc ctctgggttg 360

taaactgctt ttagttggga atatgtatgt accttcagaa aaaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc ggattattaa gtcagtggtg aaagacggtg gctcaaccat cgttaaccat 540

tgaaactggt agtcttgagt gcagacaggg atgctggaac tcgtggtgta gcggtgaaat 600

gcttagatat cacgatgaac tccgatcgcg aaggcaggtg tccgggctga ctgacgctga 660

ggctcgaaag tgtgggtatc acacaggatt agataccctg gtagtccaca cagtaaacga 720

tgtatactcg cggtttgcga gtaagccgcc aagcgaaagc attaagtata ccacctgggg 780

agtacgccgg caacggtgaa actcaaagga attgacgggg gcccgcacaa gcggaggaac 840

atgtggttta attcgatgat acgcgaggaa ccttacccgg gcttgaacta tggaggtgct 900

gcatggttgt cgtcagctcg tgccgtgagg tgtcggctta agtgccataa cgagcgcaac 960

ccttttcctt ggttgccatc agctgggcac tccagggaaa ctgccatcgg taagatggag 1020

gaaggtgggg atgacgtcga atcagcacgg cccttacgtc cggggctaca cacgtgttac 1080

aatgggggc agaaggtcgc tacctggtga caggatgcta atctgccctc tctcagttcg 1140

gatggagtct gcaacccgac tccagaagct ggattcgcta gtaatcgcgc atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg aaagccgggg 1260

gtgcctgaaa gccgtgtcgg cctagggtaa aactggtgat tggggctaag tcataacaag 1320

gtacccgtac cggaaggtgc ggctggaaca cctcctt 1357

<210> 1542
<211> 1518
<212> DNA
<213> Prevotella sp. oral clone ID019

<400> 1542
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

gcagcatgga agaagcttgc ttcttctgat ggcgaccggc gcacgggtgc gtaacgcgta 120

tcaaacctgc ctcatactcg gggatagcct tgcgaaagta agattaatac ccgatgttat 180

tagttctccg catggtggac taatcaaaga tttatcggta tgagatggtg atgcgtccga 240

ttaggtagta ggcggggtaa cggcccacct agccttcgat cggtaggggt tctgagagga 300

aggtccccca cactggaact gagacacggt ccagactcct acgggaggca gcagtgagga 360

atattggtca atggacgaaa gtctgaacca gccaagtagc gtgcaggatg acggccctcc 420

gggttgtaaa ctgctttcag tcgggaataa aaaaagggac gtgtccctta ttgtatgtac 480

cttcagaaaa aggaccggct aattccgtgc cagcagccgc ggtaatacgg aaggtccagg 540

cgttatccgg atttattggg tttaaaggga gcgtaggcgg attgttaagt cagcggttaa 600

agggtgtggc tcaaccatac attgccgttg aaactggcga tcttgagtgc agacagggat 660

gccggaattc gtggtgtagc ggtgaaatgc ttagatatca tgaagaactc cgatcgcgaa 720

ggcaggtgtc cgggctgcaa ctgacgctga ggctcgaaag tgtgggtatc aaacaggatt 780

agataccctg gtagtccaca cagtaaacga tgtatactcg cggtttgcga tagattgtaa 840

gccgccaagc gaaagcatta agtataccac ctggggagta cgccggcaac ggtgaaactc 900

aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc gatgatacgc 960

gaggaacctt acccgggctt gaactaacgg tgacgaatct agagatagat ttttcttcgg 1020

acaccgttgg aggtgctgca tggttgtcgt cagctcgtgc cgtgaggtgt cggcttaagt 1080

gccataacga gcgcaaccct tctcctcggt tgccatcggg taatgccggg cactccgtgg 1140

acactgccat cgtaagatgt gaggaaggtg gggatgacgt caaatcagca cggcccttac 1200

gtccggggct acacacgtgt tacaatggcc ggtacagagg gatggtgtaa tgcaaattgc 1260

atcatatctt gaaagccggt cccagttcgg actggggtct gcaacccgac cccacgaagc 1320

tggattcgct agtaatcgcg catcagccat ggcgcggtga atacgttccc gggccttgta 1380

cacaccgccc gtcaagccat gaaagccggg ggtgcctgaa gtccgtgacc gcaaggatcg 1440

gcctagggca aaactggtga ttggggctaa gtcgtaacaa ggtagccgta ccggaaggtg 1500

cggctggaac acctcctt 1518

<210> 1543
<211> 1269
<212> DNA
<213> Prevotella sp. oral clone IDR-CEC-0055

<400> 1543
tcctggctca ggatgaacgc tagctacagg cttaacacat gcaagtcgag ggaccggcgc 60

acgggtgagt aacgcgtatc caaccttccc ataactaagg aataccccgt agaaatgcgg 120

cctaatccct tatggttaaa gtcggttatg gatggggatg cgtctgatta gcttgctggc 180

ggggtaacgg cccaccaggg catcgatcag taggggttct gagaggaagg tcccccacat 240

tggaactgag acacggtcca aactcctacg ggaggcagca gtgaggaata ttggtcaatg 300

ggcggaagcc tgaaccagcc aagtagcgtg caggatgacg gcctatgggt cgtaaactgc 360

tttttaaggt gaatatgcat gtagccttgg aataaggacc ggctaattcc gtgccagcag 420

ccgcggtaat acggaaggtc caggtgttat ccggatttat tgggtttaaa gggagcgtag 480

gccgcaggtt aagtgtgttg tgaaaagcag tcgcccaacg tctgccttgc agcgcaaact 540

gtcctgcttg agtgcgcaca acgcaggcgg aattcgtcgt gtagcggtga aatgcttaga 600

tatgacgaag aactccgatt gcgaaggcag cttgcgggag cgactgacgc tgaagctcga 660

aagtgcgggt atcgaacagg attagatacc ctggtagtcc gcacggtaaa cgctggatgc 720

ccgtttttgg ctagtcagag accaagcgaa agcattaagc atcccacctg gggagtacgc 780

cggcaacggt gaaactcaaa ggaattgacg ggggcccgca caagcggagg aacatgtggt 840

ttaattcgat gatacgcgag gaaccttacc cgggcttgaa ttgtgaaggt gctgcatggt 900

tgtcgtcagc tcgtgccgtg aggtgtcggc ttaagtgcca taacgagcgc aaccccttc 960

ttcagttgcc atcggccggg cactctgtag atactgccgc cgtaaggtgg aggaaggtgg 1020

ggatgacgtc aaatcagcac ggcccttacg tccggggcta cacacgtgtt acaatggggg 1080

gcagcgagcg ggatgcccgc aaggtcattc aaatcaatcc cccctcagtt cggatggggt 1140

ctgcaacccg accccagaag ctggattcgc tagtaatcgc gcatcagcca tggcgcggtg 1200

aatacgttcc cgggccttgt acacaccgcc cgtcaagcca tgaaagccgg gggtgcctga 1260

agtccgtac 1269

<210> 1544
<211> 1355
<212> DNA
<213> Prevotella sp. oral clone IK053

<400> 1544
gagtttgatt ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgcggg 60

accggcgcac gggtgagtaa cgcgtatcca acctacctat taccacggga taacccggcg 120

aaagtcggac taataccgta tgtgtaaagc ggtaatagat ggggatgcgt ccgattagtt 180

agttggcggg gtaacggccc accaagacgt cgatcggtag gggttctgag aggaaggtcc 240

cccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg aggaatattg 300

gtcaatgggc gtaagcctga accagccaag tagcgtgcag gatgacggcc tatgggttgt 360

aaactgcttt tatgcaagaa tatgcaggta ttgcatgaat aaggaccggc taattccgtg 420

ccagcagccg cggtaatacg gaaggtccga gcgttatccg gatttattgg gtttaaaggg 480

agcgtaggcg gccttttaag cgtgttgtga aattcagttg ctcaacatct gacttgcagc 540

gcgaactggg gggcttgagt atgctgaagg taggcggaat tcgtggtgta gcggtgaaat 600

gcttagatat cacgaagaac tccgattgcg aaggcagctt actgcagcta ctgacgctga 660

tgctcgaaag cgtgggtatc gaacaggatt agataccctg gtagtccacg cggtaaacga 720

tggatgctcg ttgttggtat atcagtgacc aagtgaaaac gttaagcatc ccacctgggg 780

agtacgccgg caacggtgaa actcaaagga attgacgggg gcccgcacaa gcggaggaac 840

atgtggttta attcgatgat acgcgaggaa ccttacccgg gcttgaactg cggaggtgct 900

gcatggttgt cgtcagctcg tgccgtgagg tgtcggctta agtgccataa cgagcgcaac 960

ccctttttat agttgccatc ggccgggcac tctgtagata ctgccgccga aggtggagga 1020

aggcggggat gacgtcaaat catcacggcc cttacgtccg gggctacaca cgtgttacaa 1080

tggcgcgcag cgagttggtg ttatgtgagt agcatctaat cctgcgcgcc tcagttcgga 1140

tggggtctgc aacccgaccc cagaagctgg attcgctagt aatcgcgcat cagccatggc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc aagccatgaa agccgggggc 1260

gcctgaagtc cgtgtcggcc taaggtgaaa ccggtgattg gggctaagtc gtaacaaggt 1320

agccgtaccg gaaggtgcgg ctggatcacc tcctt 1355

<210> 1545
<211> 1356
<212> DNA
<213> Prevotella sp. oral clone IK062

<400> 1545
gagtttgatt ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

accggcgcac gggtgcgtaa cgcgtatcaa acctgcctca tactcgggga tagccttgcg 120

aaagtaagat taatacccga tgttcaaagt cggtatgaga tggtgatgcg tccgattagg 180

tagtaggcgg ggtaacggcc cacctagcct tcgatcggta ggggttctga gaggaaggtc 240

ccccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt gaggaatatt 300

ggtcaatgga cgaaagtctg aaccagccaa gtagcgtgca ggatgacggc ctctgggttg 360

taaactgctt ttagttggga atatgtatgt accttcagaa aaaggaccgg ctaattccgt 420

gccagcagcc gcggtaatac ggaaggtcca ggcgttatcc ggatttattg ggtttaaagg 480

gagcgtaggc ggattattaa gtcagtggtg aaagacggtg gctcaaccat cgttagccat 540

tgaaactggt agtcttgagt gcagacaggg atgctggaac tcgtggtgta gcggtgaaat 600

gcttagatat cacgatgaac tccgatcgcg aaggcaggtg tccgggctga ctgacgctga 660

ggctcgaaag tgtgggtatc aaacaggatt agataccctg gtagtccaca cagtaaacga 720

tgtatactcg cggtttgcgt gtaagccgcc aagcgaaagc attaagtata ccacctgggg 780

agtacgccgg caacggtgaa actcaaagga attgacgggg gcccgcacaa gcggaggaac 840

atgtggttta attcgatgat acgcgaggaa ccttacccgg gcttgaacta tggaggtgct 900

gcatggttgt cgtcagctcg tgccgtgagg tgtcggctta agtgccataa cgagcgcaac 960

ccttttcctt ggttgccatc agctgggcac tccagggata ctgccatcgt aagatggagg 1020

aaggtgggga tgacgtcaaa tcagcacggc ccttacgtcc ggggctacac acgtgttaca 1080

atgggggca gaaggtcgct acctggtgac aggatgctaa tctcacctct ctcagttcgg 1140

atggagtctg caacccgact ccagaagctg gattcgctag taatcgcgca tcagccatgg 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt caagccatga aagccggggg 1260

tgcctgaaag ccgtgtcggc ctagggtaaa actggtgatt ggggctaagt cgtaacaagg 1320

tagccgtacc ggaaggtgcg gctggatcac ctcctt 1356

<210> 1546
<211> 1285
<212> DNA
<213> Prevotella sp. oral clone P4PB_83 P2

<400> 1546
gatgaacgct agctacaggc ttaacacatg caagtcgagg gaccggcgca cgggtgagta 60

tcgcgtatcc aaccttccca ttactgtggg ataacctgcc gaaaggcaga ctaataccgc 120

atggttaaag tcggtaatgg atggggatgc gtctgattag cttgttggcg gggtaacggc 180

ccaccaaggc gacgatcagt aggggttctg agaggaaggt cccccacatt ggaactgaga 240

cacggtccaa actcctacgg gaggcagcag tgaggaatat tggtcaatgg acgtaagtct 300

gaaccagcca agtagcgtgc aggatgacgg cctatgggtt gtaaactgct tttacagggg 360

aatatgcatg taccctgcga ataaggaccg gctaattccg tgccagcagc cgcggtaata 420

cggaaggtcc tggtgttatc cggatttatt gggtttaaag ggagcgtagg ccgtagatta 480

agtgtgttgt gaaatgtagt cgcccaacgt ctgccttgca gcgcaaactg gtttacttga 540

gtacgcacaa cgcaggcgga attcgtcgtg tagcggtgaa atgcttagat atgatgaaga 600

actcctattg cgaaggcagc ttgcgggagc gactgacgct gaggctcgaa agtgcgggta 660

tcgaacagga ttagataccc tggtagtccg cacggtaaac gatggatgcc cgtttttggc 720

tagccagaga ccaagcgaaa gcattaagca tcccacctgg ggagtacgcc ggcaacggtg 780

aaactcaaag gaattgacgg gggcccgcac aagcggagga catgtggtta attcgatgat 840

acgcgaggaa ccttacccgg gcttgaattg tgaaggtgct gcatggttgt cgtcagctcg 900

tgccgtgagg tgtcggctta agtgccataa cgagcgcaac ccctctcttc agttgccatc 960

agctgggcac tctggagaca ctgccaccgt aaggtggagg aaggtgggga tgacgtcaaa 1020

tcagcacggc ccttacgtcc ggggctacac acgtgttaca atggccggca gagggatggt 1080

gtaatgcaaa ttgcatcaaa tcttgccggt cccggttcgg atggggtctg caacccgacc 1140

ccagaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt caagccatga aagccggggg tgcctgaagt tcgtagcgac 1260

ctagggcaaa actggtgatg ggggc 1285

<210> 1547
<211> 1508
<212> DNA
<213> Prevotella sp. oral taxon 292

<400> 1547
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggaaacgggg gaatagcttg ctattctttg tcgtcgaccg gcgcacgggt gagtaacgcg 120

tatccaacct tcccataact aaggaatacc ccgtagaaat gcggcctaat cccttatggt 180

ctcttatgcc tgtcatggga ataagagtaa agatttatcg gttatggatg gggatgcgtc 240

tgattagctt gctggcgggg taacggccca ccagggcatc gatcagtagg ggttctgaga 300

ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag gcagcagtga 360

ggaatattgg tcaatgggcg taagcctgaa ccagccaagt agcgtgcagg atgacggccc 420

tatgggttgt aaactgcttt ttaaggtgaa taaagagggg cacgcgtgcc ctgttgcatg 480

tagccttgga ataaggaccg gctaattccg tgccagcagc cgcggtaata cggaaggtcc 540

gggtgttatc cggatttatt gggtttaaag ggagcgtags ccgcaggtta agtgtgttgt 600

gaaaagcagt cgcccaacgt ctgccttgca gcgcaaactg tcctgcttga gtgcgcacaa 660

cgcaggcgga attcgtcgtg tagcggtgaa atgcttagat atgacgaaga actccgattg 720

cgaaggcagc ttgcgggagc gcaactgacg ctgaagctcg aaagtgcggg tatcgaacag 780

gattagatac cctggtagtc cgcacggtaa acgctggatg cccgtttttg gcttatttta 840

agtcagagac caagcgaaag cattaagcat cccacctggg gagtacgccg gcaacggtga 900

aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt aattcgatga 960

tacgcgagga accttacccg ggcttgaatt gccagagacg gctccagaga tggagcttcc 1020

cttcggggct ctggtgaagg tgctgcatgg ttgtcgtcag ctcgtgccgt gaggtgtcgg 1080

cttaagtgcc ataacgagcg caacccccttt cttcagttgc catcgggtaa tgccgggcac 1140

tctgtagata ctgccgccgt aaggtgtgag gaaggtgggg atgacgtcaa atcagcacgg 1200

cccttacgtc cggggctaca cacgtgttac aatggtcgga gcagcaggaa gctacctggc 1260

gacaggatgc tgatcccgaa acccggcctc agttcggact ggagtctgca acccgactcc 1320

acgaagccgg attcgctagt aatcgcgcat cagccatggc gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc aagccatgaa agccgggggt gcctgaaagc cgtgaccgcg 1440

agggtcggcc tagggtaaaa ccggtgattg gggctaagtc gtaacaaggt agccgtaccg 1500

gaaggtgc 1508

<210> 1548
<211> 1533
<212> DNA
<213> Prevotella sp. oral taxon 299

<400> 1548
ttacaatgta gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgaggg gcagcatgtt ggttgcttgc aaccaatgat ggcgaccggc gcacgggtga 120

gtaacgcgta tccaacctac ccaatactca ggcataaccc gttgaaagac ggactaattc 180

ctgatggtat gtatttttct catgatttat acattaaaga acttcggtat tggatgggga 240

tgcgtctgat tagtttgttg gtgaggtaac ggctcaccaa ggcatcgatc agtaggggtt 300

ctgagaggaa ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag 360

cagtgaggaa tattggtcaa tggatgaaaa tctgaaccag ccaagtagcg tgcaggatga 420

cggccctatg ggttgtaaac tgcttttatg tgagaataaa gttaggtatg tatacttatt 480

tgcatgtatc acatgaataa ggaccggcta attccgtgcc agcagccgcg gtaatacgga 540

aggtccaggc gttatccgga tttattgggt ttaaagggtg cgtaggccgt ttgataagcg 600

tgctgtgaaa tatagtggct caacctctat cgtgcagcgc gaactgtcga acttgagtgc 660

gtagtaggta ggcggaattc gtggtgtagc ggtgaaatgc ttagatatca cgaagaactc 720

cgattgcgaa ggcagcttac cgtaacgtta ctgacgctta agcacgaagg tgcgggtatc 780

gaacaggatt agataccctg gtagtccgca cagtaaacga tggatgctcg ctgttggcct 840

tttatggtca gtggcttagc gaaagcgtta agcatcccac ctggggagta cgccggcaac 900

ggtgaaactc aaaggaattg acgggggccc gcacaagcgg aggaacatgt ggtttaattc 960

gatgatacgc gaggaacctt acccgggctt gaactgcagc tgaacgattc agagatgatg 1020

aggcccttcg gggcagctgt ggaggtgctg catggttgtc gtcagctcgt gccgtgaggt 1080

gtcggcttaa gtgccataac gagcgcaacc ccttttctta gttgccatca ggtaatgctg 1140

ggcactctgg gaatactgcc accgtaaggt gtgaggaagg tggggatgac gtcaaatcag 1200

cacggccctt acgtccgggg ctacacacgt gttacaatgg cgcatacaga atgttggttt 1260

catgcaaatg agatctaatc ttcaaagtgc gtctcagttc ggactggggt ctgcaacccg 1320

accccacgaa gctggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcaagcc atgaaagccg ggggcgccta aagtccgtga 1440

ccgcaagggt cggcctaggg tgaaactggt gattggggct aagtcgtaac aaggtagccg 1500

taccggaagg tgcggctgga acacctcctt tct 1533

<210> 1549

<211> 1209
<212> DNA
<213> Prevotella sp. oral taxon 300

<400> 1549
gatgaacgct agctacaggc ttaacacatg caagtcgagg ggaaacggga gaatagcttg 60

ctattctttg tcgtcgaccg gcgcacgggt gagtaacgcg tatccaacct tcccatagct 120

aaggaatacc ccgtagaaat gcggcctaat cccttatggt ctcttatacc tgacatcgga 180

ataagagtaa agatttatcg gttatggatg gggatgcgtc tgattagctt gctggcgggg 240

taacggccca ccagggcatc gatcagtagg ggttctgaga ggaaggtccc ccacattgga 300

actgagacac ggtccaaact cctacgggag gcagcagtga ggaatattgg tcaatgggcg 360

agagcctgaa ccagccaagt agcgtgcagg atgacggccc tatgggtgtg taaactgctt 420

tttaaggtga ataaagaagg gcacgtgtgc cctgttgcat gtagccttgg aataaggacc 480

ggctaattcc gtgccagcag ccgcggtaat acggaaggtc caggtgttat ccggatttat 540

tgggtttaaa gggagcgtag gccgcaggtt aagtgtgttg tgaaaagcag tcgcccaacg 600

tctgccttgc agcgcaaact gtcctgcttg agtgcgcaca acgcaggcgg aattcgtcgt 660

gtagcggtga aatgcttaga tatgacgaag aactccgatt gcgaaggcag cttgcgggag 720

cgcaactgac gctgaagctc gaaagtgcgg gtatcgaaca ggattagata ccctggtagt 780

ccgcacggta aacgctggat gcccgttttt ggcttatttt aagtcagaga ccaagcgaaa 840

gcattaagca tcccacctgg ggagtacgcc ggcaacggtg aaactcaaag gaattgacgg 900

gggcccgcac aagcggagga acatgtggtt taattcgatg atacgcgagg aaccttaccc 960

ggggcttgaa ttgccagaga cggctccaga gatggagctt cccttcgggg gctctggtga 1020

cggtgctgca tgggttgtcg tcagctcgtg ccgtgaggtg tcagcttaag tgccataacg 1080

agcgcacccc ctttcttcag ttgccatcgg ggtattgccc tggcactctg taaaatccgc 1140

cgccgatcgg gttgaggaag ggtgggacta cgtcaaatag caggccctac gtcgggctaa 1200

caggttaaa 1209

<210> 1550
<211> 1521
<212> DNA
<213> Prevotella sp. oral taxon 302

<400> 1550
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggaaacgaca ttgaaagctt gcttttaatg ggcgtcgacc ggcgcacggg tgcgtaacgc 120

gtatcgaacc tgccctttac tcagggatag ccttgcgaaa gtaagattaa tacctgatag 180

tgttgtgatg aggcatcttg ttgcaactaa agatttattg gtaaaggatg gcgatgcgtc 240

tgattaggta gtaggcgggg taacggccca cctagccgac gatcagtagg ggttctgaga 300

ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag gcagcagtga 360

ggaatattgg tcaatgggcg agagcctgaa ccagccaagt agcgtgcagg atgacggccc 420

tctgggttgt aaactgcttt tagttgggaa caaaaaaggc gacgtgtcgc ctctggagtg 480

taccatcaga aaaaggaccg gctaattccg tgccagcagc cgcggtaata cggaaggtcc 540

aggcgttatc cggatttatt gggtttaaag ggagcgtagg cggacgatta agtcagctgt 600

gaaagtttgc ggctcaaccg taaaattgca gttgaaactg gttgtcttga gtgcacgcag 660

ggatgttgga attcatggtg tagcggtgaa atgcttagat atcatgaaga actccgatcg 720

cgaaggcata tgtccggagt gcaactgacg ctgaggctcg aaagtgcggg tatcgaacag 780

gattagatac cctggtagtc cgcacagtaa acgatgaata ctcgcagtat gcgatatagt 840

gtatgctgcc aagtgaaaac gttaagtatt ccacctgggg agtacgccgg caacggtgaa 900

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 960

acgcgaggaa ccttacccgg gcttgaacta agcaggaaga tgggcagaga ggcctgttgt 1020

cttcggacct gcttggaggt gctgcatggt tgtcgtcagc tcgtgccgtg aggtgtcggc 1080

ttaagtgcca taacgagcgc aacccttctc cacgtttgcc atcaggtaga gctgggcact 1140

ccgtggatac tgccatcgta agatgtgagg aaggtgggga tgacgtcaaa tcagcacggc 1200

ccttacgtcc ggggctacac acgtgttaca atggccggta cagagggaag ccaccaggcg 1260

actgggcgct gatccattaa aaccggtctc agttcggact ggagtctgca acccgactcc 1320

acgaagctgg attcgctagt aatcgcgcat cagccatggc gcggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc aagccatgaa agccgggggt gcctgaaagc tgtgaccgta 1440

aggggcggcc tagggtaaaa ccggtgattg gggctaagtc gtaacaaggt agccgtaccg 1500

gaaggtgcgg ctggaacacc t 1521

<210> 1551
<211> 1505
<212> DNA
<213> Prevotella sp. oral taxon 310

<400> 1551
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

gaaacggcat ttagtgcttg caccgaatgg acgtcgaccg gcacacgggt gagtaacgcg 120

tatccaacct tcccacaact aagggataac ctgccgaaag gcagactaat accttatgta 180

atcctttgat ggcatcagat aaggataaaa gatttatcgg taaaggatgg ggatgcgtct 240

gattagcttg ttggtgaggt aaaggctcac caaggcgacg atcagtaggg gttctgagag 300

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ttacgggagg cagcagtgag 360

gaatattggt caatgggcgg aagcctgaac cagccaagta gcgtgcagga agacggccct 420

atgggttgta aactgctttt atacgagaat aatttgatgc acgtgtgcgt tattgcatgt 480

atcgtatgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac ggaaggtcca 540

ggcgttatcc ggatttattg ggtttaaagg gagtgtaggc ggtttgttaa gcgtgttgtg 600

aaatttaggt gctcaacatt taacttgcag cgcgaactgt cagtcttgag tacacgcaac 660

gtatgcggaa ttcatggtgt agcggtgaaa tgcttagata tcatgaagaa ctccgattgc 720

gaaggcagca tacgggagtg taactgacgc ttaagctcga aggtgcgggt atcgaacagg 780

attagatacc ctggtagtcc gcacagtaaa cgatggatgc ccgctgttag cgcctggcgt 840

tagcggctaa gcgaaagcat taagcatccc acctggggag tacgccggca acggtgaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac 960

gcgaggaacc ttacccgggc ttgaattgca gaggaattat ttagagataa atacgccctt 1020

cggggtctct gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt 1080

aagtgccata acgagcgcaa ccccttttct tagttgccat caggtaatgc tgggcactct 1140

gggaacactg ccaccgcaag gtgtgaggaa ggtggggatg acgtcaaatc agcacggccc 1200

ttacgtccgg ggctacacac gtgttacaat ggccggtaca gagggatggt gtaatgcaaa 1260

ttgcatcaaa tcttaaaagc cggtcccagt tcggactgag gtctgcaacc cgacctcacg 1320

aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaag ccatgaaagc cgggggtgcc tgaagttcgt aaccgtaagg 1440

agcgacctag ggcaaaactg gtaattgggg ctaagtcgta acaaggtagc cgtaccggaa 1500

ggtgc 1505

<210> 1552
<211> 1534
<212> DNA
<213> Prevotella sp. oral taxon 317

<400> 1552
ttacaatgga gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgcggg gcagcatggg ggttgcttgc aatccctgat ggcgaccggc gcacgggtga 120

gtaacgcgta tccaacctgc ccttcaccac gggataaccc ggcgaaagtc ggactaatac 180

cgtatgttgt ccattgacgg catccgattt ggacgaaagg cttagcggtg agggatgggg 240

atgcgtccga ttagctcgac ggcggggtaa cggcccaccg tggcgacgat cggtaggggt 300

tctgagagga aggtccccca cactggaact gagacacggt ccagactcct acgggaggca 360

gcagtgagga atattggtca atgggcgtaa gcctgaacca gccaagtagc gtgcaggatg 420

acggccctat gggttgtaaa ctgcttttat gcggggataa aggagcccac gtgtgggctt 480

tttgcaggta ccgcatgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg 540

gaaggtccgg gcgttatccg gatttattgg gtttaaaggg agcgtaggcc gcccttaag 600

cgtgttgtga aatgcgggtg ctcaacatcc gacttgcagc gcgaactggg gggcttgagt 660

gcgccgaaag taggcggaat tcgtggtgta gcggtgaaat gcttagatat cacgaagaac 720

tccgattgcg aaggcagctt actgtagcgc aactgacgct gatgctcgaa agcgtgggta 780

tcgaacagga ttagataccc tggtagtcca cgcggtaaac gatggatgct cgttgtcggc 840

ctttgaggcc ggtgaccaag cgaaagcgtt aagcatccca cctggggagt acgccggcaa 900

cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt 960

cgatgatacg cgaggaacct tacccgggct tgaactgcgg cggaacgatt ccgagaggat 1020

gaggcccttc ggggctgccg cggaggtgct gcatggttgt cgtcagctcg tgccgtgagg 1080

tgtcggctta agtgccataa cgagcgcaac ccccgtcttc agttgccatc gggttatgcc 1140

gggcactctg gagatactgc caccgcaagg tgtgaggaag gtggggatga cgtcaaatca 1200

gcacggccct tacgtccggg gctacacacg tgttacaatg gcgcatacag agagtaggtg 1260

gcatgcgaat gccatccaat ccttaaagtg cgtctcagtt cggactgggg tctgcaaccc 1320

gaccccacga agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcaagc catgaaagcc gggggcgcct gaagtccgtg 1440

accgcgaggg tcggcctagg gtgaaaccgg tgattggggc taagtcgtaa caaggtagcc 1500

gtaccggaag gtgcggctgg aacacctcct ttct 1534

<210> 1553
<211> 1434
<212> DNA
<213> Prevotella sp. oral taxon 472

<400> 1553
tggcgaccgg cgcacgggtg agtaacgcgt atccaacctg cccttcacca cgggataacc 60

cggcgaaagt cggactaata ccgtatgttg tccattgacg gcatccgatt tggacgaaag 120

gctttgcggt gaaggatggg gatgcgtccg attagctgga cggcggggta acggcccacc 180

gtggctacga tcggtagggg ttctgagagg aaggtccccc acactggaac tgagacacgg 240

tccagactcc tacgggaggc agcagtgagg aatattggtc aatgggcgta agcctgaacc 300

agccaagtag cgtgcaggat gacggcccta tgggttgtaa actgctttta tgcggggata 360

aagtggccca cgtgtgggtt tttgcaggta ccgcatgaat aaggaccggc taattccgtg 420

ccagcagccg cggtaatacg gaaggtccgg gcgttatccg gatttattgg gtttaaaggg 480

agcgtaggcc gcgccttaag cgtgttgtga aatccgggtg ctcaacatcc ggcttgcagc 540

gcgaactggg gcgcttgagt gcgctgaaag taggcggaat tcgtggtgta gcggtgaaat 600

gcttagatat cacgaggaac tccgattgcg aaggcagcct actgtagcgc tactgacgct 660

gatgctcgaa agcgtgggta tcgaacagga ttagataccc tggtagtcca cgcggtaaac 720

gatggatgct cgttgtcggc ccttcgggtc ggtgaccaag cgaaagcgtt aagcatccca 780

cctggggagt acgccggcaa cggtgaaact caaaggaatt gacgggggcc cgcacaagcg 840

gaggaacatg tggtttaatt cgatgatacg cgaggaacct tacccgggct tgaactgcgg 900

cggaacgatt cggagacgat gaggcccttc ggggccgccg cggaggtgct gcatggttgt 960

cgtcagctcg tgccgtgagg tgtcggctta agtgccataa cgagcgcaac ccccgtcttc 1020

agttgccatc gggtgatgcc gggcactctg gagatactgc caccgcaagg tgcgaggaag 1080

gtggggatga cgtcaaatca gcacggccct tacgtccggg gctacacacg tgttacaatg 1140

gcgcatacag agagtcggtg gcatgcgaat gccatccaat cctcaaagtg cgtctcagtt 1200

cggactgggg tctgcaaccc gaccccacga agctggattc gctagtaatc gcgcatcagc 1260

catggcgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcaagc catgaaagcc 1320

gggggcgcct gaagtccgtg accgcgaggg tcggcctagg gtgaaaccgg tgattggggc 1380

taagtcgtaa caaggtagcc gtaccggaag gtgcggctgg aacacctcct ttct 1434

<210> 1554
<211> 1504
<212> DNA
<213> Prevotella sp. oral taxon 781

<400> 1554
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgcggg 60

gcagcatgtt ggttgcttgc aaccgatgat ggcgaccggc gcacgggtga gtaacgcgta 120

tccaacctac ctattaccac gggataaccc ggcgaaagtc ggactaatac cgtatgtagt 180

cctccaatgg catcagcagt ggactaaagg tttggcggta tagatgggg atgcgtccga 240

ttagctagtt ggtgaggtaa tggctcccca aggcttcgat cggtaggggt tctgagagga 300

aggtccccca cactggaact gagacacggt ccagactcct acgggaggca gcagtgagga 360

atattggtca atggacgaga gtctgaacca gccaagtagc gtgcaggatg actgccctat 420

gggttgtaaa ctgcttttat gcggggataa agtgaggaac gtgttctcta ttgcaggtac 480

cgcatgaata aggaccggct aattccgtgc cagcagccgc ggtaatacgg aaggttcagg 540

cgttatccgg atttattggg tttaaaggga gcgtaggccg ttttttaagc gtgttgtgaa 600

atgtaccggc tcaaccggtg atgtgcagcg cgaactggaa gacttgagtg cgtagtaagc 660

aggcggaatt cgtggtgtag cggtgaaatg cttagatatc acgaagaact ccgatagcgc 720

aggcagcttg ctgcatcgca actgacgctg atgctcgaaa gcgtgggtat caaacaggat 780

tagataccct ggtagtccac gcggtaaacg atggatgctc gttgtcaggc ctttgggttt 840

ggtgaccaag tgaaaacgtt aagcatccca cctggggagt acgccggcaa cggtgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt cgatgatacg 960

cgaggaacct tacccgggct tgaactgcgg cggaacgatt cagagatgat gaggtccttc 1020

gggactgccg cggaggtgct gcatggttgt cgtcagctcg tgccgtgagg tgtcggctta 1080

agtgccataa cgagcgcaac ccctttttctt agttgccatc gggtaatgcc gggcactctg 1140

ggaatactgc caccgtaagg tgtgaggaag gtggggatga cgtcaaatca gcacggccct 1200

tacgtccggg gctacacacg tgttacaatg gcgcatacag atagttggtt gtgtgcaaac 1260

atgatctaat ctttaaagtg cgtctcagtt cggactgggg tctgcaaccc gaccccacga 1320

agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt cccgggcctt 1380

gtacacaccg cccgtcaagc catgaaagcc gggggcgcct gaagtccgtg accgcgaggg 1440

tcggcctagg gtgaaaccgg tgattggggc taagtcgtaa caaggtagcc gtaccggaag 1500

gtgc 1504

<210> 1555

<211> 1505
<212> DNA
<213> Prevotella sp. oral taxon 782

<400> 1555
gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc aagtcgaggg 60

gaaacggcgt tgagtgcttg cactcttcgg acgtcgaccg gcgcacgggt gagtaacgcg 120

tatccaacct tcccatgact gggggataac ctgccgaaag gcagactaat accccatggt 180

cttcactgac ggcatcatat gtgaagtaaa gattcatcgg tcatggatgg ggatgcgtct 240

gattagcttg ttggcggggt aacggcccac caaggcaacg atcagtaggg gttctgagag 300

gaaggtcccc cacattggaa ctgagacacg gtccaaactc ctacgggagg cagcagtgag 360

gaatattggt caatgggcgc aagcctgaac cagccaagta gcgtgcagga cgacggccct 420

atgggttgta aactgctttt gtacggggat aaaacggcgg acgcgtccgt ccttgcaggt 480

accgtacgaa taaggaccgg ctaattccgt gccagcagcc gcggtaatac ggaaggtccg 540

ggcgttatcc ggatttattg ggtttaaagg gagcgtaggc cggggattaa gtgtgttgtg 600

aaatgtagac gctcaacgtc tgacttgcag cgcatactgg ttcccttgag tacgcacaac 660

gtcggcggaa ttcgtcgtgt agcggtgaaa tgcttagata tgacgaagaa ctccgattgc 720

gaaggcagct gacgggagcg caactgacgc ttaagctcga aggtgcgggt atcgaacagg 780

attagatacc ctggtagtcc gcacggtaaa cgatggatgc ccgctgttgg tacctggtat 840

cagcggctaa gcgaaagcat taagcatccc acctggggag tacgccggca acggtgaaac 900

tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat tcgatgatac 960

gcgaggaacc ttacccgggc ttgaattgca ggagaacgat acagagatgt tgaggtcctt 1020

cgggactcct gtgaaggtgc tgcatggttg tcgtcagctc gtgccgtgag gtgtcggctt 1080

aagtgccata acgagcgcaa cccctctctt cagttgccat caggttatgc tgggcactct 1140

ggagacactg ccaccgtaag gtgtgaggaa ggtggggatg acgtcaaatc agcacggccc 1200

ttacgtccgg ggctacacac gtgttacaat ggccggtaca gagggacggt gcaacgcaag 1260

ttgcatccaa tcttgaaagc cggtcccagt tcggactggg gtctgcaacc cgaccccacg 1320

aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaag ccatgaaagc cgggggtgcc tgaagtccgt gaccggaagg 1440

atcggcctag ggcaaaactg gtgattgggg ctaagtcgta acaaggtagc cgtaccggaa 1500

ggtgc 1505

<210> 1556
<211> 1386
<212> DNA
<213> Prevotella sp. oral taxon F68

<400> 1556
agagtttgat cctggctcag gatgaacgct ggctacaggc ttaacacatg caagtcgtgg 60

ggaaacgatt ggaggcgctt gcgcctctga ggcgtcgacc ggcgcacggg tgagtaacgc 120

gtatccaacc tgccccgcgg caagggataa tccgcagaaa tgcggtctaa taccttatgt 180

gctccgaaga ggacatctga ttcggagcaa aggcttgccg ccgcgggatg gggatgcgtc 240

tgattagata gtaggcgggg taacggccca cctagtcgtc gatgggtagg ggttctgaga 300

ggaaggtccc ccacattgga actgagacac ggtccaaact cctacgggag gcagcagtga 360

ggaatattgg tcaatgggcg agagcctgaa ccagccaagt agcgtgcagg aagacggccc 420

tatgggttgt aaactgcttt tatacgggaa taaagtttgc cacgtgtggc attttgcatg 480

taccgtaaga aaaaggatcg gctaattccg tgccagcagc cgcggtaata cggaagatcc 540

gagcgttatc cggatttatt gggtttaaag ggagcgtagg cgggaatcca agtcagttgt 600

gaaaccctgc ggctcaaccg tagtcgtgca gttgaaactg gatttcttga gtgcgcacag 660

ggcagacgga atttgtggtg tagcggtgaa atgcttagat atcacgaaga actccgatcg 720

cgaaggcagt ctgccggggc gctactgacg ctgaggctcg aaagtgcggg tatcaaacag 780

gattagatac cctggtagtc cgcactgtaa acgatggata cccgtggtcg gtttttttta 840

ttcggtcacc aagcgaaagc gttaagtatc ccacctgggg agtacgccgg caacggtgaa 900

actcaaagga attgacgggg gcccgcacaa gcggaggaac atgtggttta attcgatgat 960

acgcgaggaa ccttacccgg gcttgaattg cagaggaagt caccggagac ggtgatgtct 1020

ttatagtctc tgtgaaggtg ctgcatggtt gtcgtcagct cgtgccgtga ggtgtcggct 1080

taagtgccat aacgagcgca acccctttt ccggttgcca tcaggtgatg ctgggcactc 1140

cggagacact gccatcgtaa gatgtgagga aggtggggat gacgtcaaat cagcacggcc 1200

cttacgtccg gggctacaca cgtgttacaa tggccggtac agaaggcagc tcccacgcga 1260

gtggttgcga atcccgaaag ccggtcccag ttcggactgg agtctgcaac ccgactccac 1320

gaagctggat tcgctagtaa tcgcgcatca gccacggcgc ggtgaatacg ttcccgggcc 1380

ttgtac 1386

<210> 1557
<211> 1216
<212> DNA
<213> Prevotella sp. oral taxon G60

<400> 1557
gatgaacgct agctacaggc ttaacacatg caagtcgagg ggaaacgatg agagagcttg 60

ctctctcagg cgtcgaccgg cgcacgggtg agtaacgcgt atccaacctg cccattacag 120

gggaataacc ttgcgaaagt aagactaatg ccccatggta ttctcagcag acatctaatg 180

aggattaaag atttatcggt aatggatggg gatgcgtctg attagcttgt tggcggggta 240

acggcccacc aaggcaacga tcagtagggg ttctgagagg aaggtccccc acattggaac 300

tgagacacgg tccaaactcc tacgggaggc agcagtgggg aatattggtc aatggacgag 360

agtctgaacc agccaagtag cgtgcaggat gacggcccta tgggttgtaa actgctttta 420

taggggaata aagtgatcta cgtgtagttt attgtatgta ccctatgaat aaggaccggc 480

taattccgtg ccagcagccg cggtaatacg gaaggttcgg gcgttatccg gatttattgg 540

gtttaaaggg agcgtaggcc gtagattaag cgtgttgtga aatgtagatg ctcaacatct 600

gacttgcagc gcgaactggt ttactagagt gtgcacaacg taggcggaat tcgtcgtgta 660

gcggtgaaat gcttagatat gacgaagaac tccgattgcg aaggcagctt acgggagcac 720

aactgacgct gaagctcgaa ggtgcgggta tcaaacagga ttagataccc tggtagtccg 780

cacagtaaac gctggatgcc cgctgttggt tcattagagt cagcggccaa gcgaaagcat 840

taagcatccc acctggggag tacgccggca acggtgaaac tcaaaggaat tgacgggggc 900

ccgcacaagc ggaggaacat gtggtttaat tcgatgatac gcgaggaacc ctaccccggg 960

cctgaaattg cagacgaacg cggcagagat gccaagggcc cttcggggcg tctgtgaagg 1020

tgctgcattg gtgtcgtcag ctcgtgccgt gaggtgtcgg cctaagtgcc ataacgagcg 1080

caaccccttt tcttagttgc catcagggtc atgcctgggc actcatggaa aatccgccca 1140

cgataggggt gtaggaacgg gtgggaaata cgttcaaatc accacggccc ttacgttcgg 1200

gggcctacac ctgtta 1216

<210> 1558
<211> 1211
<212> DNA
<213> Prevotella sp. oral taxon G70

<400> 1558
gatgaacgct ggctacaggc ttaacacatg caagtcgagg ggaaacggca ttgagtgctt 60

gcactgaatg gacgtcgacc ggcgcacggg tgagtaacgc gtatccaacc ttcccgttac 120

tgcgggataa cctgccgaaa ggcagactaa taccgcatgt tcttcgatga cggcatcaga 180

ttcgaagcaa agatccgtcg gtaacggagg gggatgcgtc tgattagctg gttggcgggg 240

cgacggccca ccaaggcgac gatcagtagg ggttctgaga ggaaggtccc ccacattgga 300

actgagacac ggtccaactc ctacgggagg cagcagtgag gaatattggt caatgggcgg 360

aagcctgaac cagccaagta gcgtgcagga ggacggccct acgggtgtgt aaactgcttt 420

tatgcgggga taaagtgagg gacgcgtccc tttttgcagg taccgcatga ataaggaccg 480

gctaattccg tgccagcagc cgcggtaata cggaaggtcc gggcgttatc cggatttatt 540

gggtttaaag ggagcgtagg ccgtggatta agcgtgttgt gaaatgcagg tgctcaacgt 600

ctgcactgca gcgcgaactg gtccacttga gtgtgcgcaa cgcaggcgga attcgtcgtg 660

tagcggtgaa atgcttagat atgacgaaga actccgattg cgaaggcagc ttgcgggagc 720

acaactgacg ctgaagctcg aaagtgcggg tatcgaacag gattagatac cctggtagtc 780

cgcacggtaa acgatggatg cccgttgtca ggctgtttca gcctggtgac caagcgagag 840

cattaagcat cccacctggg gagtacgccg gcaacggtga aactcaaagg aattgacggg 900

ggcccgcaca agcggaggat catgtggttt aattcgatga tacgcgagga acctgacccg 960

gggcttgaat tgcagacgaa cgattcagag atgatgaggc ccttcggggc gtctgtgaca 1020

ggtgctgcat gggttgtcgt cagctcgtgc cgtgaggtgt cagcctaaag tgccatagcg 1080

agcgccagcc cctttcttca gtttgcacag ggtgatgcct gggcactctg aaaaccctgc 1140

caccgcaagg gtgtgaggaa gggtggcaat acgtcaaaca ccacgaccct acgttcgggg 1200

caacacagtt t 1211

<210> 1559
<211> 1218
<212> DNA
<213> Prevotella sp. oral taxon G71

<400> 1559
gatgaacgct agctacaggc ttaacacatg caagtcgagg ggaaacggcg aagggtgctt 60

gcactctccg gacgtcgacc ggcgcacggg tgagtaacgc gtatccaacc ttcccatgac 120

cgggggataa cctgccgaaa ggcagactaa taccccatgg ccttcactga cggcatcata 180

tgtgaagtaa agattcatcg gtcatggatg gggatgcgtc tgattagctt gttggcgggg 240

aaacggccca ccaaggcgac gatcagtagg ggttctgaga ggaaggtccc ccacattgga 300

actgagacac ggtccaaact cctacgggag gcagcagtga ggaatattgg tcaatgggcg 360

caagcctgaa ccagccaagt agcgtgcagg atgacggccc tatgggttgt aaactgcttt 420

tgtacgggga taaaacggcg gacgtgtccg tccttgcagg taccgtacga ataaggaccg 480

gctaattccg tgccagcagc cgcggtaata cggaaggtcc gggcgttatc cggatttatt 540

gggtttaaag ggagcgtagg ccggggatta agtgtgttgt gaaatgtaga cgctcaacgt 600

ctgacttgca gcgcatactg gttcccttga gtacgcacaa cgttggcgga attcgtcgtg 660

tagcggtgaa atgcttagat atgacgaaga actccgattg cgaaggcagc tgacgggagc 720

gcaactgacg cttaagctcg aaggtgcggg tatcgaacag gattagatac cctggtagtc 780

cgcacggtaa acgatggatg cccgctgttg gtacctggta tcagcggcta agcgaaagca 840

ttaagcatcc cacctgggga gtacgccggc aacggtgaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggaggaaca tgtggtttaa ttcgatgata cgcgaggaac cttacccggg 960

gcttgaattg caagagaacg atacaagaga tgttgagggt ccttcgggac tcctgtgaag 1020

gtgctgcatg gttgtcgtca gctcgtgccg tgaggtgtcg gcctaagtgc cataccgagg 1080

cgcacccccc ctcttcagtt gcccatcaag gtattgcctg gcacctcttg gaaacccggt 1140

gccaccctta ggggtttagg aaagggtggg gagttacgtt aaattcccca cgggccttta 1200

ctttcggggg cctcacct 1218

<210> 1560
<211> 1433
<212> DNA
<213> Prevotella sp. sp24

<400> 1560
atgcaagtcg aggggcagca tgatcgaagc ttgctttgat tgatggcgac cggcgcacgg 60

gtgagtaacg cgtatccaac cttcccttta gtagaggata gcccggcgaa agtcggatta 120

atactctata ttgtatttag aagacatctg aagaatacca aaggtttacc gctaaaggat 180

ggggatgcgt ctgattaggt tgttggcggg gtaacggccc accaagccta cgatcagtag 240

gggttctgag aggaaggtcc cccacattgg aactgagaca cggtccaaac tcctacggga 300

ggcagcagtg aggaatattg gtcaatggac gaaagtctga accagccaag tagcgtgcag 360

gatgacggcc ctatgggttg taaactgctt ttatataggg ataaagtcgg ggacgtgtcc 420

ccgtttgtag gtactatatg aataaggacc ggctaattcc gtgccagcag ccgcggtaat 480

acggaaggtc caggcgttat ccggatttat tgggtttaaa gggagcgcag gctgatgatt 540

aagcgtgacg tgaaatgtag ccgctcaacg gctgtactgc gtcgcgaact ggttatcttg 600

agtgagttcg atgttggcgg aattcgtggt gtagcggtga aatgcttaga tatcacgaag 660

aactccgatt gcgaaggcag ccaacaaggc ctttactgac gctaaagctc gaaggtgcgg 720

gtatcgaaca ggattagata ccctggtagt ccgcacggta aacgatggat gcccgctgtt 780

tgcgatatac tgtgagcggc caagagaaat cgttaagcat cccacctggg gagtacgccg 840

gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt 900

aattcgatga tacgcgagga accttacccg ggcttgaact gcagcggaag gatacagaga 960

tgttgacgcc ttcggggccg ctgtggaggt gctgcatggt tgccgtcagc tcgtgccgtg 1020

aggtgtcggc ttaagtgcca taacgagcgc aacccttttc tttagttgcc atcaggtaat 1080

gctgggcact ctggagatac tgccaccgta aggtgtgagg aaggtgggga tgacgtcaaa 1140

tcagcacggc ccttacgtcc ggggctacac acgtgttaca atgggaggta cagagagctg 1200

gatgtacgca agtacgttct aatcctaaaa gccttcctca gttcggattg gggtctgcaa 1260

cccgacccca tgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca agccatgaaa gccgggggcg cttgaagtcc 1380

gtgaccgcaa ggatcggcct agagcgaaac tggtaattgg ggctaagtcg taa 1433

<210> 1561
<211> 1433
<212> DNA
<213> Prevotella sp. sp34

<400> 1561
atgcaagtcg aggggcagca tgatcgaagc ttgctttgat tgatggcgac cggcgcacgg 60

gtgagtaacg cgtatccaac cttcccttta gtagaggata gcccggcgaa agtcggatta 120

atactctatg ttgtatttag aagacatctg aagaatacca aaggtttacc gctataggat 180

ggggatgcgt ctgattaggt tgttggcggg gtaacggccc accaagccta cgatcagtag 240

gggttctgag aggaaggtcc cccacattgg aactgagact cggtccaaac tcctacggga 300

ggcagcagtg aggaatattg gtcaatggac gaaagtctga accagccaag tagcgtgcag 360

gatgacggcc ctatgggttg taaactgctt ttatataggg ataaagtcgg ggacgtgtcc 420

ccgtttgtag gtactatatg aataaggacc ggctaattcc gtgccagcag ccgcggtaat 480

acggaaggtc caggcgttat ccggatttat tgggtttaaa gggagcgcag gctgatgatt 540

aagcgtgacg tgaaatgtag ccgctcaacg gctgaactgc gtcgcgaact ggttatcttg 600

agtgagttcg atgttggcgg aattcgtggt gtagcggtga aatgcttaga tatcacgaag 660

aactccgatt gcgaaggcag ccaacaaggc ctttactgac gctaaagctc gaaggtgcgg 720

gtatcgaaca ggattagata ccctggtagt ccgcacggta aacgatggat gcccgctgtt 780

tgcgatatac tgtgagcggc caagagaaat cgttaagcat cccacctggg gagtacgccg 840

gcaacggtga aactcaaagg aattgacggg ggcccgcaca agcggaggaa catgtggttt 900

aattcgatga tacgcgagga accttacccg ggcttgaact gcagcggaag gatacagaga 960

tgttgacgcc ttcggggccg ctgtggaggt gctgcatggt tgtcgtcagc tcgtgccgtg 1020

aggtgtcggc ttaagtgcca taacgagcgc aacccttttc tttagttgcc atcaggtaat 1080

gctgggcact ctggagatac tgccaccgta aggtgtgagg aaggtgggga tgacgtcaaa 1140

tcagcacggc ccttacgtcc ggggctacac acgtgttaca atgggaggta cagagagctg 1200

gatgtacgca agtacgttct aatcctaaaa gccttcctca gttcggattg gggtctgcaa 1260

cccgacccca tgaagctgga ttcgctagta atcgcgcatc agccatggcg cggtgaatac 1320

gttcccgggc cttgtacaca ccgcccgtca agccatgaaa gccgggggcg cttgaagtcc 1380

gtgaccgcaa ggatcggcct agagcgaaac tggtaattgg ggctaagtcg taa 1433

<210> 1562
<211> 1488
<212> DNA
<213> Prevotella stercorea

<400> 1562
agagtttgat cctggctcag gatgaacgct agctacaggc ttaacacatg caagtcgagg 60

ggcagcatgt cggttgcttg caaccgatga tggcgaccgg cgcacgggtg agtaacgcgt 120

atccaaccta cccttgtcca tcggataacc cgtcgaaagg cggcctaaca cgatatgcgg 180

ttcacagcag gcatctaacg tgaacgaaat gtgaaggaga aggatgggga tgcgtctgat 240

tagcttgttg gcggggtaac ggcccaccaa ggctacgatc agtaggggtt ctgagaggaa 300

ggtcccccac attggaactg agacacggtc caaactccta cgggaggcag cagtgaggaa 360

tattggtcaa tggacgagag tctgaaccag ccaagtagcg tgcaggatga cggccctatg 420

ggttgtaaac tgcttttata gggggataaa gtgtgccacg tgtggcatat tgcaggtacc 480

ctatgaataa ggaccggcta attccgtgcc agcagccgcg gtaatacgga aggtccgggc 540

gttatccgga tttattgggt ttaaagggag cgtaggccgt ttggtaagcg tgttgtgaaa 600

tgtcggggct caacctgggc attgcagcgc gaactgccag acttgagtgc gcaggaagta 660

ggcggaattc gtcgtgtagc ggtgaaatgc ttagatatga cgaagaactc cgattgcgaa 720

ggcagcctgc tgtagcgcaa ctgacgctga agctcgaaag cgtgggtatc gaacaggatt 780

agataccctg gtagtccacg cggtaaacga tggatgctcg ctgtttgcgt ctgacgtaag 840

cggccaagcg aaagcgttaa gcatcccacc tggggagtac gccggcaacg gtgaaactca 900

aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg atgatacgcg 960

aggaacctta cccgggcttg aactgtaggc gaacgattca gagatgatga ggcccttcgg 1020

ggcgcctatg gaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg tcggcttaag 1080

tgccataacg agcgcaaccc ttgttcgtag ttgccatcgg gtgatgccgg gcactctgcg 1140

aagactgcct ccgtaaggag tgaggaaggt ggggatgacg tcaaatcagc acggcccttа 1200

cgtccggggc tacacacgtg ttacaatggc atgtacagaa agcggggtgt atgcaaatac 1260

gctcgaatcc ctaaaacatg tctcagttcg gactggggtc tgcaacccga ccccacgaag 1320

ctggattcgc tagtaatcgc gcatcagcca tggcgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcaagcca tgaaagccgg gggcgcctaa agtccgtgac cgcgagggtc 1440

ggcctagggt gaaaccggtg attggggcta agtcgtaaca aggtaacc 1488

<210> 1563
<211> 1533
<212> DNA
<213> Prevotella tannerae

<400> 1563
tacaatgtag agtttgatcc tggctcagga tgaacgctgg ctacaggctt aacacatgca 60

agtcgtgggg cagcggatgc ttagcttgct aagtatgccg gcgaccggcg cacgggtgag 120

taacgcgtac cgaacctgcc catcacacag ggataggctt gcgaaagcaa gattaatact 180

gatggtctca gttgtatgca tgtatgattg agtaaagcct tcgggcggtg atggatggcg 240

gtgcgtccca ttaggacgtt ggcggggtaa cggcccacca atccttcgat gggtaggggt 300

tctgagagga aggtccccca cattggaact gagatacggt ccaaactcct acgggaggca 360

gcagtgagga atattggtca atgggcgaga gcctgaacca gccaagtagc gtgcgggatg 420

aaggcccttg tggtcgtaaa ccgcttttat cagtgaataa agtgcaccac gtgtggtgtc 480

attgcaggta gctgaagaaa aaggaccggc taattccgtg ccagcagccg cggtaatacg 540

gaaggtccgg gcgttatccg gaattattgg gtttaaaggg agcgcaggcg ggagtataag 600

tcagctgtta aatatcagag cccaactctg ttatgcagtt gaaactatat ttcttgagta 660

cgcacaggga tggcggaatt cagggtgtag cggtgaaatg cttagatatc ctgaagaact 720

ccgatcgcga aggcagccat ccggagcgta actgacgctg aggctcgaag gtgcgggtat 780

cgaacaggat tagataccct ggtagtccgc acggtaaacg atgaatactc gcagttcggc 840

cgtttaggtc gagttgtcca gcgaaagcgt taagtattcc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttgaaccaag agtgcggagt gcagagatgc 1020

gctttttctt cggacacttt tggaggtgct gcatggttgt cgtcagctcg tgccgtgagg 1080

tgtcggctta agtgccataa cgagcgcaac ccttttctac gtttgccatc gggtaatgcc 1140

gggaactccg tggatactgc cgccgcaagg cggaggaagg tggggatgac gtcaaatcag 1200

cacggccctt acgtccgggg ctacacacgt gttacaatgg tcggagcagc aggaagctac 1260

ctggcgacag gatgctgatc ccaaaacccg gcctcagttc ggactggagt ctgcaacccg 1320

actccacgaa gccggattcg ctagtaatcg cgcatcagcc atggcgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcaagcc atgaaagccg ggggtgcctg aaagccgtga 1440

ccgcgagggt cggcctaggg taaaaccggt gattggggct aagtcgtaac aaggtagccg 1500

taccggaagg tgcggctgga acacctcctt tct 1533

<210> 1564
<211> 1536
<212> DNA
<213> Prevotella timonensis

<400> 1564
ttacaatgta gagtttgatc ctggctcagg atgaacgcta gctacaggct taacacatgc 60

aagtcgcagg gtaacatgag gaaagcttgc tttccttgat gacgactggc gcacgggtga 120

gtaacgcgta tccaaccttc ccataactac gggataaccc gttgaaagac ggcctaatac 180

cgtatgacat cgtttgctga catcaaataa cgattaaagg tttagcggtt atggatgggg 240

atgcgtctga ttagcttgtt ggcggggtaa cggcccacca aggcgacgat cagtaggggt 300

tctgagagga aggtccccca cattggaact gagacacggt ccaaactcct acgggaggca 360

gcagtgagga atattggtca atgggcgaga gcctgaacca gccaagtagc gtgcaggatg 420

acggccctat gggttgtaaa ctgcttttat gtggggataa agtgcgtgac gtgtcatgca 480

ttgcaggtac cacatgaata aggaccggct aattccgtgc cagcagccgc ggtaatacgg 540

aaggtccggg cgttatccgg atttattggg tttaaaggga gcgtaggctg tctattaagc 600

gtgttgtgaa atttaccggc tcaaccggtg gcttgcagcg cgaactggtc gacttgagta 660

tgcaggaagt aggcggaatt catggtgtag cggtgaaatg cttagatatc atgacgaact 720

ccgattgcgc aggcagctta ctgtagcata actgacgctg atgctcgaaa gtgcgggtat 780

caaacaggat tagataccct ggtagtccgc acggtaaacg atggatgctc gctattcgtc 840

ctatttggat gagtggccaa gtgaaaacat taagcatccc acctggggag tacgccggca 900

acggtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggaggaacat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggc ttgaactgcc agcgaacgat acagagatgt 1020

tgaggccctt cggggcgctg gtggaggtgc tgcatggttg tcgtcagctc gtgccgtgag 1080

gtgtcggctt aagtgccata acgagcgcaa ccctttttctt tagttgccat caggtgatgc 1140

tgggcactct atggatactg ccaccgtaag gtgtgaggaa ggtggggatg acgtcaaatc 1200

agcacggccc ttacgtccgg ggctacacac gtgttacaat ggggcataca gagtgttggc 1260

ttaacgcaag tttggtctaa tcttcaaagt gtctcccagt tcggattggg gtctgcaacc 1320

cgaccccatg aagctggatt cgctagtaat cgcgcatcag ccatggcgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaag ccatgaaagc tgggggtgcc tgaagtccgt 1440

aaccgttaag gagcggccta gggcaaaact ggtgattggg gctaagtcgt aacaaggtag 1500

ccgtaccgga aggtgcggct ggaacacctc ctttct 1536

<210> 1565
<211> 1531
<212> DNA
<213> Prevotella veroralis

<400> 1565
tacaatggag agtttgatcc tggctcagga tgaacgctag ctacaggctt aacacatgca 60

agtcgagggg aaacggcgtt gagtgcttgc actcttcgga cgtcgaccgg cgcacgggtg 120

agtaacgcgt atccaacctt cccataacta agggataacc tgccgaaagg cagactaata 180

ccttatgtaa ttcttagatg acatcagaag agaatgaaag atttatcggt tatggatggg 240

gatgcgtctg attagcttgt tggtggggta acagcccacc aaggcaacga tcagtagggg 300

ttctgagagg aaggtccccc acattggaac tgagacacgg tccaaactcc tacgggaggc 360

agcagtgagg aatattggtc aatgggcgag agcctgaacc agccaagtag cgtgcaggat 420

gacggcccta tgggttgtaa actgcttttg tatggggata aagtcaatca cgtgtgattg 480

tttgcaggta ccatacgaat aaggaccggc taattccgtg ccagcagccg cggtaatacg 540

gaaggttcgg gcgttatccg gatttattgg gtttaaaggg agcgtaggcc ggagattaag 600

tgtgttgtga aatgtagacg ctcaacgtct gacttgcagc gcatactgtt ttccttgagt 660

acgcacaacg ttggcggaat tcgtcgtgta gcggtgaaat gcttagatat gacgaagaac 720

tccgattgcg aaggcagctg acgggagcgc cactgacgct taagctcgaa ggtgcgggta 780

tcgaacagga ttagataccc tggtagtccg cacagtaaac gatggatgcc cgctgttggt 840

acctagtatc agcggctaag cgaaagcatt aagcatccca cctggggagt acgccggcaa 900

cggtgaaact caaaggaatt gacgggggcc cgcacaagcg gaggaacatg tggtttaatt 960

cgatgatacg cgaggaacct tacccgggct tgaattgcag aggaaggatt tagagataat 1020

gacgcccttc ggggtctctg tgaaggtgct gcatggttgt cgtcagctcg tgccgtgagg 1080

tgtcggctta agtgccataa cgagcgcaac ccctctcttc agttgccatc aggtgatgct 1140

gggcactctg gagacactgc caccgtaagg tgtgaggaag gtggggatga cgtcaaatca 1200

gcacggccct tacgtccggg gctacacacg tgttacaatg gccggtacag agggacggtg 1260

taatgcaaat tgcatccaat cttgaaagcc ggtcccagtt cggactgggg tctgcaaccc 1320

gaccccacga agctggattc gctagtaatc gcgcatcagc catggcgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcaagc catgaaagcc gggggtgcct gaagtccgtg 1440

accgcaagga tcggcctagg gcaaaactgg tgattggggc taagtcgtaa caaggtagcc 1500

gtaccggaag gtgcggctgg aacacctcct t 1531

<210> 1566
<211> 1302
<212> DNA
<213> Prevotellaceae bacterium P4P_62 P1

<400> 1566
gaacgctagc tacaggctta acacatgcaa gtcgagggac cggcgcacgg gtgcgtaacg 60

cgtatcgaac ctgcccttta ctcagggata gccttgcgaa agtaagatta atacctgata 120

gttaaagttg gtaaaggatg gcgatgcgtc tgattaggta gtaggcgggg taatggccca 180

cctagccgac gatcagtagg ggttctgaga ggaaggtccc ccacattgga actgagacac 240

ggtccaaact cctacgggag gcagcagtga ggaatattgg tcaatggacg agagtctgaa 300

ccagccaagt agcgtgcagg atgacggcct ctgggttgta aactgctttt agttgggaac 360

aggagtgtac catcagaaaa aggaccggct aattccgtgc cagcagccgc ggtaatacgg 420

aaggtccagg cgttatccgg atttattggg tttaaaggga gcgtaggcgg acgattaagt 480

cagctgtgaa agtttgcggc tcaaccgtaa aattgcagtt gaaactggtt gtcttgagtg 540

cacgcaggga tgttggaatt catggtgtag cggtgaaatg cttagatatc atgaagaact 600

ccgatcgcga aggcatatgt ccggagtgac tgacgctgag gctcgaaagt gcgggtatcg 660

aacaggatta gataccctgg tagtccgcac agtaaacgat gaatactcgc agtatgcgtg 720

tatgctgcca agtgaaaacg ttaagtattc cacctgggga gtacgccggc aacggtgaaa 780

ctcaaaggaa ttgacggggg cccgcacaag cggaggaaca tgtggtttaa ttcgatgata 840

cgcgaggaac cttacccggg cttgaactat ggaggtgctg catggttgtc gtcagctcgt 900

gccgtgaggt gtcggcttaa gtgccataac gagcgcaacc cttctccacg tttgccatca 960

gctgggcact ccgtggatac tgccatcgta agatggagga aggtggggat gacgtcaaat 1020

cagcacggcc cttacgtccg gggctacaca cgtgttacaa tggccggcag agggaagcca 1080

ccaggcgact gggcgctgat ccattccggt ctcagttcgg atggagtctg caacccgact 1140

ccagaagctg gattcgctag taatcgcgca tcagccatgg cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt caagccatga aagccggggg tgcctgaaag ctgtggcggc 1260

ctagggtaaa accggtgatt ggggctaagt cgtaacaagg ta 1302

<210> 1567
<211> 1465
<212> DNA
<213> Prochlorococcus marinus

<400> 1567
ggctcaggat gaacgctggc ggcgtgctta acacatgcaa gtcgaacgaa ccttcgggtt 60

agtggcggac gggtgagtaa cgcgtgagaa tctgccctca ggaggggggat aacggttgga 120

aacgaccgct aataccccat atgcctactg gtgaaacgaa tttcgcctga ggatgagctc 180

gcgtctgatt agcttgttgg tgaggtaatg gctcaccaag gcttcgatca gtagctggtc 240

tgagaggatg atcagccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtggggaat tttccgcaat gggcgaaagc ctgacggagc aacgccgcgt gagggacgaa 360

ggcctctggg ctgtaaacct cttttctcaa ggaagaagat atgacggtac ttgaggaata 420

agccacggct aattccgtgc cagcagccgc ggtaatacgg gagtggcaag cgttatccgg 480

aattattggg cgtaaagcgt ccgcaggcgg cttttcaagt ctgctgttaa agcgtggagc 540

ttaactccat catggcagtg gaaactgaaa ggcttgagta tggtaggggc agagggaatt 600

cccggtgtag cggtgaaatg cgtagatatc gggaagaaca ccagtggcga aggcgctctg 660

ctgggccatt actgacgctc atggacgaaa gccaggggag cgaaagggat tagataccc 720

tgtagtcctg gccgtaaacg atgaacacta ggtgtcgggg gaatcgaccc cttcggtgtc 780

gtagctaacg cgttaagtgt tccgcctggg gagtacgcac gcaagtgtga aactcaaagg 840

aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgatgc aacgcgaaga 900

accttaccag ggtttgacat cctgcgaacc tcttagaaat ttgagggtgc cttcgggaat 960

gcagtgacag gtggtgcatg gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1020

cgcaacgagc gcaacccacg tttttagttg ccagcattta gttgggcact ctagaaagac 1080

cgccggtgat aaaccggagg aaggtgtgga tgacgtcaag tcatcatgcc ccttacaccc 1140

tgggctacac acgtactaca atgctacgga caaagggcag caaactcgcg agagctagca 1200

aatcccataa accgtggctc agttcagatc gtaggctgca actcgcctac gtgaagtagg 1260

aatcgctagt aatcgcaggt cagcatactg cggtgaatac gttcccgggc cttgtacaca 1320

ccgcccgtca caccatggaa gttggccatg cccgaagtcg ttactccaac ccttgtggag 1380

gaggacgccg aaggtggggc taatgactgg ggtgaagtcg taacaaggta gccgtaccgg 1440

aaggtgcggc tggatcacct cctaa 1465

<210> 1568
<211> 1320
<212> DNA
<213> Propionibacteriaceae bacterium NML 02-0265

<400> 1568
gctggcggcg tgcttaacac atgcaagtcg aacgagtggc gaacgggtga gtaacacgtg 60

agcaacctac ccttgacact ggaataagcg ctcgaaaggg cgtctaatac cggatattga 120

aaggcggtca aggatgggct cgcggcctat cagctagttg gtgaggtaac ggctcaccaa 180

ggcttcgacg ggtagccggc ctgagagggc gaccggccac actgggactg agatacggcc 240

cagactccta cgggaggcag cagtggggaa tattgcacaa tgggcgcaag cctgatgcag 300

caacgccgcg tgcgggatga cggccttcgg gttgtaaacc gctttcagca ccgacgatga 360

cggtaggtgc agaagaagga ccggccaact acgtgccagc agccgcggtg atacgtaggg 420

tccgagcgtt gtccggaatt attgggcgta aagagctcgt aggcggtttg tcgcgtcgga 480

agtgaaaact cagggcttaa ctctgagcct gcttccgata cgggcagact agaggaagtt 540

aggggagaac ggaattcctg gtggagcggt ggaatgcgca gatatcagga ggaacaccgg 600

tggcgaaggc ggttctctgg gactcctgac gctgaggagc gaaagcgtgg ggagcaaaca 660

ggcttagata ccctggtagt ccacgccgta aacggtgggc actaggtgtg ggtcgatccg 720

tgccgtagct aacgcattaa gtgccccgcc tggggagtac ggccgcaagg ctaaaactca 780

aaggaattga cgggggcccg cacaagcggc ggagcatgcg gattaattcg atgcaacgcg 840

aagaacctta cctgggtttg acatatacag gtggtgcatg gctgtcgtca gctcgtgtcg 900

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctcg tcctatgttg ccagcggccg 960

gggactcata ggagactgcc ggggtcaact cggaggaagg tggggatgag gtcaagtcat 1020

catgcccctt atgtccaggg cttcacgcat gctacaatgg ctggcaaagg gctgcgaaac 1080

cgcaaggttt agcgaatccc aaccagtctc agttcggatg gggtctgcaa ctcgacccca 1140

gaagtcggag tcgctagtaa tcgcagatca gcaacgctgc ggtgaatacg ttcccgggcc 1200

ttgtacacac cgcccgtcaa gtcatgaaag tcggcaacac ccgaagccgg tgcccaggga 1260

gccgtcgaag gtggggctgg taattaggac taagtcgtaa caaggtagcc gtaccggaag 1320

<210> 1569
<211> 1522
<212> DNA
<213> Propionibacterium acidipropionici

<400> 1569
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggtaaggccc tttcgggggt acacgagtgg cgaacgggtg agtaacacgt gagtaacctg 120

cccacttctt cgggataacg ctaggaaact ggtgctaata ccggatatga gctttcaccg 180

catggtgggg gttggaaagt gtttgtggtg gtggatggac tcgcggccta tcagcttgtt 240

ggtgaggtag tggctcacca aggcggtgac gggtagccgg cctgagaggg tgaccggcca 300

cattgggact gagatacggc ccagactcct acgggaggca gcagtgggga atattgcaca 360

atgggcggaa gcctgatgca gcaacgccgc gtgcgggatg acggccttcg ggttgtaaac 420

cgctttcacc aggggcgaag gcattctttt ggggtgttga cggtacctgg agaagaagca 480

ccggctaact acgtgccagc agccgcggtg atacgtaggg tgcgagcgtt gtccggattt 540

attgggcgta aagggctcgt aggcggttga tcgcgtcgga agtgaaaact tggggcttaa 600

ccctgagcgt gctttcgata cgggttgact tgaggaaggt aggggagaat ggaattcctg 660

gtggagcggt ggaatgcgca gatatcagga ggaacaccag tggcgaaggc ggttctctgg 720

acctttcctg acgctgagga gcgaaagcgt ggggagcaaa caggcttaga taccctggta 780

gtccacgctg taaacggtgg gtactaggtg tggggtccat tccacggatt ccgtgccgta 840

gctaacgcat taagtacccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 900

tgacggggcc ccgcacaagc ggcggagcat gcggattaat tcgatgcaac gcgaagaacc 960

ttacctgggt ttgacatgga ttggtaacgg tcagagatgg ccgcccccct tgtgggccgg 1020

ttcacaggtg gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca accctcgtcc actgttgcca gcatttggtt ggggactcag tggagaccgc 1140

cggggtcaac tcggaggaag gtggggatga cgtcaagtca tcatgcccct tatgtccagg 1200

gcttcacgca tgctacaatg gccggtacaa agagtggcga catcgtgagg tggagcgaat 1260

ctcagaaagc cggtctcagt tcggattggg gtctgcaact cgaccccatg aagtcggagt 1320

cgctagtaat cgcagatcag caacgctgcg gtgaatacgt tcccggggct tgtacacacc 1380

gcccgtcaag tcatgaaagt cggtaacacc cgaagccggt ggcccaacac gttctgcgtg 1440

ggggagtcgt cgaaggtggg actggtaatt aggactaagt cgtaacaagg tagccgtacc 1500

ggaaggtgcg gctggatcac ct 1522

<210> 1570
<211> 1326
<212> DNA
<213> Propionibacterium acnes

<220>
<221> modified_base
<222> (46)..(46)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1301)..(1301)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1316)..(1316)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1320)..(1320)
<223> a, c, t, g, unknown or other

<400> 1570
gtgagtaaca cgtgagtaac ctgcccttga ctttgggata acttcnggaa actggggcta 60

ataccggata ggagctcctg ctgcatggtg ggggttggaa agtttcggcg gttggggatg 120

gactcgcggc ttatcagctt gttggtgggg tagtggctta ccagggcttt gacgggtagc 180

cggcctgaga gggtgaccgg ccacattggg actgagatac ggcccagact cctacgggag 240

gcagcagtgg ggaatattgc acaatgggcg gaagcctgat gcatcaacgc cgcgtgcggg 300

atgacggcct tcgggtgtaa ccgctttcgc tgtgacgaag cgtgagtgac gtatgggtag 360

aagcaccggc taactacgtg ccagcaccgc ggtgatacta gggtgcgagc gttgtccgga 420

tttattgggc gtaaagggct gtaggtggtt gatcgcgtcg gaagtgtaat cttggggctt 480

aaccctgagc gtgctttcat acgggttgac ttgaggaagg taggggagaa tggaattcct 540

ggtggagcgg tggaatgcgc aatatcagag gaacaccagt ggcgaaggcg gttctctggg 600

cctttcctga cgctgaggag cgaaagcgtg gggagcgaac aggcttagat accctggtag 660

tccacgctgt aaacggtggg tactaggtgt ggggtccatt ccacgggttc cgcgccgtaa 720

ctaacgcttt aagtaccccg cctggggagt acggccgcaa ggctaaacct caaaggaatt 780

gacggggccc cgcacaagcg gcggagcatg cggattaatt cgatgcaacg cgtataacct 840

tggatgggtt tgacatggat cgggagtgct caaagatggg tgtgcctctt ttggggtcgg 900

ttcacaggtg gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 960

aacgagcgca acccttgttc actgttgcca gcacgttatg gtggggactc agtggagacc 1020

gccggggtca actcggagga aggtggggat gacgtcaagt catcatgccc cttatgtcca 1080

gggcttcacg catgctacaa tggctggtac agagagtggc gagcctgtga gggtgagcga 1140

atctcggaaa gccggtctca gttcggattg gggtctgcaa ctcgacctca tgaagtcgga 1200

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggg cttgtacaca 1260

ccgcccgtca agtcatgaaa gttggtaaca cccgaagccg ntggcctaac cgttgngggn 1320

gagccg 1326

<210> 1571
<211> 1500
<212> DNA
<213> Propionibacterium avidum

<400> 1571
tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc gaacggaaag ggccttcggg 60

ggtactcgag tggcgaacgg gtgagtaaca cgtgagtaac ctgcccttga cttcgggata 120

acttcaggaa actggggcta ataccggata ggaatccttg ctgcatggtg ggggttggaa 180

agcttcggcg gttttggatg gactcgcggc ttatcagctt gttggtgggg tagtggctta 240

ccaaggcttt gacgggtagc cggcctgaga gggcgaccgg ccacattggg actgagatac 300

ggcccagact cctacgggag gcagcagtgg ggaatattgc acaatgggcg gaagcctgat 360

gcagcaacgc cgcgtgcggg atgacggcct tcgggttgta aaccgctttc agcaggggcg 420

aacttgtggt gacggtacct gcagaagaag caccggctaa ctacgtgcca gcagccgcgg 480

tgatacgtag ggtgcgagcg ttgtccggat ttattgggcg taaagagctc gtaggtggtt 540

gattgcgtcg gaagtgaaaa cttggggctt aaccctgagc gtgctttcga tacgggttga 600

cttgaggaag gtaggggaga atggaattcc tggtggagcg gtggaatgcg cagatatcag 660

gaggaacacc agtggcgaag gcggttctct ggacctttcc tgacgctgag gagcgaaagc 720

gtggggagcg aacaggctta gataccctgg gtagtccacg ctgtaaacgg tgggtactag 780

gtgtggggtc cattccacgg attccgtgcc gtagctaacg cattaagtac cccgcctggg 840

gagtacggcc gcaaggtaaa actcaaagga attgacgggg ccccgcacaa gcggcggagc 900

atgcggatta attcgatgca acgcgaagaa ccttacctgg gtttgacatg gactgggagt 960

gctcagagat gggtatgcct ccttgtgggg ctggttcaca ggtggtgcat ggctgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gttcactgtt 1080

gccagcacgt tatggtgggg actcagtgga gaccgccggg gtcaactcgg aggaaggtgg 1140

ggatgacgtc aagtcatcat gccccttatg tccagggctt cacgcatgct acaatggccg 1200

gtacaaagag ttgcgagcct gtgagggtga gcgaatctcg gaaagccggt ctcagttcgg 1260

attggggtct gcaactcgac cccatgaagt cggagtcgct agtaatcgca gatcagcaac 1320

gctgcggtga atacgttccc ggggcttgta cacaccgccc gtcaagtcat gaaagtcggt 1380

aacacccgaa gccggtggcc taacctgtgt gggggagccg tcgaaggtgg gactggtaat 1440

taggactaag tcgtaacaag gtagccgtac cggaaggtgc ggctggatca cctcctttct 1500

<210> 1572
<211> 1510
<212> DNA
<213> Propionibacterium freudenreichii

<400> 1572
agtttgatcc tggctcagga cgaacgctgg cggcgtgctt aacacatgca agtcggacgg 60

taaggcccct ttcgggggt acacgagtgg cgaacgggtg agtaacacgt gaggaacgtg 120

cccttgactt cggtatagct ccaggaaact ggtggtaatc ccgaatatga gcctggcctg 180

catgggttgg gttggaaagc tttatgcggt cagggatcgt ctcgcggcct atcagcttgt 240

tggtggggta atggcctacc aaggcagcga cgggtagccg gcctgagagg gtgaccggcc 300

acattgggac tgagatacgg cccagactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggcgca agcctgatgc agcaacgccg cgtgcgggat gacggccttc gggttgtaaa 420

ccgctttcat ccatgacgaa gcgcaagtga cggtagtggg agaagaagca ccggctaact 480

acgtgccagc agccgcggtg atacgtaggg tgcgagcgtt gtccggaatt attgggcgta 540

aagagcttgt aggcggttga tcacgtcgga agtgaaattc cagggcttaa ctctgggctt 600

gctttcgata cgggttgact tgaggaatgt aggggagaat ggaactctcg gtggagcggt 660

ggaatgcgca gatatcggga agaacaccag tggcgaaggc ggttctctgg acatttcctg 720

acgctgagaa gcgaaagcgt ggggagcaaa caggcttaga taccctggta gtccacgccg 780

taaacggtgg gtactaggtg tgggtccctt ccacggggtc cgtgccgtag ctaacgcatt 840

aagtaccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacggggccc 900

cgcacaagcg gcggagcatg cggattaatt cgatgcaacg cgaagaacct tacctgggtt 960

tgacatgtac tggaagcgtt cagagatggg cgtgcctttt tggctggtac acaggtggtg 1020

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

ctcgtccaat gttgccagca gttcggctgg ggactcattg gagaccgccg gggccaactc 1140

ggaggaaggt ggggatgagg tcaagtcatc atgccccttа tgtccagggc ttcacgcatg 1200

ctacaatggc cggtacaaag agttgcgagc ctgtgagggt gagcgaatct cagaaagccg 1260

gtctcagttc ggattggggt ctgcaactcg accccatgaa gtcggagtcg ctagtaatcg 1320

cagatcagca acgctgcggt gaatacgttc ccggggcttg tacacaccgc ccgtcaagtc 1380

atgaaagtcg gtaacacccg aagccggtgg cccaaccttt tgggggggagc cgtcgaaggt 1440

gggactggtg attaggacta agtcgtaaca aggtagccgt accggaaggt gcggctggat 1500

cacctccttt 1510

<210> 1573
<211> 1442
<212> DNA
<213> Propionibacterium granulosum

<400> 1573
tgatcatggc tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc gtacggtaag 60

gcccttccgg gggtacacga gtggcgaacg ggtgagtaac acgtgagtaa cctgcccaca 120

actttgggat aacgctagga aactggtgct aatactggat atgtgctcct gctgcatggt 180

gggggttgga aagctccggc ggttgtggat ggactcgcgg cctatcagct tgttggtggg 240

gtagtggcct accaaggcgg cgacgggtag ccggcctgag agggtgaccg gccacattgg 300

gactgagata cggcccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc 360

gcaagcctga tgcagcaacg ccgcgtgcgg gatgacggcc ttcgggttgt aaaccgcttt 420

cagcagggac gaagcttttt gtgacggtac ctgcagaaga agcaccggct aactacgtgc 480

cagcagccgc ggtgatacgt agggtgcgag cgttgtccgg atttattggg cgtaaagggc 540

tcgtaggcgg ttgatcgcgt cggaagtgga aacttgatgc ttaacgttga gcgtgctttc 600

gatacgggtt gacttgagga aggtagggga gaatggaatt cctggtggag cggtggaatg 660

cgcagatatc aggaggaaca ccagtggcga aggcggttct ctggaccttt cctgacgctg 720

aggagcgaaa gcgtggggag cgaacaggct tagataccct ggtagtccac gctgtaaacg 780

gtgggtacta ggtgtggggt ccattccacg gattctgtgc cgtagctaac gcattaagta 840

ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag gaattgacgg ggccccgcac 900

aagcggcgga gcatgcggat taattcgatg caacgcgaag aaccttacct gggtttgaca 960

tggatcggaa gcttccagag atggttgtgc ctcttttggg gtcggttcac aggtggtgca 1020

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

cgtccactgt tgccagcaat tcggttgggg actcagtgga gaccgccggg gtcaactcgg 1140

aggaaggtgg ggatgacgtc aagtcatcat gccccttatg tccagggctt cacgcatgct 1200

acaatggccg gtacagtgag ttgcgacatc gtaaggtgga gcgaatctca aaaagccggt 1260

ctcagttcgg attggggtct gcaactcgac ctcatgaagt cggagtcgct agtaatcgca 1320

gatcagcaac gctgcggtga atacgttccc ggggcttgta cacaccgccc gtcaagtcat 1380

gaaagtcggt aacactcgaa gccggtggcc taacactttt tgtgggggag ctgtcgaagg 1440

tg 1442

<210> 1574
<211> 1487
<212> DNA
<213> Propionibacterium jensenii

<400> 1574
agttttgatt cctgggcttc aaggaacgaa accgctgggt ggcgttgctt aaccctgcaa 60

agtcggaacc gggttaaggc ccctttttggg ggggttacca cgaagtggcg aaccgggttg 120

agtaaacacc gtggagttaa cccttcccca ttccactttc gggattaacg ctagggaaac 180

ctggtggcta aattcccgga tatgagctct catcgccatg gtgggggttg gaaagttctg 240

gcggtggtgg atggactcgc gtcctatcag cttgttggtg aggttgtggc tcaccaaggc 300

gtcgacgggt agccggcctg agagggtgac cggccacatt gggactgaga tacggcccag 360

actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct gatgcagcaa 420

cgccgcgtgc gggatgacgg ccttcgggtt gtaaaccgct ttcaccaggg acgaagtgcc 480

tttcggggtg tgacggtacc tggagaagaa gcaccggcta actacgtgcc agcagccgcg 540

gtgatacgta gggtgcgagc gttgtccgga tttattgggc gtaaagagct cgtaggtggt 600

tgatcacgtc ggaagtgaaa acttggggct taaccctggg cgtgctttcg atacgggttg 660

acttgaggaa ggtaggggag aatggaattc ctggtggagc ggtggaatgc gcagatatca 720

ggaggaacac cagtggcgaa ggcggttctc tggacctttc ctgacgctga ggagcgaaag 780

cgtggggagc aaacaggctt agataccctg gtagtccacg ctgtaaacgg tgggtactag 840

gtgtggggtc cattccacgg attccgtgcc gtagctaacg cattaagtac cccgcctggg 900

gagtacggcc gcaggctaaa ctcaaaggaa ttgacggggc cccgcacaag cggcggagca 960

tgcggattaa ttcgatgcaa cgcgaagaac cttacctggg tttgacatgg attggtaacg 1020

gtcagagatg gccgcccccc ttgtgggccg attcacaggt ggtgcatggc tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccctcgtc cactgttgcc 1140

agcaattcgg ttggggactc agtggagacc gccggggtca actcggagga aggtggggat 1200

gacgacaagt catcatgccc cttatgtcca gggcttcacg catgctacaa tggctggtac 1260

aaagagttgc gacactgtga ggtggagcga atctcaaaaa gccagtctca gttcggattg 1320

gggtctgcaa ctcgacccca tgaagtcgga gtcgctagta atcgcagatc agcaacgctg 1380

cggtgaatac gttcccgggg cttgtacaca ccgcccgtca agtcatgaaa gtcggtaaca 1440

cccgaagccg gtggcccaac cttttggggg ggagccgtcc aaggtgg 1487

<210> 1575
<211> 1506
<212> DNA
<213> Propionibacterium propionicum

<400> 1575
tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc gaacggaaag gccccttttgg 60

gggtactcga gtggcgaacg ggtgagtaac acgtgagtaa cctgcccttg acttcgggat 120

aacttcagga aactggggct aataccggat agacatcctt gctgcatggt gggggttgga 180

aagcttcggc ggttttggat ggactcgcgg cttatcagct tgttggtggg gtagtggctt 240

accaaggctt tgacgggtag ccggcctgag agggcgaccg gccacattgg gactgagata 300

cggcccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc ggaagcctga 360

tgcagcaacg ccgcgtgcgg gatgacggct tcgggttgta aacccgcttt cagcaggggc 420

gaagcttttg tgacggtacc tgcagaagaa gcaccggcta actacgtgcc agcagccgcg 480

gtgatacgta gggtgcgagc gttgtccgga tttattgggc gtaaagagct cgtaggtggt 540

tgattgcgtc ggaagtgaaa acttggggct taaccctgag cgtgctttcg atacgggttg 600

acttgaggaa ggtaggggag aatggaattc ctggtggagc ggtggaatgc gcagatatca 660

ggaggaacac cagtggcgaa ggcggttctc tggacctttc ctgacgctga ggagcgaaag 720

cgtggggagc gaacaggctt agataccctg ggtagtccac gctgtaaacg gtgggtacta 780

ggtgtggggt ccattccacg gattccgtgc cgtagctaac gcattaagta ccccgcctgg 840

ggagtacggc cgcaaggcta aaactcaaag gaattgacgg ggccccgcac aagcggcgga 900

gcatgcggat taattcgatg caacgcgaag aaccttacct gggtttgaca tggactggga 960

gtgctcagag atgggtatgc ctccttgtgg ggctggttca caggtggtgc atggctgtcg 1020

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc tcgttcactg 1080

ttgccagcac gttatggtgg ggactcagtg gagaccgccg gggtcaactc ggaggaaggt 1140

ggggatgacg tcaagtcatc atgccccttа tgtccagggc ttcacgcatg ctacaatggc 1200

cggtacaaag agttgcgagc ctgtgagggt gagcgaatct cggaaagccg gtctcagttc 1260

ggattggggt ctgcaactcg accctatgaa gtcggagtcg ctagtaatcg cagatcagca 1320

acgctgcggt gaatacgttc ccggggcttg tacacaccgc ccgtcaagtc atgaaagtcg 1380

gtaacacccg aagccggtgg cctaacctgt gtgggggagc cgtcgaaggt gggactggta 1440

attaggacta agtcgtaaca aggtagccgt accggaaggt gcggctggat cacctccttt 1500

ctaagg 1506

<210> 1576
<211> 1530
<212> DNA
<213> Propionibacterium sp. 434-HC2

<400> 1576
tttcattgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaaggccct gcttttgtgg ggtgctcgag tggcgaacgg gtgagtaaca 120

cgtgagtaac ctgcccttga ctttgggata acttcaggaa actggggcta ataccggata 180

ggagctcctg ctgcatggtg ggggttggaa agtttcggcg gttggggatg gactcgcggc 240

ttatcagctt gttggtgggg tagtggctta ccaaggcttt gacgggtagc cggcctgaga 300

gggtgaccgg ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcc ggaagcctga tgcagcaacg ccgcgtgcgg gatgacggcc 420

ttcgggttgt aaaccgcttt cgcctgtgac gaagcgtgag tgacggtaat gggtaaagaa 480

gcaccggcta actacgtgcc agcagccgcg gtgatacgta gggtgcgagc gttgtccgga 540

tttattgggc gtaaagggct cgtaggtggt tgatcgcgtc ggaagtgtaa tcttggggct 600

taaccctgag cgtgctttcg atacgggttg acttgaggaa ggtaggggag aatggaattc 660

ctggtggagc ggtggaatgc gcagatatca ggaggaacac cagtggcgaa ggcggttctc 720

tgggcctttc ctgacgctga ggagcgaaag cgtggggagc gaacaggctt agataccctg 780

gtagtccacg ctgtaaacgg tgggtactag gtgtggggtc cattccacgg gttccgtgcc 840

gtagctaacg ctttaagtac cccgcctggg gagtacggcc gcaaggctaa aactcaaagg 900

aattgacggg gccccgcaca agcggcggag catgcggatt aattcgatgc aacgcgtaga 960

accttacctg ggtttgacat ggatcgggag tgctcagaga tgggtgtgcc tcttttgggg 1020

tcggttcaca ggtggtgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt gttcactgtt gccagcacgt tatggtgggg actcagtgga 1140

gaccgccggg gtcaactcgg aggaaggtgg ggatgacgtc aagtcatcat gccccttatg 1200

tccagggctt cacgcatgct acaatggctg gtacagagag tggcgagcct gtgagggtga 1260

gcgaatctcg gaaagccggt ctcagttcgg attggggtct gcaactcgac ctcatgaagt 1320

cggagtcgct agtaatcgca gatcagcaac gctgcggtga atacgttccc ggggcttgta 1380

cacaccgccc gtcaagtcat gaaagttggt aacacccgaa gccggtggcc taaccgttgt 1440

gggggagccg tcgaaggtgg gactggtgat taggactaag tcgtaacaag gtagccgtac 1500

cggaaggtgc ggctggatca cctcctttct 1530

<210> 1577
<211> 1367
<212> DNA
<213> Propionibacterium sp. H456

<400> 1577
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcgaac gggtgagtaa cacgtgagta acctgccctt gacttcggga taacttcagg 120

aaactggggc taataccgga tagggaaagg cggttttgga tggactcgcg gcttatcagc 180

ttgttggtgg ggtagtggct taccaaggct ttgacgggta gccggcctga gagggcgacc 240

ggccacattg ggactgagat acggcccaga ctcctacggg aggcagcagt ggggaatatt 300

gcacaatggg cggaagcctg atgcagcaac gccgcgtgcg ggatgacggc cttcgggttg 360

taaaccgctt tcagcagggg cgatgacggt acctgcagaa gaagcaccgg ctaactacgt 420

gccagcagcc gcggtgatac gtagggtgcg agcgttgtcc ggatttattg ggcgtaaaga 480

gctcgtaggt ggttgattgc gtcggaagtg aaaacttggg gcttaaccct gagcgtgctt 540

tcgatacggg ttgacttgag gaaggtaggg gagaatggaa ttcctggtgg agcggtggaa 600

tgcgcagata tcaggaggaa caccagtggc gaaggcggtt ctctggacct cctgacgctg 660

aggagcgaaa gcgtggggag cgaacaggct tagataccct ggtagtccac gctgtaaacg 720

gtgggtacta ggtgtggggt attccgtgcc gtagctaacg cattaagtac cccgcctggg 780

gagtacggcc gcaaggctaa aactcaaagg aattgacggg gccccgcaca agcggcggag 840

catgcggatt aattcgatgc aacgcgaaga accttacctg ggtttgacat gcacaggtgg 900

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

ccctcgttca ctgttgccag caygtgggga ctcagtggag accgccgggg tcaactcgga 1020

ggaaggtggg gatgacgtca agtcatcatg ccccttatgt ccagggcttc acgcatgcta 1080

caatggccgg caaagagttg cgagcctgtg agggtgagcg aatctcggcc ggtctcagtt 1140

cggatggggt ctgcaactcg accctagaag tcggagtcgc tagtaatcgc agatcagcaa 1200

cgctgcggtg aatacgttcc cggggcttgt acacaccgcc cgtcaagtca tgaaagtcgg 1260

taacacccga agccggtgcc tagggagccg tcgaaggtgg gactggtaat taggactaag 1320

tcgtaacaag gtagccgtac cggaaggtgc ggctggatca cctcctt 1367

<210> 1578
<211> 966
<212> DNA
<213> Propionibacterium sp. LG

<220>
<221> modified_base
<222> (876)..(876)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (900)..(900)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (914)..(914)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (947)..(949)
<223> a, c, t, g, unknown or other

<400> 1578
ttttgtgggg tgctcgagtg gcgaacgggt gagtaacacg tgagtaacct gcccttgact 60

ttgggataac ttcaggaaac tggggctaat accggatagg agctcctgct gcatggtggg 120

ggttggaaag tttcggcggt tggggatgga ctcgcggctt atcagcttgt tggtggggta 180

gtggcttacc aaggctttga cgggtagccg gcctgagagg gtgaccggcc acattgggac 240

tgagatacgg cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgga 300

agcctgatgc agcaacgccg cgtgcgggat gacggccttc gggttgtaaa ccgctttcgc 360

ctgtgacgaa gcgtgagtga cggtaatggg taaagaagca ccggctaact acgtgccagc 420

agccgcggtg atacgtaggg tgcgagcgtt gtccggattt attgggcgta aagggctcgt 480

aggtggttga tcgcgtcgga agtgtaatct tggggcttaa ccctgagcgt gctttcgata 540

cgggttgact tgaggaaggt aggggagaat ggaattcctg gtggagcggt ggaatgcgca 600

gatatcagga ggaacaccag tggcgaaggc ggttctctgg gcctttcctg acgctgagga 660

gcgaaagcgt ggggagcgaa caggcttaga taccctggta gtccacgctg taaacggtgg 720

gtactaggtg tggggtccat tccacgggtt ccgtgccgta gctaacgctt taagtacccc 780

gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacggggcc ccgcacaagc 840

ggcggagcat gcggattaat tcgatgcaac gcgtanaacc ttacctgggt ttgacatggn 900

tcgggagtgc tcanagatgg gtgtgcctct tttggggtcg gttcacnnng gtgcatggct 960

gtcgtc 966

<210> 1579

<211> 1359
<212> DNA
<213> Propionibacterium sp. S555a

<220>
<221> modified_base
<222> (574)..(574)
<223> a, c, t, g, unknown or other

<400> 1579
aaggccctgc ttttgtgggg tgctcgagtg gcgaacgggt gagtacacac gtgagtaacc 60

tgcccttgac tttgggataa cttcaggaaa ctggggctaa taccggatag gagctcctgc 120

tgcatggtgg gggttggaaa gtttcggcgg ttggggatgg actcgcggct tatcagcttg 180

ttggtggggt agtggcttac caaggctttg acgggtagcc ggcctgagag ggtgaccggc 240

cacattggga ctgagatacg gcccagactc ctacgggagg cagcagtggg gaatattgca 300

caatgggcgg aagctgatgc agcaacgccg cgtgcgggat gacggccttc gggttgtaaa 360

ccgctttcgc ctgtgacgaa gcgtgagtga cggtaatggg taaagaagca ccggctaact 420

acgtgccagc agccgcggtg atacgtaggg tgcgagcgtt gtccggattt attgggcgtt 480

aaagggctcg taggtggtgg atcgcgtcgg aagtgtaatc ttggcggctt aaccctgagc 540

gtgctttcga cacgggttga cttgaggaag gtangggaga atggaattcc tggtggagcg 600

gtggaatgcg cagatatcag gaggaacacc agtggcgaag gcgttctctg ggcctttcct 660

gacgctgagg agcgaaagcg tggggagcga acaggcttag ataccctggt agtccacgct 720

gtaaacggtg ggtactaggt gtggggtcca ttccacgggt tccgtgccgt actaacgctt 780

taagtacccc gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacggggcc 840

ccgcacaagc ggcggagcat gcggattaat tcgatgcaac gcgtagaacc ttacctgggt 900

ttgacatgga tcgggagtgc tcagagatgg gtgtgcctct tttggggtcg gttcacaggt 960

ggtgcatggc tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1020

aacccttgtt cactgttgcc agcacgttat ggtggggact cagtggagac cgccggggtc 1080

aactcggagg aaggtgggga tgacgtcaag tcatcatgcc ccttatgtcc agggcttcac 1140

gcatgctaca atggctggta cagagagtgg cgagcctgtg agggtgagcg aatctcggaa 1200

agccggtctc agttcggatt ggggtctgca actcgacctc atgaagtcgg agtcgctagt 1260

aatcgcagat cagcaacgct gcggtgaata cgttcccggg gcttgtacac accgcccgtc 1320

aagtcatgaa agttggtaac acccgaagcc ggtggccta 1359

<210> 1580
<211> 1494
<212> DNA
<213> Propionibacterium sp. oral taxon 192

<400> 1580
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gtaaggccct ttcgggggta cacgagtggc gaacgggtga gtaacacgtg agtaacctgc 120

ccctgacttt gggataacgg atggaaacgt ttgctaatac cggatattca gctcttgagg 180

catcttttgg gttggaaagt tttttcggtt ggggatgggc tcgcgtccta tcagcttgtt 240

gttggggtag tggcctacca aggcgtcgac gggtagccgg cctgagaggg cgaccggcca 300

cattgggact gagatacggc ccagactcct acgggaggca gcagtgggga atattgcaca 360

atggacggaa gtctgatgca gcaacgccgc gtgcgggatg acggccttcg ggttgtaaac 420

cgctttcagc catgacgaag cgtgagtgac ggtagtggta gaagaagcac cggctaacta 480

cgtgccagca gccgcggtga tacgtagggt gcgagcgttg tccggattta ttgggcgtaa 540

agagcttgta ggcggttgat tgcgtcgaaa gtgcaaactc agggcttaac tctgagcctg 600

ctttcgatac gggttgactt gagggatgta ggggagaatg gaattcccgg tggagcggtg 660

gaatgcgcag atatcgggag gaacaccagt ggcgaaggcg gttctctgga catttcctga 720

cgctgagaag cgaaagcgtg gggagcaaac aggcttagat accctggtag tccacgctgt 780

aaacggtggg cattaggtgt gggtcacatt ccacgtggtc tgtgccgtag ctaacgcatt 840

aagtaccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacggggccc 900

cgcacaagcg gcggagcatg cggattaatt cgatgcaacg cgaagaacct tacctgggtt 960

tgacatatgc cggaagcatg cagagatgtg tgtgcctttt tggtcggttt acaggtggtg 1020

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

ctcgtccaat gttgccagca cgttatggtg gggactcatt ggagaccgcc ggggtcaact 1140

cggaggaagg tggggatgac gtcaagtcat catgcccctt atgtccaggg cttcacgcat 1200

gctacaatgg ccggtacaaa gagttgcgag cctgtgaggg tgagcgaatc tcataaagcc 1260

ggtctcagtt cggattgggg tctgcaactc gaccccatga agtcggagtc gctagtaatc 1320

gcagatcagc aatgctgcgg tgaatacgtt ctcggggctt gtacacaccg cccgtcaagt 1380

catgaaagtt ggtaacaccc gaagccggtg gcctaacctt gtgggggga gccgtcgaag 1440

gtgggactgg taattaggac taagtcgtaa caaggtagcc gtaccggaag gtgc 1494

<210> 1581
<211> 1467
<212> DNA
<213> Propionibacterium thoenii

<400> 1581
agttttgatc ctggctcagg acgaaacgct ggcggcgtgc ttaacacatg caattcgaac 60

ggtaaggccc ttttcggggg tacaacgagt ggccaacggg tgagtaacac gtgagtaacc 120

ctgcccatca cttcgggata acgctgggaa actggtgcta ataccggata tgagctcctg 180

ctgcatggtg ggggttggaa agtttttgcg gtggtggatg gactcgcgtc ctatcagctt 240

gttggtgagg ttgtggctca ccaaggcgtc gacgggtagc cggcctgaga gggtgaccgg 300

ccacattggg actgagatac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg aaagcctgat gcagcaacgc cgcgtgcggg atgacggcct tcgggttgta 420

aaccgctttc accagggacg aagggccttt cggggtttga cggtacctgg agaagaagca 480

ccggctaact acgtgccagc agccgcggtg atacgtaggg tgcgagcgtt gtccggattt 540

attgggcgta aagagctcgt aggtggttga tcgcgtcgga agtgaaaact tggggcttaa 600

ccctgggcgt gctttcgata cgggttgact tgtggaaggt aggggagaat ggaattcttg 660

gtggagcggt ggaatgcgca gatatcagga ggaacaccag tggcgaaggc ggttctctgg 720

acctttcctg acgctgagga gcgaaagcgt ggggagcaaa caggcttaga taccctggta 780

gtccacgctg taaacggtgg gtactaggtg tggggtccat tccacggatt ccgttacgta 840

gctattcgct taagataccc cgcctgggga gtacggccgc aggctaaaac tcaaaggaat 900

tgacggggcc ccgcacaagc ggcggagcat gcggattaat tcgatgcaac gcgaagaacc 960

ttacctgggt ttgacatgga ttggtaacgg tcagagatgg ccgcccccct tgtgggccga 1020

ttcacaggtg gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca accctcgtcc actgttgcca gcaattcggt tggggactca gctggagacc 1140

gccggggtca actcggagga aggtgggcaa tgacgcacaa gtcatcatgc cccttatgtc 1200

cagggcttca cgcatgctac aatggccggt acaaacagtt gcgacactgt gaggtggagc 1260

gaatctcaaa aagccggtct cagttcggat tggggtctgc aactcaaccc catgaagtcg 1320

gagtcgctag taatcgcaga tcagcaacgc tgcggtgaat acgttcccgg ggcttgtaca 1380

caccgcccgt caagtcatga aagtcagtaa caccccttgag cgggtggccc taccccttgtg 1440

gggggggccgt cgaaggtgga ctggttc 1467

<210> 1582
<211> 1401
<212> DNA
<213> Proteus mirabilis

<400> 1582
tcgagcggta acaggagaaa gcttgctttc ttgctgacga gcggcggacg ggtgagtaat 60

gtatggggat ctgcccgata gaggggggata actactggaa acggtggcta ataccgcata 120

atgtctacgg accaaagcag gggctcttcg gaccttgcac tatcggatga acccatatgg 180

gattagctag taggtggggt aaaggctcac ctaggcgacg atctctagct ggtctgagag 240

gatgatcagc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 360

agggttgtaa agtactttca gcggggagga aggtgataag gttaataccc ttgtcaattg 420

acgttacccg cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggtca attaagtcag 540

atgtgaaagc cccgagctta acttgggaat tgcatctgaa actggttggc tagagtcttg 600

tagaggggg tagaattcca tgtgtagcgg tgaaatgcgt agagatgtgg aggaataccg 660

gtggcgaagg cggccccctg gacaaagact gacgctcagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgct gtaaacgatg tcgatttaga ggttgtggtc 780

ttgaaccgtg gcttctggag ctaacgcgtt aaatcgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgcaacg cgaagaacct tacctactct tgacatccag cgaatccttt agagatagag 960

gagtgccttc gggaacgctg agacaggtgc tgcatggctg tcgtcagctc gtgttgtgaa 1020

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cacgtaatgg 1080

tgggaactca aaggagactg ccggtgataa accggaggaa ggtggggatg acgtcaagtc 1140

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcagataca aagagaagcg 1200

acctcgcgag agcaagcgga actcataaag tctgtcgtag tccggattgg agtctgcaac 1260

tcgactccat gaagtcggaa tcgctagtaa tcgtagatca gaatgctacg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtaggt 1380

agcttaacct tcgggagggc g 1401

<210> 1583
<211> 1402
<212> DNA
<213> Proteus penneri

<400> 1583
tcgagcggta acagaagaaa gcttgctttc ttgctgacga gcggcggacg ggtgagtaat 60

gtatggggat ctgcccgata gaggggggata actactggaa acggtggcta ataccgcatg 120

acgtctacgg accaaagcag gggctcttcg gaccttgcgc tatcggatga acccatatgg 180

gattagctag taggtgaggt aatggctcac ctaggcaacg atctctagct ggtctgagag 240

gatgatcagc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 360

agggttgtaa agtactttca gcggggagga aggtgataaa gttaatacct ttgtcaattg 420

acgttacccg cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggtca ttaagtcag 540

atgtgaaagc cccgagctta acttgggaat tgcatctgaa actggttggc tagagtcttg 600

tagaggggg tagaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaataccg 660

gtggcgaagg cggccccctg gacaaagact gacgctcagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgct gtaaacgatg tcgatttaga ggttgtggtc 780

ttgaaccgtg gcttctggag ctaacgcgtt aaatcgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgatgcaacg cgaagaagct tacctactct tgacttccag cgaatccttt agagatagag 960

gagtgccttc gggaacgctg agacaggtgc tgcatggctg tcgtcagctc gtgttgtgaa 1020

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cgcgtaatgg 1080

cgggaactca aaggagactg ccggtgataa accggaggaa ggtggggatg acgtcaagtc 1140

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcagataca aagagaagcg 1200

acctcgcgag agcaagcgga actcataaag tctgtcgtag tccggattgg agtctgcaac 1260

tcgactccat gaagtcggaa tcgctagtaa tcgtagatca gaatgctacg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtaggt 1380

agcttaacct tcgggagggc gc 1402

<210> 1584
<211> 1374
<212> DNA
<213> Proteus sp. HS7514

<400> 1584
gagcggcgga cgggtgagta atgtatgggg atctgcccga tagaggggga taactactgg 60

aaacggtggc taataccgca taatgtctac ggaccaaagc aggggctctt cggaccttgc 120

actatcggat gaacccatat gggattagct agtaggtggg gtaaaggctc acctaggcga 180

cgatctctag ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac 240

tcctacggga ggcagcagtg gggaatattg cacaatgggc gcaagcctga tgcagccatg 300

ccgcgtgtat gaagaaggcc ttagggttgt aaagtacttt cagcggggag gaaggtgata 360

aggttaatac ccttgtcaat tgacgttacc cgcagaagaa gcaccggcta actccgtgcc 420

agcagccgcg gtaatacgga gggtgcaagc gttaatcgga attactgggc gtaaagcgca 480

cgcaggcggt caattaagtc agatgtgaaa gccccgagct taacttggga attgcatctg 540

aaactggttg gctagagtct tgtagagggg ggtagaattc catgtgtagc ggtgaaatgc 600

gtagagatgt ggaggaatac cggtggcgaa ggcggccccc tggacaaaga ctgacgctca 660

ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ctgtaaacga 720

tgtcgattta gaggttgtgg tcttgaaccg tggcttctgg agctaacgcg ttaaatcgac 780

cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag 840

cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctact cttgacatcc 900

agcgaatcct ttagagatag aggagtgcct tcgggaacgc tgagacaggt gctgcatggc 960

tgtcgtcagc tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc aacccttatc 1020

ctttgttgcc agcacgtcat ggtgggaact caaaggagac tgccggtgat aaaccggagg 1080

aaggtgggga tgacgtcaag tcatcatggc ccttacgagt agggctacac acgtgctaca 1140

atggcagata caaagagaag cgacctcgcg agagcaagcg gaactcataa agtctgtcgt 1200

agtccggatt ggagtctgca actcgactcc atgaagtcgg aatcgctagt aatcgtagat 1260

cagaatgcta cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga 1320

gtgggttgca aaagaagtag gtagcttaac cttcgggagg gcgcttacca cttt 1374

<210> 1585
<211> 1495
<212> DNA
<213> Proteus vulgaris

<400> 1585
gattgaacgc tggcggcagg cctaacacat gcaagtcgag cggtaacaga ggaaagcttg 60

ctttcttgct gacgagcggc ggacgggtga gtaatgtatg gggatctgcc cgatagaggg 120

ggataactac tggaaacggt agctaatacc gcatgacgtc tacggaccaa agcaggggct 180

cttcggacct tgcgctatcg gatgaaccca tatgggatta gctagtaggt gaggtaatgg 240

ctcacctagg cgacgatctc tagctggtct gagaggatga tcagccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc 360

tgatgcagcc atgccgcgtg tatgaagaag gccttagggt tgtaaagtac tttcagcggg 420

gaggaaggtg ttaagattaa tactcttagc aattgacgtt acccgcagaa gaagcaccgg 480

ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttaatc ggaattactg 540

ggcgtaaagc gcacgcaggc ggtcaattaa gtcagatgtg aaagccccga gcttaacttg 600

ggaattgcat ctgaaactgg ttggctagag tcttgtagag gggggtagaa ttccacgtgt 660

agcggtgaaa tgcgtagaga tgtggaggaa taccggtggc gaaggcggcc ccctggacaa 720

agactgacgc tcaggtgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgctgtaaa cgatgtcgat ttggaggttg tgcccttgag gcgtggcttc cggagctaac 840

gcgttaaatc gaccgcctgg ggagtacggc cgcaaggtta aaactcaaat gaattgacgg 900

gggcccgcac aagcggtgga gcatgtggtt taattcgatg caacgcgaag aaccttacct 960

actcttgaca tccagagaat cctttagaga tagaggagtg ccttcgggaa ctctgagaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt atcctttgtt gccagcacgt aatggtggga actcaaagga gactgccggt 1140

gataaaccgg aggaaggtgg ggatgacgtc aagtcatcat ggcccttacg agtagggcta 1200

cacacgtgct acaatggcag atacaaagag aagcgacctc gcgagagcaa gcggaactca 1260

taaagtctgt cgtagtccgg attggagtct gcaactcgac tccatgaagt cggaatcgct 1320

agtaatcgta gatcagaatg ctacggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcacaccatg ggagtgggtt gcaaaagaag taggtagctt aaccttcggg agggcgctta 1440

ccactttgtg attcatgact ggggtgaagt cctaacaagg taaccgtagg ggaac 1495

<210> 1586
<211> 1397
<212> DNA
<213> Providencia alcalifaciens

<400> 1586
gtcgagcggt aacaggggaa gcttgcttct cgctgacgag cggcggacgg gtgagtaatg 60

tatggggatc tgcccgatag agggggataa ctactggaaa cggtagctaa taccgcataa 120

tctcttagga gcaaagcagg ggaacttcgg tccttgcgct atcggatgaa cccatatggg 180

attagctagt tggtgaggta atggctcacc aaggcgacga tccctagctg gtctgagagg 240

atgatcagcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatgggcgca agcctgatgc agccatgccg cgtgtatgaa gaaggcctta 360

gggttgtaaa gtactttcag ttgggaggaa ggcgttgatg ctaatatcat caacgattga 420

cgttaccaac agaagaagca ccggctaact ccgtgccagc agccgcggta atacggaggg 480

tgcaagcgtt aatcggaatt actgggcgta aagcgcacgc aggcggttga ttaagttaga 540

tgtgaaatcc ccgggcttaa cctgggaatg gcatctaaga ctgtcagcta gagtcttgta 600

gaggggggta gaattccatg tgtagcggtg aaatgcgtag agatgtggag gaataccggt 660

ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtc gatttggagg ttgttccctt 780

gaggagtggc ttccggagct aacgcgttaa atcgaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaacgcg aagaacctta cctactcttg acatccagag aatttagcag agatgcttta 960

gtgccttcgg gaactctgag acaggtgctg catggctgtc gtcagctcgt gttgtgaaat 1020

gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg attcggtcgg 1080

gaactcaaag gagactgccg gtgataaacc ggaggaaggt ggggatgacg tcaagtcatc 1140

atggccctta cgagtagggc tacacacgtg ctacaatggc gtatacaaag agaagcgacc 1200

tcgcgagagc aagcggaact cataaagtac gtcgtagtcc ggattggagt ctgcaactcg 1260

actccatgaa gtcggaatcg ctagtaatcg tagatcagaa tgctacggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1380

ttaaccttcg ggagggc 1397

<210> 1587
<211> 1391
<212> DNA
<213> Providencia rettgeri

<220>
<221> modified_base
<222> (939)..(939)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (956)..(956)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1113)..(1113)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1380)..(1380)
<223> a, c, t, g, unknown or other

<400> 1587
gcggtaacag gggaagcttg cttctcgctg acgagcggcg gacgggtgag taatgtatgg 60

ggatctgccc gatagagggg gataactact ggaaacggta gctaataccg cataatctct 120

caggagcaaa gcaggggaac ttcggtcctt gcgctatcgg atgaacccat atgggattag 180

ctagtaggtg aggtaatggc tcacctaggc gacgatccct agctggtctg agaggatgat 240

cagccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 300

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt atgaagaagg ccctagggtt 360

gtaaagtact ttcagtcggg aggaaggcgt tgatgctaat atcatcaacg attgacgtta 420

ccgacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 480

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gttgattaag ttagatgtga 540

aatccccggg cttaacctgg gaatggcatc taagactggt cagctagagt cttgtagagg 600

ggggtagaat tccatgtgta gcggtgaaat gcgtagagat gtggaggaat accggtggcg 660

aaggcggccc cctggacaaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgctgtaaac gatgtcgatt tgaaggttgt tcccttgagg 780

agtggctttc ggagctaacg cgttaaatcg accgcctggg gagtacggcc gcaaggttaa 840

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 900

aacgcgaaga accttaccta ctcttgacat ccagagaant tagcagagat gctttngtgc 960

cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1020

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcgattc ggtcgggaac 1080

tcaaaggaga ctgccggtga taaaccggag ganggtgggg atgacgtcaa gtcatcatgg 1140

cccttacgag tagggctaca cacgtgctac aatggcgtat acaaagagaa gcgacctcgc 1200

gagagcaagc ggaactcata aagtrcgtcg tagtccggat tggagtctgc aactcgactc 1260

catgaagtcg gaatcgctag taatcgtaga tcagaatgct acggtgaata cgttcccggg 1320

ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta ggtagcttan 1380

ccttcgggag g 1391

<210> 1588
<211> 1516
<212> DNA
<213> Providencia rustigianii

<400> 1588
ttgatcctgg ctcagattga acgctggcgg caggcctaac acatgcaagt cgagcggtaa 60

caggggaagc ttgcttctcg ctgacgagcg gcggacgggt gagtaatgta tggggatctg 120

cccgatagag ggggataact actggaaacg gtagctaata ccgcataatc tctttggagc 180

aaagcagggg aacttcggtc cttgcgctat cggatgaacc catatgggat tagctagttg 240

gtggggtaat ggctcaccaa ggcgacgatc cctagctggt ctgagaggat gatcagccac 300

actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa tattgcacaa 360

tgggcgcaag cctgatgcag ccatgccgcg tgtatgaaga aggccttagg gttgtaaagt 420

actttcagtt gggaggaagg cgttgatgct aatatcatca acgattgacg ttaccaacag 480

aagaagcacc ggctaactcc gtgccagcag ccgcggtaat acggagggtg caagcgttaa 540

tcggaattac tgggcgtaaa gcgcacgcag gcggttgatt aagttagatg tgaaatcccc 600

gggcttaacc tgggaatggc atctaagact ggtcagctag agtcttgtag aggggggtag 660

aattccatgt gtagcggtga aatgcgtaga gatgtggagg aataccggtg gcgaaggcgg 720

ccccctggac aaagactgac gctcaggtgc gaaagcgtgg ggagcaaaca ggattagata 780

ccctggtagt ccacgctgta aacgatgtcg atttggaggt tgttcccttg aggagtggct 840

tccggagcta acgcgttaaa tcgaccgcct ggggagtacg gccgcaaggt taaaactcaa 900

atgaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgcaacgcga 960

agaaccttac ctactcttga catccagaga atttagcaga gatgctttag tgccttcggg 1020

aactctgaga caggtgctgc atggctgtcg tcagctcgtg ttgtgaaatg ttgggttaag 1080

tcccgcaacg agcgcaaccc ttatcctttg ttgccagcac gtcatggtgg gaactcaaag 1140

gagactgccg gtgataaacc ggaggaaggt ggggatgacg tcaagtcatc atggccctta 1200

cgagtagggc tacacacgtg ctacaatggc gtatacaaag agaagcgacc tcgcgagagc 1260

aagcggaact cataaagtac gtcgtagtcc ggattggagt ctgcaactcg actccatgaa 1320

gtcggaatcg ctagtaatcg tagatcagaa tgctacggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc ttaaccttcg 1440

ggagggcgct taccactttg tgattcatga ctggggtgaa gtcgtaacaa ggtaaccgta 1500

ggggaacctg cggctg 1516

<210> 1589
<211> 1494
<212> DNA
<213> Providencia stuartii

<400> 1589
tgatcctggc tcagattgaa cgctggcggc aggcctaaca catgcaagtc gagcggtaac 60

aggggaagct tgcttctcgc tgacgagcgg cggacgggtg agtaatgtat ggggatctgc 120

ccgatagagg gggataacta ctggaaacgg tggctaatac cgcataatct cttaggagca 180

aagcagggga ccttagggcc ttgcgctgtc ggatgaaccc atatgggatt agctagtagg 240

taaggtaatg gcttacctag gcgacgatcc ctagctggtc tgagaggatg atcagccaca 300

ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat attgcacaat 360

gggcgcaagc ctgatgcagc catgccgcgt gtatgaagaa ggccctaggg ttgtaaagta 420

ctttcagtcg ggaggaaggc gttgatgtta ataccatcaa cgattgacgt taccgacaga 480

agaagcaccg gctaactccg tgccagcagc cgcggtaata cggagggtgc aagcgttaat 540

cggaattact gggcgtaaag cgcacgcagg cggttaatta agttagatgt gaaatccccg 600

ggcttaacct gggaatggca tctaagactg gttagctaga gtcttgtaga gggggggtaga 660

attccatgtg tagcggtgaa atgcgtagag atgtggagga ataccggtgg cgaaggcggc 720

cccctggaca aagacttacg ctcaggtgcg aaagcgtggg gagcaaacag gattagatac 780

cctggtagtc cacgctgtaa acgatgtcga tttggaggtt gttccctaga ggagtggctt 840

ccggagctaa cgcgttaaat cgaccgcctg gggagtacgg ccgcaaggtt aaaactcaaa 900

tgaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa 960

gaaccttacc tactcttgac atccagagaa tttagcagag atgctttagt gccttcggga 1020

gctctgagac aggtgctgca tggctgtcgt caactcgtgt tgtgaaatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tatcctttgt tgccagcgat tcggtcggga actcaaagga 1140

gactgccggt gataaaccgg aggaaggtgg ggatgacgtc aagtcatcat ggcccttacg 1200

agtagggcta cacacgtgct acaatggcgt atacaaagag aagcgacctc gcgagagcaa 1260

gcggaactca taaagtacgt cgtagtccgg attggagtct gcaactcgac tccatgaagt 1320

cggaatcgct agtaatcgta gatcagaatg ctacggtgaa tacgttcccg ggccttgtac 1380

acaccgcccg tcacaccatg ggagtgggtt gcaaaagaag taggtagctt aaccttcggg 1440

agggcgctta ccactttgtg atccatgact ggggtgaagt cgtaacaagg tagc 1494

<210> 1590
<211> 1445
<212> DNA
<213> Pseudoclavibacter sp. Timone

<400> 1590
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gatgaagcct tagcttgctt 60

tggtggatta gtggcgaacg ggtgagtaac acgtgagcaa cgtgcccagg actctggaat 120

aaccgcggga aaccgtggct aataccggat aggtgccgag gccgcatggt cttcggttgg 180

aaagtttttg cggttctgga tcggctcacg gcctatcagc ttgttggtgg ggtaatggcc 240

taccaaggcg acgacgggta gccggcctga gagggtgacc ggccacactg ggactgagac 300

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgcaagcctg 360

atgcagcaac gccgcgtggg ggatgacggc cttcgggttg taaacctctt ttagtaggga 420

agaagcgcaa gtgacggtac ctgcagaaaa agcaccggct aactacgtgc cagcagccgc 480

ggtaatacgt agggtgcaag cgttgtccgg atttattggg cgtaaagagc tcgtaggcgg 540

tttgtcgcgt ctgctgtgaa agcccgaggc tcaacctcgg gtctgcagtg ggtacgggca 600

ggctagagtg cggtagggga gattggaatt cctggtgtag cggtggaatg cgcagatatc 660

aggaggaaca ccgatggcga aggcagatct ctgggccgtt actgacgctg aggagcgaaa 720

gcatggggag cgaacaggat tagataccct ggtagtccat gccgtaaacg ttgggcgcta 780

gatgtgggga cctttccacg gtttctgtgt cgtagctaac gcattaagcg ccccgcctgg 840

ggagtacggc cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcggcgga 900

gcatgcggat taattcgatg caacgcgaag aaccttacca aggcttgaca tatatcggaa 960

tcggctagag atagtcgcgc cctttgggtc ggtatacagg tggtgcatgg ttgtcgtcag 1020

ctcgtgtcgt gagatgttcg gttaagtccg gcaacgagcg caacccttgt cctatgttrc 1080

cagcacgtta tggtgggaac tcatgggata ctgccgtggt caacacggag gaaggtgggg 1140

atgacgtcaa atcatcatgc cccttatgtc ttgggcttca cgcatgctac aatggccggt 1200

acaatgggct gcgataccgc gaggtggagc gaatcccaaa aagccggtct cagttcggat 1260

tggggtctgc aactcgaccc catgaagtcg gagtcgctag taatcgcaga tcagcattgc 1320

tgcggtgaat acgttcccgg gccttgtaca caccgcccgt caagtcatga aagtcggtaa 1380

cacccgaagc cggtggccta acctttttggg gggagctgtc gaaggtggga tcggtgatta 1440

ggact 1445

<210> 1591
<211> 1385
<212> DNA
<213> Pseudoflavonifractor capillosus

<400> 1591
tcgaacggag tgctcatgac ggagttttcg gacaacggat tgggttactt agtggcggac 60

gggtgagtaa cgcgtgagga acctgcctcg gagtggggaa taacacaccg aaaggtgtgc 120

taataccgca taatgcagtt gggtcgcatg actctgactg ccaaagattt atcgctctga 180

gatggcctcg cgtctgatta gctagttggc ggggtaacgg cccaccaagg cgacgatcag 240

tagccggact gagaggttga ccggccacat tgggactgag acacggccca gactcctacg 300

ggaggcagca gtggggaata ttgggcaatg ggcgcaagcc tgacccagca acgccgcgtg 360

aaggaagaag gctttcgggt tgtaaacttc ttttgtcagg gacgaaacaa atgacggtac 420

ctgacgaata agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag 480

cgttatccgg atttactggg tgtaaagggc gtgtaggcgg gactgcaagt caggtgtgaa 540

aaccaggggc tcaacctctg gcctgcattt gaaactgtag ttcttgagtg ctggagaggc 600

aatcggaatt ccgtgtgtag cggtgaaatg cgtagatata cggaggaaca ccagtggcga 660

aggcggattg ctggacagta actgacgctg aggcgcgaaa gcgtggggag caaacaggat 720

tagataccct ggtagtccac gccgtaaacg atggatacta ggtgtggggg gactgacccc 780

ctccgtgccg cagttaacac aataagtatc ccacctgggg agtacgatcg caaggttgaa 840

actcaaagga attgacgggg gcccgcacaa gcggtggagt atgtggttta attcgaagca 900

acgcgaagaa ccttaccagg gcttgacatc ctactaacga agcagagatg cattaggtgc 960

ccttcgggga aagtagagac aggtggagca tgggagtcgt cagctcgtgt cgtgagatgt 1020

tgggttaagt cccgcaacga gcgcaacccc tattgttagt tgctacgcaa gagcactcta 1080

gcgagactgc cgttgacaaa acggaggaag gtggggacga cgtcaaatca tcatgcccct 1140

tatgtcctgg gccacacacg tactacaatg gtggttaaca gagggaagca ataccgcgag 1200

gtggagcaaa tccctaaaag ccatcccagt tcggattgca ggctgaaacc cgcctgtatg 1260

aagttggaat cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacac catgagagtc gggaacaccc gaagtccgta gcctaaccgc 1380

aagga 1385

<210> 1592
<211> 1382
<212> DNA
<213> Pseudomonas aeruginosa

<400> 1592
tcgagcggat gaagggagct tgctcctgga ttcagcggcg gacgggtgag taatgcctgg 60

gaatctgcct ggtagtgggg gataacgtcc ggaaacgggc gctaataccg catacgtcct 120

gagggagaaa gtgggggatc ttcggacctc acgctatcag atgagcctag gtcggattag 180

ctagttggtg gggtaaaggc ctaccaaggc gacgatccgt aactggtctg agaggatgat 240

cagtcacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 300

tggacaatgg gcgaaagcct gatccagcca tgccgcgtgt gtgaagaagg tcttcggatt 360

gtaaagcact ttaagttggg aggaagggca gtagttaata ccttgctgtt ttgacgttac 420

caacagaata agcaccggct aacttcgtgc cagcagccgc ggtaatacga agggtgcaag 480

cgttaatcgg aattactggg cgtaaagcgc gcgtaggtgg ttcagcaagt tggatgtgaa 540

atccccgggc tcaacctggg aactgcatcc aaaactactg agctagagta cggtagaggg 600

tggtggaatt tcctgtgtag cggtgaaatg cgtagatata ggaaggaaca ccagtggcga 660

aggcgaccac ctggactgat actgacactg aggtgcgaaa gcgtggggag caaacaggat 720

tagataccct ggtagtccac gccgtaaacg atgtcgacta gccgttggga tccttgagat 780

cttagtggcg cagctaacgc gataagtcga ccgcctgggg agtacggccg caaggttaaa 840

actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 900

acgcgaagaa ccttacctgg ccttgacatg ctgagaactt tccagagatg gattggtgcc 960

ttcgggaact cagacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg 1020

gttaagtccc gtaacgagcg caacccttgt ccttagttac cagcacctcg ggtgggcact 1080

ctaaggagac tgccggtgac aaaccggagg aaggtgggga tgacgtcaag tcatcatggc 1140

ccttacggcc agggctacac acgtgctaca atggtcggta caaagggttg ccaagccgcg 1200

aggtggagct aatcccataa aaccgatcgt agtccggatc gcagtctgca actcgactgc 1260

gtgaagtcgg aatcgctagt aatcgtgaat cagaatgtca cggtgaatac gttcccgggc 1320

cttgtacaca ccgcccgtca caccatggga gtgggttgct ccagaagtag ctagtctaac 1380

cg 1382

<210> 1593
<211> 851
<212> DNA
<213> Pseudomonas fluorescens

<220>
<221> modified_base
<222> (25)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (557)..(557)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (669)..(669)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (783)..(784)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (810)..(810)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (814)..(814)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (830)..(830)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (841)..(841)
<223> a, c, t, g, unknown or other

<400> 1593
tctcttgaga gcggcggacg ggtgnnnnnn ncctaggaat ctgcctggta gtgggggata 60

acgctcggaa acggacgcta ataccgcata cgtcctacgg gagaaagcag gggaccttcg 120

ggccttgcgc tatcagatga gcctaggtcg gattagctag ttggtgaggt aatggctcac 180

caaggcgacg atccgtaact ggtctgagag gatgatcagt cacactggaa ctgagacacg 240

gtccagactc ctacgggagg cagcagtggg gaatattgga caatgggcga aagcctgatc 300

cagccatgcc gcgtgtgtga agaaggtctt cggattgtaa agcactttaa gttgggagga 360

agggcattaa cctaatacgt tagtgttttg acgttaccga cagaataagc accggctaac 420

tctgtgccag cagccgcggt aatacagagg gtgcaagcgt taatcggaat tactgggcgt 480

aaagcgcgcg taggtggttc gttaagttgg atgtgaaatc cccgggctca acctgggaac 540

tgcattcaaa actgtcnagc tagagtatgg tagagggtgg tggaatttcc tgtgtagcgg 600

tgaaatgcgt agatatagga aggaacacca gtggcgaagg cgaccacctg gactgatact 660

gacactgang tgcgaaaagc gtggggagca aacaggatta gataccctgg tagtccacgc 720

cgtaaacgat gtcaactagc cgttgggagc cttgagctct tagtggcgca gctaacgcat 780

tannttgacc gcctggggag tacggccgcn aggntaaaac tcaaatgaan ttgacggggg 840

nccgcacaag c 851

<210> 1594
<211> 1466
<212> DNA
<213> Pseudomonas gessardii

<400> 1594
agattgaacg ctggcggcag gcctaacaca tgcaagtcga gcggtagaga gaagctttgc 60

ttctcttgag agcggcggac gggtgagtaa tgcctaggaa tctgcctggt agtgggggat 120

aacgttcgga aacggacgct aataccgcat acgtcctacg ggagaaagca ggggaccttc 180

gggccttgcg ctatcagatg agcctaggtc ggattagcta gttggtgggg taatggctca 240

ccaaggcgac gatccgtaac tggtctgaga ggatgatcag tcacactgga actgagacac 300

ggtccagact cctacgggag gcagcagtgg ggaatattgg acaatgggcg aaagcctgat 360

ccagccatgc cgcgtgtgtg aagaaggtct tcggattgta aagcacttta agttgggagg 420

aagggttgta gattaatact ctgcaatttt gacgttaccg acagaataag caccggctaa 480

ctctgtgcca gcagccgcgg taatacagag ggtgcaagcg ttaatcggaa ttactgggcg 540

taaagcgcgc gtaggtggtt agttaagttg gatgtgaaat ccccgggctc aacctgggaa 600

ctgcattcaa aactgactga ctagagtatg gtagaggggg gtggaatttc ctgtgtagcg 660

gtgaaatgcg tagatatagg aaggaacacc agtggcgaag gcgaccacct ggactgatac 720

tgacactgag gtgcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc 780

cgtaaacgat gtcaactagc cgttgggagc cttgagctct tagtggcgca gctaacgcat 840

taagttgacc gcctggggag tacggccgca aggttaaaac tcaaatgaat tgacgggggc 900

ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc ttaccaggcc 960

ttgacatcca atgaactttc tagagataga ttggtgcctt cgggaacatt gagacaggtg 1020

ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgt aacgagcgca 1080

acccttgtcc ttagttacca gcacgttatg gtgggcactc taaggagact gccggtgaca 1140

aaccggagga aggtggggat gacgtcaagt catcatggcc cttacggcct gggctacaca 1200

cgtgctacaa tggtcggtac agagggttgc caagccgcga ggtggagcta atcccagaaa 1260

accgatcgta gtccggatcg cagtctgcaa ctcgactgcg tgaagtcgga atcgctagta 1320

atcgcgaatc agaatgtcgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgggag tgggttgcac cagaagtagc tagtctaacc ttcggcagga cggttaccac 1440

ggtgtgattc atgactgggg tgaagt 1466

<210> 1595
<211> 1537
<212> DNA
<213> Pseudomonas mendocina

<400> 1595
tgaactgaag agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca 60

agtcgagcgg atgaggggag cttgctccct gatttagcgg cggacgggtg agtaatgtct 120

aggaatctgc ctggtagtgg gggataacgt tccgaaagga acgctaatac cgcatacgtc 180

ctacgggaga aagcagggga ccttcgggcc ttgcgctatc agatgagcct aggtcggatt 240

agctagttgg tgaggtaatg gctcaccaag gcgacgatcc gtaactggtc tgagaggatg 300

atcagtcaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 360

attggacaat gggcgaaagc ctgatccagc catgccgcgt gtgtgaagaa ggtcttcgga 420

ttgtaaagca ctttaagttg ggaggaaggg cattaaccta atacgttagt gttttgacgt 480

taccaacaga ataagcaccg gctaacttcg tgccagcagc cgcggtaata cgaagggtgc 540

aagcgttaat cggaattact gggcgtaaag cgcgcgtagg tggttcgtta agttggatgt 600

gaaagccccg ggctcaacct gggaactgca tccaaaactg gcgagctaga gtacggtaga 660

gggtggtgga atttcctgtg tagcggtgaa atgcgtagat ataggaagga acaccagtgg 720

cgaaggcgac cacctggact gatactgaca ctgaggtgcg aaagcgtggg gagcaaacag 780

gattagatac cctggtagtc cacgccgtaa acgatgtcaa ctagccgttg gaatccttga 840

gattttagtg gcgcagctaa cgcattaagt tgaccgcctg gggagtacgg ccgcaaggtt 900

aaaactcaaa tgaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa 960

gcaacgcgaa gaaccttacc tggccttgac atgctgagaa ctttccagag atggattggt 1020

gccttcggga actcagacac aggtgctgca tggctgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgtaacga gcgcaaccct tgtccttagt taccagcacc tcgggtgggc 1140

actctaagga gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aagtcatcat 1200

ggcccttacg gccagggcta cacacgtgct acaatggtcg gtacaaaggg ttgccaagcc 1260

gcgaggtgga gctaatccca taaaaccgat cgtagtccgg atcgcagtct gcaactcgac 1320

tgcgtgaagt cggaatcgct agtaatcgtg aatcagaatg tcacggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgggtt gctccagaag tagctagtct 1440

aaccttcggg gggacggtta ccacggagtg attcatgact ggggtgaagt cgtaacaagg 1500

tagccgtagg ggaacctgcg gctggatcac ctcctta 1537

<210> 1596
<211> 1517
<212> DNA
<213> Pseudomonas monteilii

<400> 1596
atcctggctc agattgaacg ctgcggcagg cctaacacat gcaagtcgag cggatgacgg 60

gagcttgctc cttgattcag cggcggacgg gtgagtaatg cctaggaatc tgcctggtag 120

tgggggacaa cgtttcgaaa ggaacgctaa taccgcatac gtcctacggg agaaagcagg 180

ggaccttcgg gccttgcgct atcagatgag cctaggtcgg attagctagt tggtggggta 240

atggctcacc aaggcgacga tccgtaactg gtctgagagg atgatcagtc acactggaac 300

tgagacacgg tccagactcc tacgggaggc agcagtgggg aatattggac aatgggcgaa 360

agcctgatcc agccatgccg cgtgtgtgaa gaaggtcttc ggattgtaaa gcactttaag 420

ttgggaggaa gggcagtaag ttaatacctt gctgttttga cgttaccgac agaataagca 480

ccggctaact ctgtgccagc agccgcggta atacagaggg tgcaagcgtt aatcggaatt 540

actgggcgta aagcgcgcgt aggtggttcg ttaagttgga tgtgaaagcc ccgggctcaa 600

cctgggaact gcatccaaaa ctggcgagct agagtacggt agagggtggt ggaatttcct 660

gtgtagcggt gaaatgcgta gatataggaa ggaacaccag tggcgaaggc gaccacctgg 720

actgatactg acactgaggt gcgaaagcgt ggggagcaaa caggattaga taccctggta 780

gtccacgccg taaacgatgt caactagccg ttggaatcct tgagatttta gtggcgcagc 840

taacgcatta agttgaccgc ctggggagta cggccgcaag gttaaaactc aaatgaattg 900

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt 960

accaggcctt gacatgcaga gaactttcca gagatggatt ggtgccttcg ggaactctga 1020

cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgtaa 1080

cgagcgcaac ccttgtcctt agttaccagc acgtaatggt gggcactcta aggagactgc 1140

cggtgacaaa ccggaggaag gtggggatga cgtcaagtca tcatggccct tacggcctgg 1200

gctacacacg tgctacaatg gtcggtacag agggttgcca agccgcgagg tggagctaat 1260

ctcacaaaac cgatcgtagt ccggatcgca gtctgcaact cgactgcgtg aagtcggaat 1320

cgctagtaat cgcgaatcag aatgtcgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacac catgggagtg ggttgcacca gaagtagcta gtctaacctt cgggaggacg 1440

gttaccacgg tgtgattcat gactggggtg aagtcgtaac aaggtagccg taggggaacc 1500

tgcggctgga tcacctc 1517

<210> 1597
<211> 1348
<212> DNA
<213> Pseudomonas poae

<400> 1597
cttgagagcg gcggacgggt gagtaatgcc taggaatctg cctggtagtg ggggataacg 60

ttcggaaacg gacgctaata ccgcatacgt cctacgggag aaagcagggg accttcgggc 120

cttgcgctat cagatgagcc taggtcggat tagctagttg gtgaggtaat ggctcaccaa 180

ggcgacgatc cgtaactggt ctgagaggat gatcagtcac actggaactg agacacggtc 240

cagactccta cgggaggcag cagtggggaa tattggacaa tgggcgaaag cctgatccag 300

ccatgccgcg tgtgtgaaga aggtcttcgg attgtaaagc actttaagtt gggaggaagg 360

gcattaacct aatacgttag tgttttgacg ttaccgacag aataagcacc ggctaactct 420

gtgccagcag ccgcggtaat acagagggtg caagcgttaa tcggaattac tgggcgtaaa 480

gcgcgcgtag gtggtttgtt aagttggatg tgaaatcccc gggctcaacc tgggaactgc 540

attcaaaact gactgactag agtatggtag agggtggtgg aatttcctgt gtagcggtga 600

aatgcgtaga tataggaagg aacaccagtg gcgaaggcga ccacctggac taatactgac 660

actgaggtgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 720

aacgatgtca actagccgtt ggaagccttg agcttttagt ggcgcagcta acgcattaag 780

ttgaccgcct ggggagtacg gccgcaaggt taaaactcaa atgaattgac gggggcccgc 840

acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac caggccttga 900

catccaatga actttctaga gatagattgg tgccttcggg aacattgaga caggtgctgc 960

atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgtaacg agcgcaaccc 1020

ttgtccttag ttaccagcac gtaatggtgg gcactctaag gagactgccg gtgacaaacc 1080

ggaggaaggt ggggatgacg tcaagtcatc atggcccttа cggcctgggc tacacacgtg 1140

ctacaatggt cggtacagag ggttgccaag ccgcgaggtg gagctaatcc cacaaaaccg 1200

atcgtagtcc ggatcgcagt ctgcaactcg actgcgtgaa gtcggaatcg ctagtaatcg 1260

cgaatcagaa tgtcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1320

tgggagtggg ttgcaccaga agtagcta 1348

<210> 1598
<211> 1492
<212> DNA
<213> Pseudomonas pseudoalcaligenes

<400> 1598
attgaacgct ggcggcaggc ctaacacatg caagtcgagc ggatgaaggg agcttgctcc 60

ctgatttagc ggcggacggg tgagtaatgc ctaggaatct gcctggtagt gggggataac 120

gttccgaaag gaacgctaat accgcatacg tcctacggga gaaagcaggg gaccttcggg 180

ccttgcgcta tcagatgagc ctaggtcgga ttagctagtt ggtgaggtaa tggctcacca 240

aggcgacgat ccgtaactgg tctgagagga tgatcagtca cactggaact gagacacggt 300

ccagactcct acgggaggca gcagtgggga atattggaca atgggcgaaa gcctgatcca 360

gccatgccgc gtgtgtgaag aaggtcttcg gattgtaaag cactttaagt tgggaggaag 420

ggcagtaagc taataccttg ctgttttgac gttaccgaca gaataagcac cggctaactt 480

cgtgccagca gccgcggtaa tacgaagggt gcaagcgtta atcggaatta ctgggcgtaa 540

agcgcgcgta ggtggttcgt taagttggat gtgaaagccc cgggctcaac ctgggaactg 600

catccaaaac tggcgagcta gagtacggta gagggtggtg gaatttcctg tgtagcggtg 660

aaatgcgtag atataggaag gaacaccagt ggcgaaggcg accacctgga ctgatactga 720

cactgaggtg cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgtc aactagccgt tgggttcctt gagaacttag tggcgcagct aacgcattaa 840

gttgaccgcc tggggagtac ggccgcaagg ttaaaactca aatgaattga cgggggcccg 900

cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg aagaacctta cctggccttg 960

acatgctgag aactttccag agatggattg gtgccttcgg gaactcagac acaggtgctg 1020

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgtaac gagcgcaacc 1080

cttgtcctta gttaccagca cgtaatggtg ggcactctaa ggagactgcc ggtgacaaac 1140

cggaggaagg tggggatgac gtcaagtcat catggccctt acggccaggg ctacacacgt 1200

gctacaatgg tcggtacaaa gggttgccaa gccgcgaggt ggagctaatc ccataaaacc 1260

gatcgtagtc cggatcgcag tctgcaactc gactgcgtga agtcggaatc gctagtaatc 1320

gtgaatcaga atgtcacggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc 1380

atgggagtgg gttgctccag aagtagctag tctaaccttc gggggggacgg ttaccacgga 1440

gtgattcatg actggggtga agtcgtaaca aggtagccgt aggggaacct gc 1492

<210> 1599
<211> 1394
<212> DNA
<213> Pseudomonas putida

<220>
<221> modified_base
<222> (1384)..(1384)
<223> a, c, t, g, unknown or other

<400> 1599
tcgagcggat gagaagagct tgctcttcga ttcagcggcg gacgggtgag taatgcctag 60

gaatctgcct ggtagtgggg gacaacgttt cgaaaggaac gctaataccg catacgtcct 120

acgggagaaa gcaggggacc ttcgggcctt gcgctatcag atgagcctag gtcggattag 180

ctagttggtg aggtaatggc tcaccaaggc gacgatccgt aactggtctg agaggatgat 240

cagtcacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 300

tggacaatgg gcgaaagcct gatccagcca tgccgcgtgt gtgaagaagg tcttcggatt 360

gtaaagcact ttaagttggg aggaagggca ttaacctaat acgttagtgt tttgacgtta 420

ccgacagaat aagcaccggc taactctgtg ccagcagccg cggtaataca gagggtgcaa 480

gcgttaatcg gaattactgg gcgtaaagcg cgcgtaggtg gtttgttaag ttggatgtga 540

aagccccggg ctcaacctgg gaactgcatc caaaactggc aagctagagt acggtagagg 600

gtggtggaat ttcctgtgta gcggtgaaat gcgtagatat aggaaggaac accagtggcg 660

aaggcgacca cctggactga tactgacact gaggtgcgaa agcgtgggga gcaaacagga 720

ttagataccc tggtagtcca cgccgtaaac gatgtcaact agccgttgga atccttgaga 780

ttttagtggc gcagctaacg cattaagttg accgcctggg gagtacggcc gcaaggttaa 840

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 900

aacgcgaaga accttaccag gccttgacat gcagagaact ttccagagat ggattggtgc 960

cttcgggaac tctgacacag gtgctgcatg gctgtcgtca gctcgtgtcg tgagatgttg 1020

ggttaagtcc cgtaacgagc gcaacccttg tccttagtta ccagcacgtt atggtgggca 1080

ctctaaggag actgccggtg acaaaccgga ggaaggtggg gatgacgtca agtcatcatg 1140

gcccttacgg cctgggctac acacgtgcta caatggtcgg tacagagggt tgccaagccg 1200

cgaggtggag ctaatctcac aaaaccgatc gtagtccgga tcgcagtctg caactcgact 1260

gcgtgaagtc ggaatcgcta gtaatcgcga atcagaatgt cgcggtgaat acgttcccgg 1320

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caccagaagt agctagtcta 1380

accntcggga ggac 1394

<210> 1600
<211> 1524
<212> DNA
<213> Pseudomonas sp. 2_1_26

<400> 1600
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggatgaaggg agcttgctcc tgaattcagc ggcggacggg tgagtaatgc ctaggaatct 120

gcctgatagt gggggataac gtccggaaac gggcgctaat accgcatacg tcctgaggga 180

gaaagtgggg gatcttcgga cctcacgcta tcagatgagc ctaggtcgga ttagctagtt 240

ggtggggtaa aggcctacca aggcgacgat ccgtaactgg tctgagagga tgatcagtca 300

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattggaca 360

atgggcgaaa gcctgatcca gccatgccgc gtgtgtgaag aaggtcttcg gattgtaaag 420

cactttaagt tgggaggaag ggcagtaagt taataccttg ctgttttgac gttaccaaca 480

gaataagcac cggctaactt cgtgccagca gccgcggtaa tacgaagggt gcaagcgtta 540

atcggaatta ctgggcgtaa agcgcgcgta ggtggttcag caagttggat gtgaaatccc 600

cgggctcaac ctgggaactg catccaaaac tactgagcta gagtacggta gagggtggtg 660

gaatttcctg tgtagcggtg aaatgcgtag atataggaag gaacaccagt ggcgaaggcg 720

accacctgga ctgatactga cactgaggtg cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgccgt aaacgatgtc gactagccgt tgggatcctt gagatcttag 840

tggcgcagct aacgcgataa gtcgaccgcc tggggagtac ggccgcaagg ttaaaactca 900

aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 960

aagaacctta cctggccttg acatgctgag aactttccag agatggattg gtgccttcgg 1020

gaactcagac acaggtgctg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgtaac gagcgcaacc cttgtcctta gttaccagca cctcgggtgg gcactctaag 1140

gagactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaagtcatc atggcccttа 1200

cggccagggc tacacacgtg ctacaatggt cggtacaaag ggttgccaag ccgcgaggtg 1260

gagctaatcc cataaaaccg atcgtagtcc ggatcgcagt ctgcaactcg actgcgtgaa 1320

gtcggaatcg ctagtaatcg tgaatcagaa tgtcacggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacca tgggagtggg ttgctccaga agtagctagt ctaaccgcaa 1440

gggggacggt taccacggag tgattcatga ctggggtgaa gtcgtaacaa ggtagccgta 1500

ggggaacctg cggctggatc acct 1524

<210> 1601
<211> 1284
<212> DNA

<213> Pseudomonas sp. G1229

<400> 1601
cctaggaatc tgcctggtag tgggggacaa cgtttcgaaa ggaacgctaa taccgcatac 60

gtcctacggg agaaagcagg ggaccttcgg gccttgcgct atcagatgag cctaggtcgg 120

attagctagt tggtgaggta atggctcacc aaggctacga tccgtaactg gtctgagagg 180

atgatcagtc acactggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg 240

aatattggac aatgggcgaa agcctgatcc agccatgccg cgtgtgtgaa gaaggtcttc 300

ggattgtaaa gcactttaag ttgggaggaa gggttgtaga ttaatactct gcaattttga 360

cgttaccgac agaataagca ccggctaact ctgtgccagc agccgcggta atacagaggg 420

tgcaagcgtt aatcggaatt actgggcgta aagcgcgcgt aggtggttcg ttaagttgga 480

tgtgaaatcc ccgggctcaa cctgggaact gcatccaaaa ctggcgagct agagtatggt 540

agagggtggt ggaatttcct gtgtagcggt gaaatgcgta gatataggaa ggaacaccag 600

tggcgaaggc gaccacctgg actgatactg acactgaggt gcgaaagcgt ggggagcaaa 660

caggattaga taccctggta gtccacgccg taaacgatgt caactagccg ttgggagcct 720

tgagctctta gtggcgcagc taacgcatta agttgaccgc ctggggagta cggccgcaag 780

gttaaaactc aaatgaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 840

gaagcaacgc gaagaacctt accaggcctt gacatccaat gaactttcca gagatggatt 900

ggtgccttcg ggaacattga gacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 960

tgttgggtta agtcccgtaa cgagcgcaac ccttgtcctt agttaccagc acgtaatggt 1020

gggcactcta aggagactgc cggtgacaaa ccggaggaag gtggggatga cgtcaagtca 1080

tcatggccct tacggcctgg gctacacacg tgctacaatg gtcggtacaa agggttgcca 1140

agccgcgagg tggagctaat cccataaaac cgatcgtagt ccggatcgca gtctgcaact 1200

cgactgcgtg aagtcggaat cgctagtaat cgcgaatcag aatgtcgcgg tgattacgtt 1260

cccgggcctt gtacacaccg cccg 1284

<210> 1602
<211> 1402
<212> DNA
<213> Pseudomonas sp. NP522b

<400> 1602
catgcaagtc gagcggatga agggagcttg cttctggatt cagcggcgga cgggtgagta 60

atgcctagga atctgcctgg tagtggggga caacgttccg aaaggagcgc taataccgca 120

tacgtcctac gggagaaagt gggggatctt cggacctcac gctatcagat gagcctaggt 180

cggattagct agtaggtggg gtaatggctc acctaggcga cgatccgtaa ctggtctgag 240

aggatgatca gtcacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg 300

gggaatattg gacaatgggc gaaagcctga tccagccatg ccgcgtgtgt gaagaaggtc 360

ttcggattgt aaagcacttt aagttgggag gaagggcagt aagttaatac cttgctgttt 420

tgacgttacc aacagaataa gcaccggcta acttcgtgcc agcagccgcg gtaatacgaa 480

gggtgcaagc gttaatcgga attactgggc gtaaagcgcg cgtaggtggt ttggtaagat 540

ggatgtgaaa tccccgggct caacctggga actgcatcca taactgcctg actagagtac 600

ggtagagggt ggtggaattt cctgtgtagc ggtgaaatgc gtagatatag gaaggaacac 660

cagtggcgaa ggcgaccacc tggactgata ctgacactga ggtgcgaaag cgtggggagc 720

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgtcgactag ccgttgggat 780

ccttgagatc ttagtggcgc agctaacgcg ataagtcgac cgcctgggga gtacggccgc 840

aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 900

ttcgaagcaa cgcgaagaac cttacctggc cttgacatgt ccggaatcct gcagagatgc 960

gggagtgcct tcgggaatcg gaacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1020

gagatgttgg gttaagtccc gtaacgagcg cacccтttgt ccttagttac cagcacgtta 1080

tggtgggcac tctaaggaga ctgccggtga caaaccggag gaaggtgggg atgaggtcaa 1140

gtcatcatgg cccttacggc cagggctaca cacgtgctac aatggtcggt tcagagggtt 1200

gccaagccgc gaggtggagc taatcccaga aaaccgattg tagtccggat cgcagtctgc 1260

aactcgactg cggaagtcgg aatcgctagt aatcgtgaat cagaatgtca cggtgaatac 1320

gttcccgggc cttgtacact ccgcccgtca caccatggga gtgggttgct ccagaagtag 1380

ctagtctaac cgcaaggggg ac 1402

<210> 1603
<211> 1363
<212> DNA
<213> Pseudomonas stutzeri

<400> 1603
gcttgctctc tgattcagcg gcggacgggt gagtaatgcc taggaatctg cctgrtagtg 60

ggggacaacg tttcgaaagg aacgctaata ccgcatacgt cctacgggag aaagcagggg 120

accttcgggc cttgcgctat cagatgagcc taggtcggat tagctagttg gtgaggtaac 180

ggctcaccaa ggcgacgatc cgtaactggt ctgagaggat gatcagtcac actggaactg 240

agacacggtc cagactccta cgggaggcag cagtggggaa tattggacaa tgggcgaaag 300

cctgatccag ccatgccgcg tgtgtgaaga aggtcttcgg attgtaaagc actttaagtt 360

gggaggaagg gcattaacct aatacgttag tgttttgacg ttaccgacag aataagcacc 420

ggctaacttc gtgccagcag ccgcggtaat acgaagggtg caagcgttaa tcggaattac 480

tgggcgtaaa gcgcgcgtag gtggtttgtt aagttgaatg tgaaagcccc gggctcaacc 540

tgggaactgc atccaaaact ggcaagctag agtatggcag agggtggtgg aatttcctgt 600

gtagcggtga aatgcgtaga tataggaagg aacaccagtg gcgaaggcga ccacctgggc 660

taatactgac actgaggtgc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 720

ccacgccgta aacgatgtcg actagccgtt gggatccttg agatcttagt ggcgcagcta 780

acgcattaag tcgaccgcct ggggagtacg gccgcaaggt taaaactcaa atgaattgac 840

ggggggcccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac 900

caggccttga catgcagaga actttccaga gatggattgg tgccttcggg aactctgaca 960

caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgtaacg 1020

agcgcaaccc ttgtccttag ttaccagcac gttaaggtgg gcactctaag gagactgccg 1080

gtgacaaacc ggaggaaggt ggggatgacg tcaagtcatc atggcccttа cggcctgggc 1140

tacacacgtg ctacaatggt cggtacaaag ggttgccaag ccgcgaggtg gagctaatcc 1200

cataaaaccg atcgtagtcc ggatcgcagt ctgcaactcg actgcgtgaa gtcggaatcg 1260

ctagtaatcg tgaatcagaa tgtcacggtg aatacgttcc cgggccttgt acacaccgcc 1320

cgtcacacca tgggagtggg ttgctccaga agtagctagt cta 1363

<210> 1604
<211> 1450
<212> DNA
<213> Pseudomonas tolaasii

<400> 1604
agagtttgat cctggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggtagagaga agcttgcttc tcttgagagc ggcggacggg tgagtaatgc ctaggaatct 120

gcctggtagt gggggataac gtccggaaac ggacgctaat accgcatacg tcctacggga 180

gaaagcaggg gaccttcggg ccttgcgcta tcagatgagc ctaggtcgga ttagctagtt 240

ggtgaggtaa tggctcacca aggcgacgat ccgtaactgg tctgagagga tgatcagtca 300

cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga atattggaca 360

atgggcgaaa gcctgatcca gccatgccgc gtgtgtgaag aaggtcttcg gattgtaaag 420

cactttaagt tgggaggaag ggcagttgcc taatacgtaa ctgttttgac gttaccgaca 480

gaataagcac cggctaactc tgtgccagca gccgcggtaa tacagagggt gcaagcgtta 540

atcggaatta ctgggcgtaa agcgcgcgta ggtggtttgt taagttggat gtgaaatccc 600

cgggctcaac ctgggaactg cattcaaaac tgactgacta gagtatggta gagggtggtg 660

gaatttcctg tgtagcggtg aaatgcgtag atataggaag gaacaccagt ggcgaaggcg 720

accacctgga ctaatactga cactgaggtg cgaaagcgtg gggagcaaac aggattagat 780

accctggtag tccacgccgt aaacgatgtc aactagccgt tggaagcctt gagcttttag 840

tggcgcagct aacgcattaa gttgaccgcc tggggagtac ggccgcaagg ttaaaactca 900

aatgaattga csggggcccg cacaagcggt ggagcatgtg gtttaattcg aagcaacgcg 960

aagaacctta ccaggccttg acatccaatg aactttccag agatggattg gtgccttcgg 1020

gaacattgag acaggtgctg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa 1080

gtcccgtaac gagcgcaacc cttgtcctta gttaccagca cgttatggtg ggcactctaa 1140

ggagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcat catggccctt 1200

acggcctggg ctacacacgt gctacaatgg tcggtacaga gggttgccaa gccgcgaggt 1260

ggagctaatc ccataaaacc gatcgtagtc cggatcgcag tctgcaactc gactgcgtga 1320

agtcggaatc gctagtaatc gcgaatcaga atgtcgcggt gaatacgttc ccgggccttg 1380

tacaaaccgc ccgtcacacc atgggagtgg gttgcaccag aagtagctag tctaaccttc 1440

gggaggacgg 1450

<210> 1605
<211> 1439
<212> DNA
<213> Pseudomonas viridiflava

<400> 1605
tgcgagtcga tcggtagaga gaagcttgct tctcttgaga gcggcggacg ggtgagtaat 60

gcctaggaat ctgcctggta gtgggggata acgctcggaa acggacgcta ataccgcata 120

cgtcctacgg gagaaagcag gggaccttcg ggccttgcgc tatcagatga gcctaggtcg 180

gattagctag ttggtgaggt aatggctcac caaggcgacg atccgtaact ggtctgagag 240

gatgatcagt cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 300

gaatattgga caatgggcga aagcctgatc cagccatgcc gcgtgtgtga agaaggtctt 360

cggattgtaa agcactttaa gttgggagga agggcagtaa cctaatacgt tattgttttg 420

acgttaccga cagaataagc accggctaac tctgtgccag cagccgcggt aatacagagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcgcg taggtggttt gttaagttga 540

atgtgaaatc cccgggctca acctgggaac tgcatccaaa actggcaagc tagagtaggg 600

cagagggtgg tggaatttcc tgtgtagcgg tgaaatgcgt agatatagga aggaacacca 660

gtggcgaagg cgaccacctg ggctcatact gacactgagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgcc gtaaacgatg tcaactagcc gttggaatcc 780

ttgagatttt agtggcgcag ctaacgcatt aagttgaccg cctggggagt acggccgcaa 840

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 900

cgaagcaacg cgaagaacct taccaggcct tgacatccaa tgaatccttt agagatagag 960

gagtgccttc gggagcattg agacaggtgc tgcatggctg tcgtcagctc gtgtcgtgag 1020

atgttgggtt aagtcccgta acgagcgcaa cccttgtcct tagttaccag cacgttaagg 1080

tgggcactct aaggagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc 1140

atcatggccc ttacggcctg ggctacacac gtgctacaat ggtcggtaca gagggttgcc 1200

aagccgcgag gtggagctaa tctcacaaaa ccgatcgtag tccggatcgc agtctgcaac 1260

tcgactgcgt gaagtcggaa tcgctagtaa tcgcgaatca gaatgtcgcg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcacc agaagtagct 1380

agtctaacct tcgggaggac ggttaccgcg gtgtgattca tgactggggt gaagtcgaa 1439

<210> 1606
<211> 1480
<212> DNA
<213> Pseudoramibacter alactolyticus

<400> 1606
taagtcaaaa agaacagttt gatcatggct caggacgaac gctggcggta tgcttaacac 60

atgcaagtcg aacgagaagt tttttattga ccttcggggg atataagaga cagacagtgg 120

cgaacgggtg agtaacgcgt gggcaaccta cctatcggag cgggatagcc tcgagaaatc 180

gggagtaaaa ccgcataaca cagcagaatc gcatgacttt gctgtcaaaa ctccggtgcc 240

gatagatggg cccgcgtctg attagctagt tggtaaggta agggcttacc aaggcaacga 300

tcagtagccg gtctgagagg gcgaacggcc acactggaac tgagacacgg tccagactcc 360

tacgggaggc agcagtgggg aatattgcgc aatgggggca accctgacgc agcaataccg 420

cgtgagtgaa gaaggttttc ggatcgtaaa gctctgttat tggggaagaa gcagtgacgg 480

tacccaatga ggaagtcccg gctaactacg tgccagcagc cgcggtaata cgtaggggac 540

gagcgttgtc cggaatcact gggcgtaaag ggcgcgtagg cggttttata agtcagatgt 600

gaaaggtacc ggctcaaccg gtgacgtgca tttgaaactg taagacttga gtactgaaga 660

ggcaagcgga attcctagtg tagcggtgaa atgcgtagat attaggaaga acaccggtgg 720

cgaaggcggc ttgctgggca gatactgacg ctgaggtgcg aaagcgtggg gagcgaacag 780

gattagatac cctggtagtc cacgccgtaa acgatgaata ctaggtgttg gcgaataagt 840

cagtgccgga gttaacacaa taagtattcc gcctggggag tacgaccgca aggttgaaac 900

tcaaaggaat tgacggggac ccgcacaagc agcggagcat gtggtttaat tcgaagcaac 960

gcgaagaacc ttaccaggcc ttgacatcct ctgagcgcaa tagagatatt gctttccctt 1020

cggagacaga gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt 1080

taagtcccgc aacgagcgca acccctgtca ttagttgcca tcattgagtt gggcactcta 1140

atgagactgc cgtagacaat acggaggaag gtggggacga cgtcaaatca tcatgcccct 1200

tatggcctgg gctacacacg tgctacaatg gtctgaacaa agggaagcga aggagcgatt 1260

cggagcgaat ctcataaaac agatcccagt tcggattgca ggctgcaact cgcctgcatg 1320

aagatggagt tgctagtaat cgcggatcag aatgtcgcgg tgaatgcgtt cccgggtctt 1380

gtacacaccg cccgtcacac cacgagagtc ggtaacaccc gaagccagtg agacaaccgg 1440

aaggagtcag ctgtcgaagg tgggatcggt aattggggtg 1480

<210> 1607
<211> 1610
<212> DNA
<213> Psychrobacter arcticus

<400> 1607
atgagccaag tttagtagcc tctttaaagg gttacatagc aagattaaac tgaagagttt 60

gatcatggct cagattgaac gctggcggca ggcttaacac atgcaagtcg agcggaaacg 120

atggtagctt gctaccaggc gtcgagcggc ggacgggtga gtaatactta ggaatctacc 180

tagtagtggg ggatagcacg gggaaactcg tattaatacc gcatacgacc tacgggagaa 240

aggggcagt ttactgctct cgctattaga tgagcctaag tcggattagc tagatggtgg 300

ggtaaaggcc taccatggcg acgatctgta gctggtctga gaggatgatc agccacaccg 360

ggactgagac acggcccgga ctcctacggg aggcagcagt ggggaatatt ggacaatggg 420

ggaaaccctg atccagccat gccgcgtgtg tgaagaaggc cttttggttg taaagcactt 480

taagcagtga agaagactcc atggttaata cccatggacg atgacattag ctgcagaata 540

agcaccggct aactctgtgc cagcagccgc ggtaatacag agggtgcaag cgttaatcgg 600

aattactggg cgtaaaggga gcgtaggtgg ctcgataagt cagatgtgaa atccccgggc 660

tcaacctggg aactgcatct gatactgttg agctagagta tgtgagagga aggtagaatt 720

ccaggtgtag cggtgaaatg cgtagagatc tggaggaata ccgatggcga aggcagcctt 780

ctggcataat actgacactg aggctcgaaa gcgtgggtag caaacaggat tagataccct 840

ggtagtccac gccgtaaacg atgtctacta gtcgttgggt cccttgagga cttagtgacg 900

cagctaacgc aataagtaga ccgcctgggg agtacggccg caaggttaaa actcaaatga 960

attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgatgca acgcgaagaa 1020

ccttacctgg tcttgacata tctagaatcc tgcagagatg cgggagtgcc ttcgggaatt 1080

agaatacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1140

gcaacgagcg caacccttgt ccttagttac cagcgggtta agccgggaac tctaaggata 1200

ctgccagtga caaactggag gaaggcgggg acgacgtcaa gtcatcatgg cccttacgac 1260

cagggctaca cacgtgctac aatggtaggt acagagggca gctacacagc gatgtgatgc 1320

gaatctcaaa aagcctatcg tagtccagat tggagtctgc aactcgactc catgaagtag 1380

gaatcgctag taatcgcgga tcagaatgcc gcggtgaata cgttcccggg ccttgtacac 1440

accgcccgtc acaccatggg agttgattgc accagaagtg gatagcttaa ccttcgggaa 1500

ggcgttcacc acggtgtggt tgatgactgg ggtgaagtcg taacaaggta gccgtagggg 1560

aacctgcggc tggatcacct ccttatagat ggcattcggt cagcaagaat 1610

<210> 1608
<211> 1428
<212> DNA
<213> Psychrobacter cibarius

<400> 1608
aagcttgctt ctcgctgacg agcggcggac gggtgagtaa tacttaggaa tctacctagt 60

agtgggggat agcacgggga aactcgtatt aataccgcat acgacctacg ggagaaaggg 120

ggcagtttac tgctctcgct attagatgag cctaagtcgg attagctaga tggtggggta 180

aaggcctacc atggcgacga tctgtagctg gtctgagagg atgatcagcc acaccgggac 240

tgagacacgg cccggactcc tacgggaggc agcagtgggg aatattggac aatgggggaa 300

accctgatcc agccatgccg cgtgtgtgaa gaaggccttt tggttgtaaa gcactttaag 360

cagtgaagaa gactccatgg ttaataccca tggacgatga cattagctgc agaataagca 420

ccggctaact ctgtgccagc agccgcggta atacagaggg tgcaagcgtt aatcggaatt 480

actgggcgta aagggagcgt aggtggctct ataagtcaga tgtgaaatcc ccgggcttaa 540

cctgggaact gcatctgaaa ctgtagagct agagtatgtg agaggaaggt agaattccag 600

gtgtagcggt gaaatgcgta gagatctgga ggaataccga tggcgaaggc agccttctgg 660

cataatactg acactgaggc tcgaaagcgt gggtagcaaa caggattaga taccctggta 720

gtccacgccg taaacgatgt ctactagtcg ttgggtccct tgaggactta gtgacgcagc 780

taacgcaata agtagaccgc ctggggagta cggccgcaag gttaaaactc aaatgaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc gaagaacctt 900

acctggtctt gacatatcta gaatcctgca gagatgcggg agtgccttcg ggaattagaa 960

tacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1020

cgagcgcaac ccttgtcctt agttaccagc gggttaagcc gggaactcta aggatactgc 1080

cagtgacaaa ctggaggaag gcggggacga cgtcaagtca tcatggccct tacgaccagg 1140

gctacacacg tgctacaatg gtaggtacag agggcagcta cacagcgatg tgatgcgaat 1200

ctcaaaaagc ctatcgtagt ccagattgga gtctgcaact cgactccatg aagtaggaat 1260

cgctagtaat cgcggatcag aatgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1320

cccgtcacac catgggagtt gattgcacca gaagtggata gcttaacctt cgggggagcg 1380

ttcaccacgg tgtggttgat gactggggtg aagtcgtaac aaggtagc 1428

<210> 1609
<211> 1586
<212> DNA
<213> Psychrobacter cryohalolentis

<400> 1609
gatgagccaa gtttagaagt ctctttaaag gacttcatag caagattaaa ctgaagagtt 60

tgatcatggc tcagattgaa cgctggcggc aggcttaaca catgcaagtc gagcggaaac 120

gatgatagct tgctatcagg cgtcgagcgg cggacgggtg agtaatactt aggaatctac 180

ctagtagtgg gggatagcac ggggaaactc gtattaatac cgcatacgac ctacgggaga 240

aaggggcag tttactgctc tcgctattag atgagcctaa gtcggattag ctagatggtg 300

gggtaaaggc ctaccatggc gacgatctgt agctggtctg agaggatgat cagccacacc 360

gggactgaga cacggcccgg actcctacgg gaggcagcag tggggaatat tggacaatgg 420

gggaaaccct gatccagcca tgccgcgtgt gtgaagaagg ccttttggtt gtaaagcact 480

ttaagcagtg aagaagactc ttcggttaat acccggagac gatgacatta gctgcagaat 540

aagcaccggc taactctgtg ccagcagccg cggtaataca gagggtgcaa gcgttaatcg 600

gaattactgg gcgtaaaggg agcgtaggtg gctcgataag tcagatgtga aatccccggg 660

ctcaacctgg gaactgcatc tgatactgtt gagctagagt atgtgagagg aaggtagaat 720

tccaggtgta gcggtgaaat gcgtagagat ctggaggaat accgatggcg aaggcagcct 780

tctggcataa tactgacact gaggctcgaa agcgtgggta gcaaacagga ttagataccc 840

tggtagtcca cgccgtaaac gatgtctact agtcgttggg tcccttgagg acttagtgac 900

gcagctaacg caataagtag accgcctggg gagtacggcc gcaaggttaa aactcaaatg 960

aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga 1020

accttacctg gtcttgacat atctagaatc ctgcagagat gcgggagtgc cttcgggaat 1080

tagaatacag gtgctgcatg gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1140

cgcaacgagc gcaacccttg tccttagtta ccagcgggtt aagccgggaa ctctaaggat 1200

actgccagtg acaaactgga ggaaggcggg gacgacgtca agtcatcatg gcccttacga 1260

ccagggctac acacgtgcta caatggtagg tacagagggc agctacacag cgatgtgatg 1320

cgaatctcaa aaagcctatc gtagtccaga ttggagtctg caactcgact ccatgaagta 1380

ggaatcgcta gtaatcgcgg atcagaatgc cgcggtgaat acgttcccgg gccttgtaca 1440

caccgcccgt cacaccatgg gagttgattg caccagaagt ggatagctta accttcgggg 1500

gagcgttcac cacggtgtgg ttgatgactg gggtgaagtc gtaacaaggt agccgtaggg 1560

gaacctgcgg ctggatcacc tcctta 1586

<210> 1610
<211> 1472
<212> DNA
<213> Psychrobacter faecalis

<400> 1610
ggctcagatt gaacgctggc ggcaggctta acacatgcaa gtcgagcggt aacaggagaa 60

gcttgcttct cgctgacgag cggcggacgg gtgagtaata cttaggaatc tacctagtag 120

tgggggatag ctcggggaaa ctcgaattaa taccgcatac gacctacggg agaaaggggg 180

caacttgttg ctctcgctat tagatgagcc taagtcggat tagctagatg gtggggtaaa 240

ggcctaccat ggcgacgatc tgtagctggt ctgagaggat gatcagccac accgggactg 300

agacacggcc cggactccta cgggaggcag cagtggggaa tattggacaa tgggggcaac 360

cctgatccag ccatgccgcg tgtgtgaaga aggccttttg gttgtaaagc actttaagca 420

gtgaagaaga ctccatggtt aatacccatg gacgatgaca ttagctgcag aataagcacc 480

ggctaactct gtgccagcag ccgcggtaat acagagggtg caagcgttaa tcggaattac 540

tgggcgtaaa gcgagcgtag gtggcttgat aagtcagatg tgaaagcccc gggcttaacc 600

tgggaacggc atctgatact gttaggctag agtaggtgag aggaaggtag aattccaggt 660

gtagcggtga aatgcgtaga gatctggagg aataccgatg gcgaaggcag ccttctggca 720

tcatactgac actgaggttc gaaagcgtgg gtagcaaaca ggattagata ccctggtagt 780

ccacgccgta aacgatgtct actagtcgtt gggtcccttg aggacttagt gacgcagcta 840

acgcaataag tagaccgcct ggggagtacg gccgcaaggt taaaactcaa atgaattgac 900

gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgcaacgcga agaaccttac 960

ctggtcttga catatctaga atcctgcaga gatgcgggag tgccttcggg aattagaata 1020

caggtgctgc atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtccttag ttaccagcgg tttggccggg aactctaagg atactgccag 1140

tgacaaactg gaggaaggcg gggacgacgt caagtcatca tggcccttac gaccagggct 1200

acacacgtgc tacaatggta ggtacagagg gcagctacac agcgatgtga tgcgaatctc 1260

aaaaagccta tcgtagtcca gattggagtc tgcaactcga ctccatgaag taggaatcgc 1320

tagtaatcgc ggatcagaat gccgcggtga atacgttccc gggccttgta cacaccgccc 1380

gtcacaccat gggagttgat tgcaccagaa gtgggtagcc taacctttta ggatggcgct 1440

caccacggtg tggttgatga ctggggtgaa gt 1472

<210> 1611
<211> 1468
<212> DNA
<213> Psychrobacter nivimaris

<400> 1611
agattgaacg ctggcggcag gcttaacaca tgcaagtcga gcggaaacga tgatagcttg 60

ctatcaggcg tcgagcggcg gacgggtgag taatacttag gaatctacct agtagtgggg 120

gatagcacgg ggaaactcgt attaataccg catacgacct acgggagaaa gggggcagtt 180

tactgctctc gctattagat gagcctaagt cggattagct agatggtggg gtaaaggcct 240

accatggcga cgatctgtag ctggtctgag aggatgatca gccacaccgg gactgagaca 300

cggcccggac tcctacggga ggcagcagtg gggaatattg gacaatgggg gaaaccctga 360

tccagccatg ccgcgtgtgt gaagaaggcc ttttggttgt aaagcacttt aagcagtgaa 420

gaagactctt cggttaatac ccggagacga tgacattagc tgcagaataa gcaccggcta 480

actctgtgcc agcagccgcg gtaatacaga gggtgcaagc gttaatcgga attactgggc 540

gtaaagcgag cgtaggtggc ttgataagtc agatgtgaaa tccccgggct taacctggga 600

actgcatctg aaactgttag gctagagtag gtgagaggga ggtagaattt caggtgtagc 660

ggtgaaatgc gtagagatct gaaggaatac cgatggcgaa ggcagcctcc tggcatcata 720

ctgacactga ggctcgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg 780

ccgtaaacga tgtctactag tcgttgggtc ccttgaggac ttagtgacgc agctaacgca 840

ataagtagac cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg 900

cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctggt 960

cttgacatat ctagaatcct gcagagatgc gggagtgcct tcgggaatta gaatacaggt 1020

gctgcatggc tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1080

aacccttgtc cttagttacc agcgggttaa gccgggaact ctaaggatac tgccagtgac 1140

aaactggagg aaggcgggga cgacgtcaag tcatcatggc ccttacgacc agggctacac 1200

acgtgctaca atggtaggta cagagggcag ctacacagcg atgtgatgcg aatctcaaaa 1260

agcctatcgt agtccagatt ggagtctgca actcgactcc atgaagtagg aatcgctagt 1320

aatcgcggat cagaatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

caccatggga gttgattgca ccagaagtgg atagcctaac cttcgggaag gcgttcacca 1440

cggtgtggtt gatgactggg gtgaagtc 1468

<210> 1612
<211> 1468
<212> DNA
<213> Psychrobacter pulmonis

<400> 1612
agattgaacg ctggcggcag gcttaacaca tgcaagtcga gcggtaacag gagaagcttg 60

cttctcgctg acgagcggcg gacgggtgag taatacttag gaatctacct agtagtgggg 120

gatagctcgg ggaaactcga attaataccg catacgacct acgggagaaa gggggcaact 180

tgttgctctc gctattagat gagcctaagt cggattagct agatggtggg gtaaaggcct 240

accatggcga cgatctgtag ctggtctgag aggatgatca gccacaccgg gactgagaca 300

cggcccggac tcctacggga ggcagcagtg gggaatattg gacaatgggg gcaaccctga 360

tccagccatg ccgcgtgtgt gaagaaggcc ttttggttgt aaagcacttt aagcagtgaa 420

gaagactcca tggttaatac ccatggacga tgacattagc tgcagaataa gcaccggcta 480

actctgtgcc agcagccgcg gtaatacaga gggtgcaagc gttaatcgga attactgggc 540

gtaaagcgag cgtaggtggc ttgataagtc agatgtgaaa gccccgggct taacctggga 600

acggcatctg atactgttag gctagagtag gtgagaggaa ggtagaattc caggtgtagc 660

ggtgaaatgc gtagagatct ggaggaatac cgatggcgaa ggcagccttc tggcatcata 720

ctgacactga ggttcgaaag cgtgggtagc aaacaggatt agataccctg gtagtccacg 780

ccgtaaacga tgtctactag tcgttgggtc ccttgaggac ttagtgacgc agctaacgca 840

ataagtagac cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg 900

cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctggt 960

cttgacatat ctagaatcct gcagagatgc gggagtgcct tcgggaatta gaatacaggt 1020

gctgcatggc tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1080

aacccttgtc cttagttacc agcggtttgg ccgggaactc taaggatact gccagtgaca 1140

aactggagga aggcggggac gacgtcaagt catcatggcc cttacgacca gggctacaca 1200

cgtgctacaa tggtaggtac agagggcagc tacacagcga tgtgatgcga atctcaaaaa 1260

gcctatcgta gtccagattg gagtctgcaa ctcgactcca tgaagtagga atcgctagta 1320

atcgcggatc agaatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgggag ttgattgcac cagaagtggt tagcctaacc ttttaggaag gcgatcacca 1440

cggtgtggtt gatgactggg gtgaagtc 1468

<210> 1613
<211> 1457
<212> DNA
<213> Psychrobacter sp. 13983

<400> 1613
attgaacgct ggcggcaggc ttaacacatg caagtcgagc ggtaacagga gaagcttgct 60

tctygctgac gagcggcgga cgggtgagta atacttagga atctgcccag tagtggggga 120

tagcacgggg aaactcgtat taataccgca tacaccctac ggggaaaagg gggcgcttgc 180

gctctcgcta ttggatgagc ctaagtcgga ttagctagtt ggtggggtaa aggcctacca 240

aggcgacgat ctgtagctgg tctgagagga tgatcagcca caccgggact gagacacggc 300

ccggactcct acgggaggca gcagtgggga atattggaca atgggggcaa ccctgatcca 360

gccatgccgc gtgtgtgaag aaggcctttt ggttgtaaag cactttaagc agtgaagaag 420

actctatggt taatacccat agacgatgac attagctgca gaataagcac cggctaactc 480

tgtgccagca gccgcggtaa tacagagggt gcaagcgtta atcggaatta ctgggcgtaa 540

agcgagcgta ggtggcttaa taagtcagat gtgaaatccc cgggcttaac ctgggaactg 600

catctgatac tgttgggcta gagtaggtga gagggaggta gaatttcagg tgtagcggtg 660

aaatgcgtag agatctgaag gaataccgat ggcgaaggca gcctcctggc atcatactga 720

cactgaggtt cgaaagcgtg ggtagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgtc tactagtcgt tggggaactt gattccttag tgacgcagct aacgcaataa 840

gtagaccgcc tggggagtac ggccgcaagg ttaaaactca aatgaattga cgggggcccg 900

cacaagcggt ggagcatgtg gtttaattcg atgcaacgcg aagaacctta cctggtcttg 960

acatatctag aatcctgcag agatgcggga gtgccttcgg gaattagaat acaggtgctg 1020

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1080

cttttcctta gttaccagcg gtttggccgg ggactctaag gatactgcca gtgacaaact 1140

ggaggaaggc ggggacgacg tcaagtcatc atggcccttа cgaccagggc tacacacgtg 1200

ctacaatggt aggtacagag ggctgctaca cagcgatgtg atgcgaatct caaaaagcct 1260

atcgtagtcc agattggagt ctgcaactcg actccatgaa gtcggaatcg ctagtaatcg 1320

cggatcagaa tgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1380

tgggagttga ttgcaccaga agtgggtagc ctaactttta gagggcgctc accacggtgt 1440

ggtcgatgac tggggtg 1457

<210> 1614
<211> 1327
<212> DNA
<213> Pyramidobacter piscolens

<400> 1614
gacgaacgct ggcggcgtgc ttaacacatg caagttgagc gagcagcgga cgggtgagta 60

aagcacaagg acttgtccga aagagaggga cacctgcggg aaaccggagc taatacctca 120

taaaaaaggc gcttttggag agacttgtgt cctatcaggc agttggtgag gtaacggctc 180

accaaaccga agacgggtag ccggactgag aggtcgaccg gccacattgg aactgagaga 240

cggtccagac tcctacggga ggcagcagtg gggaatattg ggcaatgggc gcaagcctga 300

cccagcgacg ccgcgtgagg gaagacagcc ttcgggttgt aaacctctgt tgcaggggaa 360

gatgacggta ccctgcgagg aagctccggc taactacgtg ccagcagccg cggtaatacg 420

tagggagcga gcgttgtccg gaattactgg gcgtaaaggg cgcgtaggcg gcgcttcaag 480

tcgtctgtca aaagccgagg ctcaacctcg gtgcgcagac gaaactggag agcttgagaa 540

gcagagaggc aaacagaatt cctggtgtag cggtgaaatg cgtagatatc aggaagaata 600

ccagtggcga aggcggtttg ctggctgcct gacgctgaag cgcgaaagcc aggggagcaa 660

acgggattag ataccccggt agtcctggca gtaaacgatg tatgctgggt gtgggacgtt 720

ccgtgccgaa gttaacgcga taagcatacc gcctggggag tacggtcgca agattgaaac 780

tcaaaggaat tgacgggggc ccgcacaagc ggtggagcac gtggtttaat tcgatgcaaa 840

ccgaagaacc ttacctggac ttgacatcaa caggtgctgc atggctgtcg tcagctcgtg 900

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctattgccgg ttgctaccag 960

ctgagcactc cggcgagact gccatcgaca agatggagga aggtggggac gacgtcaagt 1020

catcatggcc catatgtcca gggcgacaca catgctacaa tggatggcag agagaagcga 1080

gcccgaaagg agaagcagat cccaaccatc cccagttcgg atgcagtctg caactcgact 1140

gcagaagttg gaatcgctag taatcgcgga tcagccaagc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt cacaccatcc gagtcgggtg ctctcaaagc cggagcctaa 1260

ggatccgcct aaagagtgtc cggtgaggag ggtgaagtcg taacaaggta accgtacggg 1320

aacgtgc 1327

<210> 1615
<211> 1540
<212> DNA
<213> Ralstonia pickettii

<400> 1615
ttgaactgaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgcc ttacacatgc 60

aagtcgaacg gcagcatgat ctagcttgct agattgatgg cgagtggcga acgggtgagt 120

aatacatcgg aacgtgccct gtagtggggg ataactagtc gaaagattag ctaataccgc 180

atacgacctg agggtgaaag tgggggaccg caaggcctca tgctatagga gcggccgatg 240

tctgattagc tagttggtgg ggtaaaggcc caccaaggcg acgatcagta gctggtctga 300

gaggacgatc agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatttt ggacaatggg cgaaagcctg atccagcaat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt ttgtccggaa agaaatggct ctggttaata cctggggtcg 480

atgacggtac cggaagaata aggaccggct aactacgtgc cagcagccgc ggtaatacgt 540

agggtccaag cgttaatcgg aattactggg cgtaaagcgt gcgcaggcgg ttgtgcaaga 600

ccgatgtgaa atccccgagc ttaacttggg aattgcattg gtgactgcac ggctagagtg 660

tgtcagaggg gggtagaatt ccacgtgtag cagtgaaatg cgtagagatg tggaggaata 720

ccgatggcga aggcagcccc ctgggataac actgacgctc atgcacgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcaacta gttgttgggg 840

attcatttcc ttagtaacgt agctaacgcg tgaagttgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaaaaac cttacctacc cttgacatgc cactaacgaa gcagagatgc 1020

attaggtgct cgaaagagaa agtggacaca ggtgctgcat ggctgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtctctagtt gctacgaaag 1140

ggcactctag agagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct 1200

catggccctt atgggtaggg cttcacacgt catacaatgg tgcatacaga gggttgccaa 1260

gccgcgaggt ggagctaatc ccagaaaatg catcgtagtc cggatcgtag tctgcaactc 1320

gactacgtga agctggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1380

ccgggtcttg tacacaccgc ccgtcacacc atgggagtgg gctttaccag aagtagttag 1440

cctaaccgca aggagggcga ttaccacggt agggttcatg actggggtga agtcgtaaca 1500

aggtagccgt atcggaaggt gcggctggat cacctccttt 1540

<210> 1616
<211> 1540
<212> DNA
<213> Ralstonia sp. 5_7_47FAA

<400> 1616
ttgaactgaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgcc ttacacatgc 60

aagtcgaacg gcagcatgat ctagcttgct agattgatgg cgagtggcga acgggtgagt 120

aatacatcgg aacgtgccct gtagtggggg ataactagtc gaaagattag ctaataccgc 180

atacgacctg agggtgaaag tgggggaccg caaggcctca tgctatagga gcggccgatg 240

tctgattagc tagttggtga ggtaaaggct caccaaggcg acgatcagta gctggtctga 300

gaggacgatc agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatttt ggacaatggg cgaaagcctg atccagcaat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt ttgtccggaa agaaatggct ctggttaata cctggggtcg 480

atgacggtac cggaagaata aggaccggct aactacgtgc cagcagccgc ggtaatacgt 540

agggtccaag cgttaatcgg aattactggg cgtaaagcgt gcgcaggcgg ttgtgcaaga 600

ccgatgtgaa atccccgagc ttaacttggg aattgcattg gtgactgcac ggctagagtg 660

tgtcagaggg gggtagaatt ccacgtgtag cagtgaaatg cgtagagatg tggaggaata 720

ccgatggcga aggcagcccc ctgggataac actgacgctc atgcacgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccctaaacg atgtcaacta gttgttgggg 840

attcatttcc ttagtaacgt agctaacgcg tgaagttgac cgcctgggga gtacggtcgc 900

aagattaaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggatga tgtggattaa 960

ttcgatgcaa cgcgaaaaac cttacctacc cttgacatgc cactaacgaa gcagagatgc 1020

attaggtgct cgaaagagaa agtggacaca ggtgctgcat ggctgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtctctagtt gctacgaaag 1140

ggcactctag agagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct 1200

catggccctt atgggtaggg cttcacacgt catacaatgg tgcatacaga gggttgccaa 1260

gccgcgaggt ggagctaatc ccagaaaatg catcgtagtc cggatcgtag tctgcaactc 1320

gactacgtga agctggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1380

ccgggtcttg tacacaccgc ccgtcacacc atgggagtgg gctttaccag aagtagttag 1440

cctaaccgca aggagggcga ttaccacggt agggttcatg actggggtga agtcgtaaca 1500

aggtagccgt atcggaaggt gcggctggat cacctccttt 1540

<210> 1617
<211> 1515
<212> DNA
<213> Raoultella ornithinolytica

<400> 1617
cagattgaac gctggcggca cgcctaacac atgcaagtcg agcggtagca cagagagctt 60

gctctcgggt gacgagcggc ggacgggtga gtaatgtctg ggaaactgcc tgatggaggg 120

ggataactac tggaaacggt agctaatacc gcataacgtc gcaagaccaa agtgggggac 180

cttcgggcct catgccatca gatgtgccca gatgggatta gctagtaggt ggggtaatgg 240

ctcacctagg cgacgatccc tagctggtct gagaggatga ccagccacac tggaactgag 300

acacggtcca gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc 360

tgatgcagcc atgccgcgtg tatgaagaag gccttcgggt tgtaaagtac tttcagcgag 420

gaggaaggcg ttaaggttaa taaccttagt gattgacgtt actcgcagaa gaagcaccgg 480

ctaactccgt gccagcagcc gcggtaatac ggagggtgca agcgttaatc ggaattactg 540

ggcgtaaagc gcacgcaggc ggtctgttaa gtcagatgtg aaatccccgg gctcaacctg 600

ggaactgcat ttgaaactgg caggcttgag tcttgtagag gggggtagaa ttccaggtgt 660

agcggtgaaa tgcgtavaga tctggaggaa taccggtggc gaaggcggcc ccctggacaa 720

agactgacgc tcaggtgcga aagcgtgggg agcaaacagg attagatacc ctggtagtcc 780

acgctgtaaa cgatgtcgac ttggaggttg ttcccttgag gagtggcttc cggagctaac 840

gcgttaagtc gaccgcctgg ggagtacggc cgcaaggtta aaactcaaat gaattgacgg 900

gggcccgcac aagcggtgga gcatgtggtt taattcgatg caacgcgaag aaccttacct 960

actcttgaca tccagagaac ttagcagaga tgctttggtg ccttcgggaa ctctgagaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt atcctttgtt gccagcgatt cggtcgggaa ctcaaaggag actgccagtg 1140

ataaactgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1200

acacgtgcta caatggcata tacaaagaga agcgacctcg cgagagcaag cggacctcat 1260

aaagtatgtc gtagtccgga ttggagtctg caactcgact ccatgaagtc ggaatcgcta 1320

gtaatcgtag atcagaatgc tacggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtgggttg caaaagaagt aggtagctta accttcggga gggcgcttac 1440

cactttgtga ttcatgactg gggtgaagtc gtaacaaggt aaccgtaggg gaacctgcgg 1500

ctggatcacc tcctt 1515

<210> 1618
<211> 1398
<212> DNA
<213> Raoultella planticola

<400> 1618
tcgagcggta gcacagagag cttgctctcg ggtgacgagc ggcggacggg tgagtaatgt 60

ctgggaaact gcctgatgga gggggataac tactggaaac ggtagctaat accgcataac 120

gtcgcaagac caaagtgggg gaccttcggg cctcatgcca tcagatgtgc ccagatggga 180

ttagctagta ggtggggtaa tggctcacct aggcgacgat ccctagctgg tctgagagga 240

tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca gcagtgggga 300

atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag aaggccttcg 360

ggttgtaaag tactttcagc gaggaggaag gcattaaggt taataacctt ggtgattgac 420

gttactcgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa tacggagggt 480

gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtttgt taagtcagat 540

gtgaaatccc cgggctcaac ctgggaactg catttgaaac tggcaagctt gagtcttgta 600

gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag gaataccggt 660

ggcgaaggcg gcccccctgga caaagactga cgctcaggtg cgaaagcgtg gggagcaaac 720

aggattagat accctggtag tccacgctgt aaacgatgtc gacttggagg ttgttccctt 780

gaggagtggc ttccggagct aacgcgttaa gtcgaccgcc tggggagtac ggccgcaagg 840

ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

atgcaacgcg aagaacctta cctactcttg acatccagag aacttagcag agatgctttg 960

gggccttcgg gaactctgag acagaggctg catggctgtc gtcagctcgt gtgatgaaat 1020

tttgggatta gtcccgcaac gagcgcaacc cttatccttt gttgccagcg gtccggccgg 1080

gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg tcaagtcatc 1140

atggcccttа cgagtagggc tacacacgtg ctacaatggc atatacaaag agaagcgacc 1200

tcgcgagagc aagcggacct cataaagtat gtcgtagtcc ggattggagt ctgcaactcg 1260

actccatgaa gtcggaatcg ctagtaatcg tagatcagaa tgctacggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga agtaggtagc 1380

ttaaccttcg ggagggcg 1398

<210> 1619
<211> 1454
<212> DNA
<213> Raoultella terrigena

<400> 1619
tgaacgctgg cggcaggcct aacacatgca agtcgagcgg tagcacagaa gagcttgctc 60

ttcgggtgac gagcggcgga cgggtgagta atgtctggga aactgcctga tggagggga 120

taactactgg aaacggtagc taataccgca taacgtcgca agaccaaagt gggggacctt 180

cgggcctcat gccatcagat gtgcccagat gggattagct agtaggtgag gtaatggctc 240

acctaggcga cgatccctag ctggtctgag aggatgacca gccacactgg aactgagaca 300

cggtccagac tcctacggga ggcagcagtg gggaatattg cacaatgggc gcaagcctga 360

tgcagccatg ccgcgtgtat gaagaaggcc ttcgggttgt aaagtacttt cagcgaggag 420

gaaggcgtta aggttaataa ccttagcgat tgacgttact cgcagaagaa gcaccggcta 480

actccgtgcc agcagccgcg gtaatacgga gggtgcaagc gttaatcgga attactgggc 540

gtaaagcgca cgcaggcggt ctgtcaagtc ggatgtgaaa tccccgggct caacctggga 600

actgcatccg aaactggcag gctagagtct tgtagagggg ggtagaattc caggtgtagc 660

ggtgaaatgc gtagagatct ggaggaatac cggtggcgaa ggcggccccc tggacaaaga 720

ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 780

ctgtaaacga tgtcgacttg gaggttgttc ccttgaggag tggcttccgg agctaacgcg 840

ttaagtcgac cgcctgggga gtacggccgc aaggttaaaa ctcaaatgaa ttgacggggg 900

cccgcacaag cggtggagca tgtggtttaa ttcgatgcaa cgcgaagaac cttacctact 960

cttgacatcc agagaactta gcagagatgc tttggtgcct tcgggaactc tgagacaggt 1020

gctgcatggc tgtcgtcagc tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc 1080

aacccttatc ctttgttgcc agcggttcgg ccgggaactc aaaggagact gccagtgata 1140

aactggagga aggtggggat gacgtcaagt catcatggcc cttacgagta gggctacaca 1200

cgtgctacaa tggcatatac aaagagaagc gacctcgcga gagcaagcgg acctcataaa 1260

gtatgtcgta gtccggatcg gagtctgcaa ctcgactccg tgaagtcgga atcgctagta 1320

atcgtggatc agaatgccac ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1380

accatgggag tgggttgcaa aagaagtagg tagcttaacc ttcgggaggg cgcttaccac 1440

tttgtgattc atga 1454

<210> 1620
<211> 1432
<212> DNA
<213> Rhodobacter sp. oral taxon C30

<400> 1620
agagtttgat cctggctcag aacgaacgct ggcggcaggc ctaacacatg caagtcgaac 60

gagatcttcg gatctagtgg cggacgggtg agtaacgcgt gggaacgtgc cctttggttc 120

ggaatagcct cgggaaactg ggagtaatac cggatacgcc cttcggggga aagatttatc 180

gccaaaggat cggcccgcgt tggattaggt agttggtggg gtaacggcct accaagccga 240

cgatccatag ctggtttgag aggatgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatctta gacaatgggg gcaaccctga tctagccatg 360

ccgcgtgatc gatgaaggcc ttagggttgt aaagatcttt cagctgggaa gataatgact 420

gtaccagcag aagaagcccc ggctaactcc gtgccagcag ccgcggtaat acggaggggg 480

ctagcgttgt tcggaattac tgggcgtaaa gcgcacgtag gcggaccaga aagtcagagg 540

tgaaatccca gggctcaacc ttggaactgc ctttgaaact cctggtcttg agttcgagag 600

aggtgagtgg aattccgagt gtagaggtga aattcgtaga tattcggagg aacaccagtg 660

gcgaaggcgg ctcactggct cgatactgac gctgaggtgc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgaat gccagacgtc gggcagccat 780

gctgttcggt gtcacaccta acggattaag cattccgcct ggggagtacg gccgcaaggt 840

taaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac caacccttga catggcgatc gcggttccag agatggttcc 960

ttcagttcgg ctggatcgca cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttcggtta agtccggcaa cgagcgcaac ccacactttc agttgccatc attcagttgg 1080

gcactctgaa agaactgccg gtgataagcc ggaggaaggt gtggatgacg tcaagtcctc 1140

atggcccttа cgggttgggc tacacacgtg ctacaatggt ggtgacaatg ggttaatccc 1200

caaaagccat ctcagttcgg attggggtct gcaactcgac cccatgaagt cggaatcgct 1260

agtaatcgcg taacagcatg acgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1320

tcacaccatg ggaattgggt ctacccgacg acggtgcgcc aacctcgcaa gaggaagcag 1380

ccggccacgg taggctcagt gactggggtg aagtcgtaac aaggtagccg ta 1432

<210> 1621
<211> 1466
<212> DNA
<213> Rhodobacter sphaeroides

<400> 1621
caacttgaga gtttgatcct ggctcagaat gaacgctggc ggcaggccta acacatgcaa 60

gtcgagcgaa gtcttcggac ttagcggcgg acgggtgagt aacgcgtggg aacgtgccct 120

ttgcttcgga atagccccgg gaaactggga gtaataccga atgtgccctt tgggggaaag 180

atttatcggc aaaggatcgg cccgcgttgg attaggtagt tggtggggta atggcctacc 240

aagccgacga tccatagctg gtttgagagg atgatcagcc acactgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatcttagac aatgggcgca agcctgatct 360

agccatgccg cgtgatcgat gaaggcctta gggttgtaaa gatctttcag gtgggaagat 420

aatgacggta ccaccagaag aagccccggc taactccgtg ccagcagccg cggtaatacg 480

gaggggcta gcgttattcg gaattactgg gcgtaaagcg cacgtaggcg gatcggaaag 540

tcagaggtga aatcccaggg ctcaaccctg gaactgcctt tgaaactccc gatcttgagg 600

tcgagagagg tgagtggaat tccgagtgta gaggtgaaat tcgtagatat tcggaggaac 660

accagtggcg aaggcggctc actggctcga tactgacgct gaggtgcgaa agcgtgggga 720

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatgcc agtcgtcggg 780

cagcatgctg ttcggtgaca cacctaacgg attaagcatt ccgcctgggg agtacggccg 840

caaggttaaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgcagaa ccttaccaac ccttgacatg gcgatcgcgg ttccagagat 960

ggttccttca gttcggctgg atcgcacaca ggtgctgcat ggctgtcgtc agctcgtgtc 1020

gtgagatgtt cggttaagtc cggcaacgag cgcaacccac gtccttagtt gccagcattc 1080

agttgggcac tctagggaaa ctgccggtga taagccggag gaaggtgtgg atgacgtcaa 1140

gtcctcatgg cccttacggg ttgggctaca cacgtgctac aatggcagtg acaatgggtt 1200

aatcccaaaa agctgtctca gttcggattg gggtctgcaa ctcgacccca tgaagtcgga 1260

atcgctagta atcgcgtaac agcatgacgc ggtgaatacg ttcccgggcc ttgtacacac 1320

cgcccgtcac accatgggaa ttggttctac ccgaaggcgg tgcgccaacc tcgcaagagg 1380

aggcagccga ccacggtagg atcagtgact ggggtgaagt cgtaacaagg tagccgtagg 1440

ggaacctgcg gctggatcac ctcctt 1466

<210> 1622
<211> 1477
<212> DNA
<213> Rhodococcus corynebacterioides

<220>
<221> modified_base
<222> (970)..(970)
<223> a, c, t, g, unknown or other

<400> 1622
cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtaaggccc 60

ttcggggtac acgagtggcg aacgggtgag taacacgtgg gtgatctgcc ctgcacttcg 120

ggataagccc gggaaactgg gtctaatacc ggataggact gcgcggtgca tgccgtgtgg 180

tggaaagatt tatcggtgca ggatgggccc gcggcctatc agcttgttgg tggggtaatg 240

gcctaccaag gcgacgacgg gtagccggcc tgagagggcg accggccaca ctgggactga 300

gacacggccc agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc 360

ctgatgcagc gacgccgcgt gagggatgac ggccttcggg ttgtaaacct ctttcagcag 420

ggacgaagcg caagtgacgg tacctgcaga agaagcaccg gccaactacg tgccagcagc 480

cgcggtaata cgtagggtgc aagcgttgtc cggaattact gggcgtaaag agctcgtagg 540

cggtttgtcg cgtcgtctgt gaaaaccagc agctcaactg ttggcttgca ggcgatacgg 600

gcagacttga gtatttcagg ggagactgga attcctggtg tagcggtgaa atgcgcagat 660

atcaggagga acaccggtgg cgaaggcggg tctctgggaa ataactgacg ctgaggagcg 720

aaagcgtggg tagcgaacag gattagatac cctggtagtc cacgccgtaa acggtgggcg 780

ctaggtgtgg gtttccttcc acgggatccg tgccgtagct aacgcattaa gcgccccgcc 840

tggggagtac ggccgcaagg ctaaaactca aaggaattga cgggggcccg cacaagcggc 900

ggagcatgtg gattaattcg atgcaacgcg aagaacctta cctgggtttg acatacaccg 960

gaaagccgtn gagatacggc ccccttgtg gtcggtgtac aggtggtgca tggctgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcctgtgt 1080

tgccagcacg ttatggcggg gactcgcagg agactgccgg ggtcaactcg gaggaaggtg 1140

gggacgacgt caagtcatca tgcccttat gtccagggct tcacacatgc tacaatggcc 1200

ggtacagagg gctgcgatac cgtgaggtgg agcgaatccc ttaaagccgg tctcagttcg 1260

gatcggggtc tgcaactcga ccccgtgaag tcggagtcgc tagtaatcgc agatcagcaa 1320

cgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacgtca tgaaagtcgg 1380

taacacccga agccggtggc ctaacccctt gtgggaggga gccgtcgaag gtgggatcgg 1440

cgattgggac gaagtcgtaa caaggtagcc gtaccgg 1477

<210> 1623
<211> 1523
<212> DNA
<213> Rhodococcus equi

<400> 1623
cttcaacgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gtaaggcccc ttcgggggta cacgagtggc gaacgggtga gtaacacgtg 120

ggtgatctgc cctgcactct gggataagcc tgggaaactg ggtctaatac cggatatgag 180

ctcctgtcgc atggcggggg ttggaaaggt ttactggtgc aggatgggcc cgcggcctat 240

cagcttgttg gtggggtaat ggcctaccaa ggcgacgacg ggtagccggc ctgagagggc 300

gaccggccac actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa 360

tattgcacaa tgggcgaaag cctgatgcag cgacgccgcg tgagggatga cggccttcgg 420

gttgtaaacc tctttcagca gggacgaagc gagagtgacg gtacctgcag aagaagcacc 480

ggccaactac gtgccagcag ccgcggtaat acgtagggtg cgagcgttgt ccggaattac 540

tgggcgtaaa gagctcgtag gcggtttgtc gcgtcgtccg tgaaaacttg gggctcaacc 600

ccaagcttgc gggcgatacg ggcagacttg agtactgcag gggagactgg aattcctggt 660

gtagcggtga aatgcgcaga tatcaggagg aacaccggtg gcgaaggcgg gtctctgggc 720

agtaactgac gctgaggagc gaaagcgtgg gtagcgaaca ggattagata ccctggtagt 780

ccacgccgta aacggtgggc gctaggtgtg ggtttccttc cacgggatcc gtgccgtagc 840

taacgcatta agcgccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg 900

acgggggccc gcacaagcgg cggagcatgt ggattaattc gatgcaacgc gaagaacctt 960

acctgggttt gacatatacc ggaaagccgt agagatacgg ccccccttgt ggtcggtata 1020

caggtggtgc atggctgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttgtcctgtg ttgccagcgc gtaatggcgg ggactcgcag gagactgccg 1140

gggtcaactc ggaggaaggt ggggacgacg tcaagtcatc atgcccctta tgtccagggc 1200

ttcacacatg ctacaatggc cggtacagag ggctgcgata ccgtgaggtg gagcgaatcc 1260

cttaaagccg gtctcagttc ggatcggggt ctgcaactcg accccgtgaa gtcggagtcg 1320

ctagtaatcg cagatcagca acgctgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcacgtc atgaaagtcg gtaacacccg aagccggtgg cctaaccctt gtggagggag 1440

ccgtcgaagg tgggatcggc gattgggacg aagtcgtaac aaggtagccg taccggaagg 1500

tgcggctgga tcacctcctt tct 1523

<210> 1624
<211> 1527
<212> DNA
<213> Rhodococcus erythropolis

<400> 1624
acggagagtt tgatcctggc tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc 60

gagcggtaag gcctttcggg gtacacgagc ggcgaacggg tgagtaacac gtgggtgatc 120

tgccctgcac ttcgggataa gcctgggaaa ctgggtctaa taccggatat gacctcaggt 180

tgcatgactt gggtggtgga aagatttatc ggtgcaggat gggcccgcgg cctatcagct 240

tgttggtggg gtaatggcct accaaggcga cgacgggtag ccgacctgag agggtgaccg 300

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg 360

cacaatgggc gaaagcctga tgcagcgacg ccgcgtgagg gatgacggcc ttcgggttgt 420

aaacctcttt cagcagggac gaagcgcaag tgacggtacc tgcagaagaa gcaccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggtgcaagc gttgtccgga attactgggc 540

gtaaagagtt cgtaggcggt ttgtcgcgtc gtttgtgaaa accagcagct caactgctgg 600

cttgcaggcg atacgggcag acttgagtac tgcaggggag actggaattc ctggtgtagc 660

ggtgaaatgc gcagatatca ggaggaacac cggtggcgaa ggcgggtctc tgggcagtaa 720

ctgacgctga ggaacgaaag cgtgggtagc gaacaggatt agataccctg gtagtccacg 780

ccgtaaacgg tgggcgctag gtgtgggttc cttccacgga atccgtgccg tagctaacgc 840

attaagcgcc ccgcctgggg agtacggccg caaggctaaa actcaaagga attgacgggg 900

gcccgcacaa gcggcggagc atgtggatta attcgatgca acgcgaagaa ccttacctgg 960

gtttgacata taccggaaag ctgcagagat gtggcccccc ttgtggtcgg tatacaggtg 1020

gtgcatggct gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccctatct tatgttgcca gcacgttatg gtggggactc gtaagagact gccggggtca 1140

actcggagga aggtggggac gacgtcaagt catcatgccc cttatgtcca gggcttcaca 1200

catgctacaa tggccagtac agagggctgc gagaccgtga ggtggagcga atcccttaaa 1260

gctggtctca gttcggatcg gggtctgcaa ctcgaccccg tgaagtcgga gtcgctagta 1320

atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

cgtcatgaaa gtcggtaaca cccgaagccg gtggcttaac cccttgtggg agggagccgt 1440

cgaaggtggg atcggcgatt gggacgaagt cgtaacaagg tagccgtacc ggaaggtgcg 1500

gctggatcac ctcctttcta aggagca 1527

<210> 1625
<211> 1424
<212> DNA
<213> Rhodococcus fascians

<400> 1625
cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgagc ggtaaggcct 60

ttcggggtac acgagcggcg aacgggtgag taacacgtgg gtgatctgcc ctgcactctg 120

ggataagctt gggaaactgg gtctaatacc ggatatgacc acagcatgca tgtgttgtgg 180

tggaaagatt tatcggtgca ggatgggccc gcggcctatc agcttgttgg tggggtaatg 240

gcctaccaag gcgacgacgg gtagccgacc tgagagggtg accggccaca ctgggactga 300

gacacggccc agactcctac gggaggcagc agtggggaat attgcacaat gggcggaagc 360

ctgatgcagc gacgccgcgt gagggatgaa ggccttcggg ttgtaaacct ctttcagcag 420

ggacgaagcg tgagtgacgg tacctgcaga agaagcaccg gctaactacg tgccagcagc 480

cgcggtaata cgtagggtgc gagcgttgtc cggaattact gggcgtaaag agttcgtagg 540

cggtttgtcg cgtcgtttgt gaaaacccgg ggctcaactt cgggcttgca ggcgatacgg 600

gcagacttga gtgtttcagg ggagactgga attcctggtg tagcggtgaa atgcgcagat 660

atcaggagga acaccggtgg cgaaggcggg tctctgggaa acaactgacg ctgaggaacg 720

aaagcgtggg tagcaaacag gattagatac cctggtagtc cacgccgtaa acggtgggcg 780

ctaggtgtgg gttccttcca cgggatctgt gccgtagcta acgcattaag cgccccgcct 840

ggggagtacg gccgcaaggc taaaactcaa aggaattgac gggggcccgc acaagcggcg 900

gagcatgtgg attaattcga tgcaacgcga agaaccttac ctgggtttga catacaccgg 960

aaaaccgtag agatacggtc ccccttgtgg tcggtgtaca ggtggtgcat ggctgtcgtc 1020

agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtcttatgtt 1080

gccagcacgt aatggtgggg actcgtaaga gactgccggg gtcaactcgg aggaaggtgg 1140

ggacgacgtc aagtcatcat gccccttatg tccagggctt cacacatgct acaatggcca 1200

gtacagaggg ctgcgagacc gtgaggtgga gcgaatccct taaagctggt ctcagttcgg 1260

atcggggtct gcaactcgac cccgtgaagt cggagtcgct agtaatcgca gatcagcaac 1320

gctgcggtga atacgttccc gggccttgta cacaccgccc gtcacgtcat gaaagtcggt 1380

aacacccgaa gccggtggcc taaccccttа cggggaggga gccg 1424

<210> 1626
<211> 1489
<212> DNA
<213> Rhodopseudomonas palustris

<400> 1626
tccaacttga gagtttgatc ctggctcaga gcgaacgctg gcggcaggct taacacatgc 60

aagtcgaacg ggcatagcaa tatgtcagtg gcagacgggt gagtaacgcg tgggaacata 120

ccttttggtt cggaacaact gagggaaact tcagctaata ccggataagc cctaacgggg 180

aaagatttat cgccgaaaga ttggcccgcg tctgattagc tagttggtga ggtaatggct 240

caccaaggcg acgatcagta gctggtctga gaggatgatc agccacattg ggactgagac 300

acggcccaaa ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgcaagcctg 360

atccagccat gccgcgtgag tgatgaaggc cctagggttg taaagctctt ttgtgcggga 420

agataatgac ggtaccgcaa gaataagccc cggctaactt cgtgccagca gccgcggtaa 480

tacgaagggg gctagcgttg ctcggaatca ctgggcgtaa agggtgcgta ggcgggtttt 540

taagtcagag gtgaaatcct ggagctcaac tccagaactg cctttgatac tgaaagtctt 600

gagtacggga gaggtgagtg gaactgcgag tgtagaggtg aaattcgtag atattcgcaa 660

gaacaccagt ggcgaaggcg gctcactggc ccgttactga cgctgaggca cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgaa tgccagccgt 780

tagtgggttt actcactagt ggcgcagcta acgctttaag cattccgcct ggggagtacg 840

gtcgcaagat taaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga cgcaacgcgc agaaccttac cagcccttga catgtctagg accggtcgca 960

gagatgtgac cttctcttcg gagcctagag cacaggtgct gcatggctgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccccgtcttt agttgctacc 1080

atttagttga gcactctaaa gagactgccg gtgataagcc gcgaggaagg tggggatgac 1140

gtcaagtcct catggccctt acgggctggg ctacacacgt gctacaatgg cggtgacaat 1200

gggatgctaa agggcaacct ctcgcaaatc tcaaaaagcc gtctcagttc ggattgggct 1260

ctgcaactcg agcccatgaa gttggaatcg ctagtaatcg tggatcagca tgccacggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgggagttgg ttttacctga 1380

aggtagtgcg ctaacccgca agggaggcag ctaaccacgg tagggtcagc gactggggtg 1440

aagtcgtaac aaggtagccg taggggaacc tgcggctgga tcacctcct 1489

<210> 1627
<211> 1508
<212> DNA
<213> Rickettsia akari

<400> 1627
gacagaatca aacttgagag tttgatcctg gctcagaacg aacgctatcg gtatgcttaa 60

cacatgcaag tcggacggac tgattggggt tttctccagt tagtgagtgg cgaacgggtg 120

agtaacacgt gggaatctgc ccatcagtac ggaataactt ttagaaataa aagctaatac 180

cgtatattct ctacggagga aagatttatc gctgatggat gagcccgcgt cggattaggt 240

agttggtgag gtaacggctc accaagccga cgatctgtag ttggtctgag aggatgatca 300

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg 360

gacaatgggc gaaagcctga tccagcaata ccgagtgagt gatgaaggcc ctagggttgt 420

aaagctcttt tagcaaggaa gataatgacg ttacttgcag aaaaagcccc ggctaactcc 480

gtgccagcag ccgcggtaag acggaggggg ctagcgttgt tcggaattac tgggcgtaaa 540

gagtgcgtag gcggtttagt aagttggaag tgaaagcccg gggcttaacc tcggaattgc 600

tttcaaaact actaatctag agtgtagtag gggatgatgg aattcctagt gtagaggtga 660

aattcttaga tattaggagg aacaccggtg gcgaaggcgg tcatctgggc tacgactgac 720

gctgatgcac gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta 780

aacgatgagt gctagatatc ggaagagtct ctttcggttt cgcagctaac gcattaagca 840

ctccgcctgg ggagtacggt cgcaagatta aaactcaaag gaattgacgg gggctcgcac 900

aagcggtgga gcatgcggtt taattcgatg ttacgcgaaa aaccttacca acctttgaca 960

tggtggttgc ggatcgcaga gatgctttcc ttcagttcgg ctggaccaca cacaggtgtt 1020

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

cctcattctt atttgccagc gggtaatgcc gggaactata agaaaactgc cggtgataag 1140

ccggaggaag gtggggacga cgtcaagtca tcatggccct tatgggttgg gctacacgcg 1200

tgctacaatg gtgtttacag agggaagcaa gacggtaacg tggagcaaat ccctaaaaga 1260

catctcagtt cggattgttc tctgcaactc gagagcatga agttggaatc gctagtaatc 1320

gcggatcagc atgccgcggt gaatacgttc tcgggccttg tacacactgc ccgtcacgcc 1380

atgggagttg gttttacctg aaggtggtga gctaacgcaa gaggcagcca accacggtag 1440

aattagcgac tggggtgaag tcgtaacaag gtagccgtag gggaacctgc ggctggatta 1500

cctcctta 1508

<210> 1628
<211> 1501
<212> DNA
<213> Rickettsia conorii

<400> 1628
tcaaacttga gagtttgatc ctggctcaga acgaacgcta tcggtatgct taacacatgc 60

aagtcgaacg gactaattgg ggcttgctcc agttagttag tggcagacgg gtgagtaaca 120

cgtgggaatc tacccattag tacggaataa cttttagaaa taaaagctaa taccgtatat 180

tctctgcgga ggaaagattt atcgctgatg gatgagcccg cgtcagatta ggtagttggt 240

gaggtaatgg ctcaccaagc cgacgatctg tagctggtct gagaggatga tcagccacac 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttggacaatg 360

ggcgaaagcc tgatccagca ataccgagtg agtgatgaag gccttagggt tgtaaagctc 420

ttttagcaag gaagataatg acgttacttg cagaaaaagc cccggctaac tccgtgccag 480

cagccgcggt aagacggagg gggctagcgt tgttcggaat tactgggcgt aaagagtgcg 540

taggcggttt agtaagttgg aagtgaaagc ccggggctta acctcggaat tgctttcaaa 600

actactaatc tagagtgtag taggggatga tggaattcct agtgtagagg tgaaattctt 660

agatattagg aggaacaccg gtggcgaagg cggtcatctg ggctacaact gacgctgatg 720

cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 780

agtgctagat atcggaagat tctctttcgg tttcgcagct aacgcattaa gcactccgcc 840

tggggagtac ggtcgcaaga ttaaaactca aaggaattga cgggggctcg cacaagcggt 900

ggagcatgcg gtttaattcg atgttacgcg aaaaaccttа ccaacccttg acatggtggt 960

cgcggatcgc agagatgctt ttcttcagct cggctggacc acacacaggt gttgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccctcatt 1080

cttatttgcc agcgggtaat gccgggaact ataagaaaac tgccggtgat aagccggagg 1140

aaggtgggga cgacgtcaag tcatcatggc ccttacgggt tgggctacac gcgtgctaca 1200

atggtgttta cagagggaag caagacggcg acgtggagca aatccctaaa agacatctca 1260

gttcggattg ttctctgcaa ctcgagagca tgaagttgga atcgctagta atcgcggatc 1320

agcatgccgc ggtgaatacg ttctcgggcc ttgtacacac tgcccgtcac gccatgggag 1380

ttagttttac ctgaaggtgg tgagctaacg caagaggcag ccaaccacgg taaaattagc 1440

gactggggtg aagtcgtaac aaggtagccg taggggaacc tgcggctgga ttacctcctt 1500

a 1501

<210> 1629
<211> 1501
<212> DNA
<213> Rickettsia prowazekii

<400> 1629
tcaaacttga gagtttgatc ctggctcaga acgaacgcta tcggtatgct taacacatgc 60

aagtcgaacg gattaactag agctcgcttt agttaattag tggcagacgg gtgagtaaca 120

cgtgggaatc tacccatcag tacggaataa cttttagaaa taaaagctaa taccgtatat 180

tctctacgga ggaaagattt atcgctgatg gatgggcccg cgtcagatta ggtagttggt 240

gaggtaatgg ctcaccaagc cgacgatctg tagctggtct gagaggatga tcagccacac 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttggacaatg 360

ggcgaaagcc tgatccagca ataccgagtg agtgatgaag gccttagggt tgtaaagctc 420

ttttagcaag gaagataatg acgttacttg cagaaaaagc cccggctaac tccgtgccag 480

cagccgcggt aagacggagg gggctagcgt tgttcggaat tactgggcgt aaagagtgcg 540

taggcggttt agtaagttgg aagtgaaagc ccggggctta acctcggaat tgctttcaaa 600

actactaatc tagagtgtag taggggatga tggaattcct agtgtagagg tgaaattctt 660

agatattagg aggaacaccg gtggcgaagg cggtcatctg ggctacaact gacgctgatg 720

cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 780

agtgctagat atcggaggat tctctttcgg tttcgcagct aacgcattaa gcactccgcc 840

tggggagtac ggtcgcaaga ttaaaactca aaggaattga cgggggctcg cacaagcggt 900

ggagcatgcg gtttaattcg atgttacgcg aaaaaccttа ccaacccttg acatggtggt 960

tacggattgc agagatgctt tccttcagtt cggctgggcc acacacaggt gttgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt 1080

cttatttgcc agtgggtaat gccgggaact ataagaaaac tgccggtgat aagccggagg 1140

aaggtgggga cgacgtcaag tcatcatggc ccttacgggt tgggctacac gcgtgctaca 1200

atggtgttta cagagggaag caatacggtg acgtggagca aatccctaaa agacatctca 1260

gttcggattg ttctctgcaa ctcgagagca tgaagttgga atcgctagta atcgcggatc 1320

agcatgccgc ggtgaatacg ttctcgggcc ttgtacacac tgcccgtcac gccatgggag 1380

ttggttttac ctgaaggtgg tgagctaacg caagaggcag ccaaccacgg taaaattagc 1440

gactggggtg aagtcgtaac aaggtagccg taggggaacc tgcggctgga ttacctcctt 1500

a 1501

<210> 1630
<211> 1501
<212> DNA
<213> Rickettsia rickettsii

<400> 1630
tcaaacttga gagtttgatc ctggctcaga acgaacgcta tcggtatgct taacacatgc 60

aagtcgaacg gactaattgg ggcttgctcc aattagttag tggcagacgg gtgagtaaca 120

cgtgggaatc tacccatcag tacggaataa cttttagaaa taaaagctaa taccgtatat 180

tctctgcgga ggaaagattt atcgctgatg gatgagcccg cgtcagatta ggtagttggt 240

gaggtaatgg ctcaccaagc cgacgatctg tagctggtct gagaggatga tcagccacac 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttggacaatg 360

ggcgaaagcc tgatccagca ataccgagtg agtgatgaag gccttagggt tgtaaagctc 420

ttttagcaag gaagataatg acgttacttg cagaaaaagc cccggctaac tccgtgccag 480

cagccgcggt aagacggagg gggctagcgt tgttcggaat tactgggcgt aaagagtgcg 540

taggcggttt agtaagttgg aagtgaaagc ccggggctta acctcggaat tgctttcaaa 600

actactaatc tagagtgtag taggggatga tggaattcct agtgtagagg tgaaattctt 660

agatattagg aggaacaccg gtggcgaagg cggtcatctg ggctaccact gacgctgatg 720

cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 780

agtgctagat atcggaagat tctctttcgg tttcgcagct aacgcattaa gcactccgcc 840

tggggagtac ggtcgcaaga ttaaaactca aaggaattga cgggggctcg cacaagcggt 900

ggagcatgcg gtttaattcg atgttacgcg aaaaacctta ccaacccttg acatggtggt 960

tgcggatcgc agagatgctt ttcttcagct cggctggacc acacacaggt gttgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aaccctcatt 1080

cttatttgcc agcgggtaat gccgggaact ataagaaaac tgccggtgat aagccggagg 1140

aaggtgggga cgacgtcaag tcatcatggc ccttacgggt tgggctacac gcgtgctaca 1200

atggtgttta cagagggaag caagacggcg acgtggagca aatccctaaa agacatctca 1260

gttcggattg ttctctgcaa ctcgagagca tgaagttgga atcgctagta atcgcggatc 1320

agcatgccgc ggtgaatacg ttctcgggcc ttgtacacac tgcccgtcac gccatgggag 1380

ttagttttac ctgaaggtgg tgagctaacg caagaggcag ccaaccacgg taaaattagc 1440

gactggggtg aagtcgtaac aaggtagccg taggggaacc tgcggctgga ttacctcctt 1500

a 1501

<210> 1631
<211> 1432
<212> DNA
<213> Rickettsia slovaca

<400> 1631
agaacgaacg ctatcggtat gcttaacaca tgcaagtcga acggactaat tggggcttgc 60

tccaattagt tagtggcaga cgggtgagta acacgtggga atctacccat cagtacggaa 120

taacttttag aaataaaagc taataccgta tattctctgc ggaggaaaga tttatcgctg 180

atggatgagc ccgcgtcaga ttaggtagtt ggtgaggtaa tggctcacca agccgacgat 240

ctgtagctgg tctgagagga tgatcagcca cactgggact gagacacggc ccagactcct 300

acgggaggca gcagtgggga atattggaca atgggcgaaa gcctgatcca gcaataccga 360

gtgagtgatg aaggccttag ggttgtaaag ctcttttagc aaggaagata atgacgttac 420

ttgcagaaaa agccccggct aactccgtgc cagcagccgc ggtaagacgg aggggctag 480

cgttgttcgg aattactggg cgtaaagagt gcgtaggcgg tttagtaagt tggaagtgaa 540

agcccggggc ttaacctcgg aattgctttc aaaactacta atctagagtg tagtagggga 600

tgatggaatt cctagtgtag aggtgaaatt cttagatatt aggaggaaca ccggtggcga 660

aggcggtcat ctgggctaca actgacgctg atgcacgaaa gcgtggggag caaacaggat 720

tagataccct ggtagtccac gccgtaaacg atgagtgcta gatatcggaa gattctcttt 780

cggtttcgta gctaacgcat taagcactcc gcctggggag tacggtcgca agattaaaac 840

tcaaaggaat tgacgggggc tcgcacaagc ggtggagcat gcggtttaat tcgatgttac 900

gcgaaaaacc ttaccaaccc ttgacatggt ggtcgcggat cgcagagatg cttttcttca 960

gctcggctgg accacacaca ggtgttgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1020

gggttaagtc ccgcaacgag cgcaaccctc attcttattt gccagcgggt aatgccggga 1080

actataagaa aactgccggt gataagccgg aggaaggtgg ggacgacgtc aagtcatcat 1140

ggcccttacg ggttgggcta cacgcgtgct acaatggtgt ttacagaggg aagcaagacg 1200

gcgacgtgga gcaaatccct aaaagacatc tcagttcgga ttgttctctg caactcgaga 1260

gcatgaagtt ggaatcgcta gtaatcgcgg atcagcatgc cgcggtgaat acgttctcgg 1320

gccttgtaca cactgcccgt cacgccatgg gagttagttt tacctgaagg tggtgagcta 1380

acgcaagagg cagccaacca cggtaaaatt agcgactggg gtgaagtcgt aa 1432

<210> 1632
<211> 1501
<212> DNA
<213> Rickettsia typhi

<400> 1632
tcaaacttga gagtttgatc ctggctcaga acgaacgcta tcggtatgct taacacatgc 60

aagtcgaacg gattaattag agcttgctct agttaattag tggcagacgg gtgagtaaca 120

cgtgggaatc tacccatcag tacggaataa cttttagaaa taaaagctaa taccgtatat 180

tctctacgga ggaaagattt atcgctgatg gatgggcccg cgtcagatta ggtagttggt 240

gtggtaatgg ctcaccaagc cgacgatctg tagctggtct gagaggatga tcagccacac 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttggacaatg 360

ggcgaaagcc tgatccagca ataccgagtg agtgatgaag gccttagggt tgtaaagctc 420

ttttagcaag gaagataatg acgttacttg cagaaaaagc cccggctaac tccgtgccag 480

cagccgcggt aagacggagg gggctagcgt tgttcggaat tactgggcgt aaagagtgcg 540

taggtggttt agtaagttgg aagtgaaagc ccggggctta acctcggaat tgctttcaaa 600

actactaatc tagagtgtag taggggatga tggaattcct agtgtagagg tgaaattctt 660

agatattagg aggaacaccg gtggcgaagg cggtcatctg ggctacaact gacgctgatg 720

cacgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 780

agtgctagat atcggaggat tctctttcgg tttcgcagct aacgcattaa gcactccgcc 840

tggggagtac ggtcgcaaga ttaaaactca aaggaattga cgggggctcg cacaagcggt 900

ggagcatgcg gtttaattcg atgttacgcg aaaaacctta ccaacccttg acatggtggt 960

tatggattgc agagatgctt tccttcagtt cggctgggcc acacacaggt gttgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt 1080

cttatttgcc agcgggtaat gccgggaact ataagaaaac tgccggtgat aagccggagg 1140

aaggtgggga cgacgtcaag tcatcatggc ccttacgggt tgggctacac gcgtgctaca 1200

atggtgttta cagagggaag caagacggtg acgtggagca aatccctaaa agacatctca 1260

gttcggattg ttctctgcaa ctcgagagca tgaagttgga atcgctagta atcgcggatc 1320

agcatgccgc ggtgaatacg ttctcgggcc ttgtacacac tgcccgtcac gccatgggag 1380

ttggttttac ctgaaggtgg tgagctaacg caagaggcag ccaaccacgg taaaattagc 1440

gactggggtg aagtcgtaac aaggtagccg taggggaacc tgcggctgga ttacctcctt 1500

a 1501

<210> 1633
<211> 1526
<212> DNA
<213> Robinsoniella peoriensis

<400> 1633
gagagtttga ttctggctca ggatgaacgc tggcggcgtg cttaacacat gcaagtcgag 60

cgaagcatta aaacagattt cttcggaawg aagttttrat gactgagcgg cggacgggtg 120

agtaacgcgt gggtgaccyg cctcatacag ggggataaca gacagaaatg tctgctaata 180

ccgcataagc gcacagtgct gcatggcaca gtgtgaaaaa ctccggtggt atgagatgga 240

cccgcgtctg attagctagt tggtaaggta acggcttacc aaggcgacga tcagtagccg 300

gcctgagagg gtgaacggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 360

agcagtgggg aatattgcac aatgggggaa accctgatgc agcgacgccg cgtgaaggaa 420

gaagtatttc ggtatgtaaa cttctatcag cagggaagaa aatgacggta cctgactaag 480

aagccccggc taactacgtg ccagcagccg cggtaatacg taggggcaa gcgttatccg 540

gatttactgg gtgtaaaggg agcgtagacg gcatggcaag tctggtgtga aaggcagggg 600

ctcaacccct ggactgcatt ggaaactgtc aggctggagt gcaggagagg taagtggaat 660

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcgactt 720

actggactgt aactgacgtt gaggctcgaa agcgtgggga gcaaacagga ttagataccc 780

tggtagtcca cgccgtaaac gatgaatact aggtgtcagg gagcaaagct ctttggtgcc 840

gcagctaacg caataagtat tccacctggg gagtacgttc gcaagaatga aactcaaagg 900

aattgacggg gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccaa gtcttgacat cctcttgacc ggacagtaac gtgtcctttc cttcgggaca 1020

agagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaaccctta tcttcagtag ccagcaattc ggttgggcac tctggagaga 1140

ctgccaggga taacctggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgat 1200

ttgggctaca cacgtgctac aatggcgtaa acaaagggaa gcagccctgt gaaggtgagc 1260

aaatcccaaa aataacgtct cagttcggat tgtagtctgc aactcgacta catgaagctg 1320

gaatcgctag taatcgcgaa tcagaatgtc gcggatsaat acgttcccgg gtcttgtaca 1380

caccgcccgt cacaccatgg gagtcggaaa tgcccgaagt cagtgaccca accgtaagga 1440

gggagctgcc gaaggtggag ccggtaactg gggtgaagtc gtaacaaggt agccgtatcg 1500

gaaggtgcgg ctggatcacc tccttc 1526

<210> 1634
<211> 1371
<212> DNA
<213> Roseburia cecicola

<400> 1634
ggatgaacgc tggcggcgtg cttaacacat gcaagtcgaa cgaagcactc tatttgattt 60

tcttcggaaa tgaagatttt gtgactgagt ggcggacggg tgagtaacgc gtgggtaacc 120

tgctcataca gggggataac agttggaaac gactgctaat accgcataag cgcacagtac 180

tgcatggtac cgtgtgaaaa actccggtgg tatgagatgg acccgcgtct gattagccag 240

ttggcggggt acggcccacc aaagcgacga tcagtagccg acctgagagg gtgaccggcc 300

acattgggac tgagacacgg cccaaactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggggaa accctgagca gcgacgccgc gtgagcgaag aagtatttcg gtatgtaaag 420

ctctatcagc agggaagaaa aaatgacggt acctgactaa gaagcaccgg ctaaatacgt 480

gccagcagcc gcggtaatac gtatgtgcaa gcgttatccg gatttactgg gtgtaaaggg 540

agcgcaggcg gtgcggcaag tctgatgtga aagcccgggg ctcaaccccg gtactgcatt 600

ggaaactgtc gtactagagt gtcggagggg tagtggaatt cctagtgtag cggtgaaatg 660

cgtagatatt aggaggaaca ccagtggcga aggcggctta ctggacgatt actgacgctg 720

aggctcgaaa gcgtggggag caaacaggat tagatacctg gtagtccacg ccgtaaacga 780

tgaatactag gtgtcgggga gcattgctct tcggtgccgc agcaaacgca ataagtattc 840

cacctgggga gtacgttcgc aagaatgaaa ctcaaaggaa ttgacgggac ccgcacaagc 900

ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc ttaccaagtc ttgacatcct 960

tctgacaatg tatgtaatgt atattctctt cggagcagaa gtgacaggtg gtcatggttg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttattct 1080

tagtagccag cggttcgaga ctgccaggga taacctggag gaaggtgggg atgacgtcaa 1140

tcatcatgcc ccttatgacc tacaatggcg taaacaaagg gaagcaagac cgtgaggtgg 1200

agcaaatccc aaaaataacg tctctgcaac tcgactacac gaagctggaa tcgctagtaa 1260

tcgcgatcag aatgtcgcgg tgaataacac accgcccgtc acaccatggg agttggtaat 1320

gcccgaagtc agtgacccaa ccgcaaggag aggatcgata actggggtga a 1371

<210> 1635
<211> 1361
<212> DNA
<213> Roseburia faecalis

<400> 1635
tatttgattt tcttcggaaa tgaagatttt gtgactgagt ggcggacggg tgagtaacgc 60

gtgggtaacc tgcctcatac agggggataa cagttggaaa cgactgctaa taccgcataa 120

gcgcacagga tcgcatgatc tggtgtgaaa aactccggtg gtatgagatg gacccgcgtc 180

tgattagcca gttggcaggg taacggccta ccaaagcgac gatcagtagc cgacctgaga 240

gggtgaccgg ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtgg 300

ggaatattgc acaatggggg aaaccctgat gcagcgacgc cgcgtgagcg aagaagtatt 360

tcggtatgta aagctctatc agcagggaag aagaatgacg gtacctgact aagaagcacc 420

ggctaaatac gtgccagcag ccgcggtaat acgtatggtg caagcgttat ccggatttac 480

tgggtgtaaa gggagcgcag gcggtgcggc aagtctgatg tgaaagcccg gggctcaacc 540

ccggtactgc attggaaact gtcgtactag agtgtcgagg ggtaagtgga attcctagtg 600

tacggtgaaa tgcgtagata ttaggaggaa caccagtggc gaagcggctt actggacgat 660

aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 720

cgccgtaaac gatgaatact agtgtcgggg agcattgctc ttcggtgccg cacaaacgca 780

ataagtattc cacctgggga gtacgttcgc aagaatgaaa ctcaaggaat tgacggggac 840

ccgcacaagc ggtggagcat gtgggttaat tcgaagcaac gcgaagaacc ttaccaagtc 900

ttgacatccc gatgacaaag tatgtaatgt actttctctt cggagcatcg gtgacaggtg 960

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1020

acccctgttc ttagtagcca gcggttcggc cgggcactct agggagactg ccagggataa 1080

cctggaggaa ggcggggatg acgtcaaatc atcatgcccc ttatgacttg ggctacacac 1140

gtgctacaat ggcgtaaaca aagggaagcg gagccgtgag gccgagcaaa tctcaaaaat 1200

aacgtctcag ttcggactgt agtctgcaac ccgactacac gaagctggaa tcgctagtaa 1260

tcgcagatca gaatgctgcg gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca 1320

ccatgggagt tggaaatgcc cgaagtcagt gacccaaccg c 1361

<210> 1636
<211> 1297
<212> DNA
<213> Roseburia faecis

<400> 1636
gatgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgga cgggtgagta 60

acgcgtgggt aacctgcctc atacaggggg ataacagttg gaaacgactg ctaataccgc 120

ataagaaaaa gtggtatgag atggacccgc gtctgattag ccagttggca gggtaacggc 180

ctaccaaagc gacgatcagt agccgacctg agagggtgac cggccacatt gggactgaga 240

cacggcccaa actcctacgg gaggcagcag tggggaatat tgcacaatgg gggaaaccct 300

gatgcagcga cgccgcgtga gcgaagaagt atttcggtat gtaaagctct atcagcaggg 360

aagatgacgg tacctgacta agaagcaccg gctaaatacg tgccagcagc cgcggtaata 420

cgtatggtgc aagcgttatc cggatttact gggtgtaaag ggagcgcagg cggtgcggca 480

agtctgatgt gaaagcccgg ggctcaaccc cggtactgca ttggaaactg tcgtactaga 540

gtgtcggagg ggtaagtgga attcctagtg tagcggtgaa atgcgtagat attaggagga 600

acaccagtgg cgaaggcggc ttactggacg aactgacgct gaggctcgaa agcgtgggga 660

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgaatact aggtgtcggg 720

gcttcggtgc cgcagcaaac gcaataagta ttccacctgg ggagtacgtt cgcaagaatg 780

aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 840

caacgcgaag aaccttacca agtcttgaca tcgacaggtg gtgcatggtt gtcgtcagct 900

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctgtcc ttagtagcca 960

gcggccgggc actctaggga gactgccagg gataacctgg aggaaggcgg ggatgacgtc 1020

aaatcatcat gccccttatg acttgggcta cacacgtgct acaatggcgt acaaagggaa 1080

gcggagccgt gaggccgagc aaatctcaaa acgtctcagt tcggatgtag tctgcaaccc 1140

gactacagaa gctggaatcg ctagtaatcg cagatcagaa tgctgcggtg aatacgttcc 1200

cgggtcttgt acacaccgcc cgtcacacca tgggagttgg aaatgcccga agtcagtacc 1260

cagggagctg ccgaaggcag gttcgataac tggggtg 1297

<210> 1637
<211> 1376
<212> DNA
<213> Roseburia hominis

<220>
<221> modified_base
<222> (14)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (45)..(47)
<223> a, c, t, g, unknown or other

<400> 1637
acgaagcact ttanttgatt tcttcggaat gaagtttttg tgacnnnagt ggcggacggg 60

tgagtaacgc gtgggtaacc tgcctcatac aggggataa cagttggaaa cgactgctaa 120

taccgcataa gcgcacagga ttgcatgatc cagtgtgaaa aactccggtg gtatgagatg 180

gacccgcgtc tgattagcca gttggcgggg taacggccca ccaaagcgac gatcagtagc 240

cgacctgaga gggtgaccgg ccacattggg actgagacac ggcccaaact cctacgggag 300

gcagcagtgg ggaatattgc acaatggggg aaaccctgat gcagcgacgc cgcgtgagcg 360

aagaagtatt tcggtatgta aagctctatc agcagggaag aagaatgacg gtacctgact 420

aagaagcacc ggctaaatac gtgccagcag ccgcggtaat acgtatggtg caagcgttat 480

ccggatttac tgggtgtaaa gggagcgcag gcggtacggc aagtctgatg tgaaatcccg 540

gggctcaacc ccggtactgc attggaaact gtcggactag agtgtcggag gggtaagtgg 600

aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg gcgaaggcgg 660

cttactggac gattactgac gctgaggctc gaaagcgtgg ggagcaaaca ggattagata 720

ccctggtagt ccacgccgta aacgatgaat actaggtgtc ggggagcatt gctcttcggt 780

gccgcagcaa acgcaataag tattccacct ggggagtacg ttcgcaagaa tgaaactcaa 840

aggaattgac ggggacccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 900

agaaccttac caagtcttga catcccactg acagagtatg taatgtactt tctcttcgga 960

acagtggtga cagatggtgc atgggggtcg tcagctcgtg tcgtgagatg ttgggttaag 1020

tcccgcaacg agcgcaaccc ctattcttag tagccagcgg tttggccggg cactctaggg 1080

agactgccag ggataacctg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1140

gacttgggct acacacgtgc tacaatggcg taaacaaagg gaagcaatcc cgcgaggggg 1200

agcaaatctc aaaaataacg tctcagttcg gactgtagtc tgcaactcga ctacacgaag 1260

ctggaatcgc tagtaatcgc gaatcagaat gtcgcggtga atacgttccc gggtcttgta 1320

cacaccgccc gtcacaccat gggagttggt aatgcccgaa gtcagtgacc caaccg 1376

<210> 1638

<211> 1390
<212> DNA
<213> Roseburia intestinalis

<400> 1638
tcgaacgaag cactttattt gatttcttcg gaatgaagat tttgtgactg agtggcggac 60

gggtgagtaa cgcgtgggta acctgcctca tacaggggga taacagttgg aaacgactgc 120

taataccgca taagcgcaca gggtcgcatg acctggtgtg aaaaactccg gtggtatgag 180

atggacccgc gtctgattag ccagttggtg gggtaacggc ctaccaaagc gacgatcagt 240

agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa actcctacgg 300

gaggcagcag tggggaatat tgcacaatgg gggaaaccct gatgcagcga cgccgcgtga 360

gcgaagaagt atttcggtat gtaaagctct atcagcaggg aagaagaaat gacggtacct 420

gactaagaag caccggcaaa tactgccagc agccgcggta atacgtatgg tgcaagcgtt 480

atccggattt actgggtgta aagggagcgc aggcggtacg gcaagtctga tgtgaaagcc 540

cggggctcaa ccccggtact gcattggaaa ctgtcggact agagtgtcgg aggggtaagt 600

ggaattccta gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc 660

ggcttactgg acgattactg acgctgagct cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgaa tactaggtgt cggggagcat tgctcttcgg 780

tgccgcagca aacgcaataa gtattccacc tggggagtac gttcgcaaga atgaaactca 840

aaggaattga cggggacccg cacaagcggt ggaccatgtg gtttaattcg aagcaacgcg 900

aagaacctta ccaagtcttg acatcccgat gacagaacat gtaatgtgtt ttctcttcga 960

agcatcggtg acagagggtc ggaggggtaa gtgagctcgt gtcgtgagat gttgggttaa 1020

gtcccgcaac gagcgcaacc cctattctta gtagccagcg gttaagccgg gcactctagg 1080

gagactgcca gggataacct ggaggaaggt ggggatgacg tcaaatcatc atgccccttа 1140

tgacttgggc tacacacgtg ctacaatggc gtaaacaaag ggaagcgagc ctgcgagggg 1200

gagcaaatct caaaaataac gtctcagttc ggactgcagt ctgcaactcg actgcacgaa 1260

gctggaatcg ctagtaatcg cgaatcagaa tgtcgcggtg aatacgttcc cgggtcttgt 1320

acacaccgcc cgtcacacca tgggagttgg taatgcccga agtcagtgac ccaaccgcaa 1380

ggagggagct 1390

<210> 1639
<211> 1374
<212> DNA
<213> Roseburia inulinivorans

<220>
<221> modified_base
<222> (19)..(19)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (51)..(51)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (951)..(951)
<223> a, c, t, g, unknown or other

<400> 1639
gaacgaagca cttttacang atttcttcgg aatgaagttt tagtgactga ntggcggacg 60

ggtgagtaac gcgtgggtaa cctgcctcac acaggggat aacagttgga aacggctgct 120

aataccgcat aagcgcacag taccgcatgg tacagtgtga aaaactccgg tggtgtgaga 180

tggacccgcg tctgattagc tagttggcag ggcaacggcc taccaaggcg acgatcagta 240

gccgacctga gagggtgacc ggccacattg ggactgagac acggcccaaa ctcctacggg 300

aggcagcagt ggggaatatt gcacaatggg ggaaaccctg atgcagcgac gccgcgtgag 360

cgaagaagta tttcggtatg taaagctcta tcagcaggga aaagaaatga cggtacctgc 420

taaacaccgg ctaaatacgt gccagcagcc gcggtaatac gtatggtgca agcgttatcc 480

ggatttactg ggtgtaaagg gagcgcaggc ggaaggctaa gtctgatgtg aaagcccggg 540

gctcaacccc ggtactgcat tggaaactgg tcatctagag tgtcggaggg gtaagtggaa 600

ttcctagtgt agcggtgaaa tgcgtagata ttaggaggaa caccagtggc gaaggcggct 660

tactggacga taactgacgc tgaggctcga aagcgtgggg agcaaacagg attagatacc 720

ctggtagtcc acgccgtaaa cgatgaatac taggtgtcgg aaagcacagc ttttcggtgc 780

cgccgcaaac gcattaagta ttccacctgg ggagtacgtt cgcaagaatg aaactcaaag 840

gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattggtat aaagggagag 900

cagcctgacg actaattctg atcttaaagc ccggggctaa tctgtggttt ncttcgggac 960

agaagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1020

ccgcaacgag cgcaaccctt atccccagta gccagcggtt cggccgggca ctctgaggag 1080

actgccaggg ataacctgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga 1140

cttgggctac acacgtgcta caatggcgta aacaaaggga agcgagaccg tgaggtggag 1200

caaatcccaa aaataacgtc tcagttcgga ctgtagtctg caacccgact acacgaagct 1260

ggaatcgcta gtaatcgcag atcagaatgc tgcggtgaat acgttcccgg gtcttgtaca 1320

caccgcccgt cacaccatgg gagttggaaa tgcccgaagt cagtgaccca accg 1374

<210> 1640
<211> 1235
<212> DNA
<213> Roseburia sp. 11SE37

<400> 1640
tggcggcgtg cttaacacat gcaagtcgaa cgagtggcgg acgggtgagt aacgcgtggg 60

taacctgcct catacagggg gataacagtt ggaaacgact gctaataccg cataagaaaa 120

agtggtatga gatggacccg cgtctgatta gccagttggc agggtaacgg cctaccaaag 180

cgacgatcag tagccaacct gagagggtga ccggccacat tgggactgag acacggccca 240

aactcctacg ggaggcagca gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg 300

acgccgcgtg agcgaagaag tatttcggta tgtaaagctc tatcagcagg gaagatgacg 360

gtacctgact aagaagcacc ggctaaatac gtgccagcag ccgcggtaat acgtatggtg 420

caagcgttat ccggatttac tgggtgtaaa gggagcgcag gcggtgcggc aagtctgatg 480

tgaaagcccg gggctcaacc ccggtactgc attggaaact gtcgtactag agtgtcggag 540

gggtaagtgg aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg 600

gcgaaggcgg cttactggac gaactgacgc tgaggctcga aagcgtgggg agcaaacagg 660

attagatacc ctggtagtcc acgccgtaaa cgatgaatac taggtgtcgg ggcttcggtg 720

ccgcagcaaa cgcaataagt attccacctg gggagtacgt tcgcaagaat gaaactcaaa 780

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 840

gaaccttacc aagtcttgac atcgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 900

agatgttggg ttaagtcccg caacgagcgc aacccctgtt cttagtagcc agcggccggg 960

cactctaggg agactgccag ggataacctg gaggaaggcg gggatgacgt caaatcatca 1020

tgccccttat gacttgggct acacacgtgc tacaatggcg tacaaaggga agcaaagccg 1080

tgaggccgag caaatctcaa aacgtctcag ttcggatgta gtctgcaacc cgactacaga 1140

agctggaatc gctagtaatc gcagatcaga atgctgcggt gaatacgttc ccgggtcttg 1200

tacacaccgc ccgtcacacc atgggagttg gaaat 1235

<210> 1641
<211> 1231
<212> DNA
<213> Roseburia sp. 11SE38

<400> 1641
tggcggcgtg cttaacacat gcaagtcgaa cgagtggcgg acgggtgagt aacgcgtggg 60

taacctgcct catacagggg gataacagtt ggaaacgact gctaataccg cataagaaaa 120

agtggtatga gatggacccg cgtctgatta gccagttggc agggtaacgg cctaccaaag 180

cgacgatcag tagccaacct gagagggtga ccggccacat tgggactgag acacggccca 240

aactcctacg ggaggcagca gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg 300

acgccgcgtg agcgaagaag tatttcggta tgtaaagctc tatcagcagg gaagatgacg 360

gtacctgact aagaagcacc ggctaaatac gtgccagcag ccgcggtaat acgtatggtg 420

caagcgttat ccggatttac tgggtgtaaa gggagcgcag gcggtgcggc aagtctgatg 480

tgaaagcccg gggctcaacc ccggtactgc attggaaact gtcgtactag agtgtcggag 540

gggtaagtgg aattcctagt gtagcggtga aatgcgtaga tattaggagg aacaccagtg 600

gcgaaggcgg cttactggac gaactgacgc tgaggctcga aagcgtgggg agcaaacagg 660

attagatacc ctggtagtcc acgccgtaaa cgatgaatac taggtgtcgg ggcttcggtg 720

ccgcagcaaa cgcaataagt attccacctg gggagtacgt tcgcaagaat gaaactcaaa 780

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 840

gaaccttacc aagtcttgac atcgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 900

agatgttggg ttaagtcccg caacgagcgc aacccctgtt cttagtagcc agcggccggg 960

cactctaggg agactgccag ggataacctg gaggaaggcg gggatgacgt caaatcatca 1020

tgccccttat gacttgggct acacacgtgc tacaatggcg tacaaaggga agcaaagccg 1080

tgaggccgag caaatctcaa aacgtctcag ttcggatgta gtctgcaacc cgactacaga 1140

agctggaatc gctagtaatc gcagatcaga atgctgcggt gaatacgttc ccgggtcttg 1200

tacacaccgc ccgtcacacc atgggagttg g 1231

<210> 1642
<211> 1469
<212> DNA
<213> Roseiflexus castenholzii

<400> 1642
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatgcatg caagtcgaac 60

gcacgcgctt cggcgcgtga gtggcgcacg gctgagtaac acgtgggaac ccgccctccg 120

gtgggggata acgagacgaa agtcgcgcta atcccgcata cgtccgcaag gggaaagcgc 180

ttcggcgcgc cggaggaggg gcctgcggcc catcaggtgg ttggtggggt aacggcctac 240

caagccgatg acgggtagct ggtctgggag gatgaccagc cagactggga ctgagacacg 300

gcccagactc ctacgggagg cagcagcaag gaattttcgg caatgggcgc aagcctgacc 360

gagcaacgcc gcgtgcggga tgacggcctt cgggttgtaa accgcttttc gggggacga 420

ctacgacggt acccccggaa gaagccccgg ctaactctgt gccagcagcc gcggtaagac 480

agagggggcg agcgttgtcc ggagttactg ggcgtaaagc gcgcgcaggc ggtggtctca 540

gtgtcgtgtg aaagcccccg gctcaaccgg gggaggtcat ggcaaactag acgactagag 600

cggcggagag gcccctcgaa ttgccggtgt agcggtgaaa tgcgtagaga tcggcaggaa 660

gaccaagggg gaagccaggg ggctggccgc tggctgacgc tgaggcgcga cagcgtgggg 720

agcaaaccgg attagatacc cgggtagtcc acgccgtaaa cgatgaccac tcggcgtgtg 780

gcgactattg acgtcgcggc gcgcctaagc ttacgcgtga agtggtccgc ctgggaacta 840

cgagcgcaag cttaaaactc aaaggaattg acgggggccc gcacaagcag cggagcgtgt 900

ggtttaattc gaggcaaccc gaagaacctt acccaggctg gacatgacgg tgcaggcggc 960

ggaaacgtcg cggccttcga gggaccgtca caggtgctgc atggctgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctgcggttag ttaccggtgt 1080

ctaaccggac tgcccttcgg ggaggaaggc ggggatgacg tcaagtccgc atggccctga 1140

cgcctggggc gacacacacg ctacaatggc gccgacaatg cgtggcgacc gcgcgagcgg 1200

aggcaaatcg ccaaacggcg tctcagtgca gatcgggggc tgcaactcgc ccccgtgaag 1260

gcggagttgc tagtaaccgc gtatcagcca tggcgcggtg aatacgtacc cgggccttgt 1320

acacaccgcc cgtcacgtca tgggagttgt caatgcctga agtccgtgcg ctaaccgtca 1380

ggaggcagcg gccgagggca ggggcagcga ctgggacgaa gtcgtaacaa ggtagccgta 1440

ccggaaggtg cggctggatc acctccttt 1469

<210> 1643
<211> 1312
<212> DNA
<213> Roseomonas cervicalis

<400> 1643
aagcagcgat gcgcctttgg agtaacctgc gtccgattag ctagttggtg gggtaaaggc 60

ctaccaaggc gacgatcggt agctggtctg agaggacgac cagccacact gggactgaga 120

cacggcccag actcctacgg gaggcagcag tggggaatat tggacaatgg gcgcaagcct 180

gatccagcaa tgccgcgtgg gtgaagaagg tcttcggatc gtaaagccct ttcggcgggg 240

acgatgatga cggtacccgc agaagaagcc ccggctaact tcgtgccagc agccgcggta 300

atacgaaggg ggctagcgtt actcggaatt actgggcgta aagggcgcgt aggcggcgct 360

ccaagttagg cgtgaaagcc ctgggctcaa cctggggact gcgcttaaga ctggagtgct 420

agaggatgga agagggttgt ggaattccca gtgtagaggt gaaattcgta gatattggga 480

agaacaccgg tggcgaaggc ggcaacctgg tccatttctg acgctgaggc gcgatagcgt 540

ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatgt gcgctgaatg 600

ttggggttcc tagaacctca gtgttgtagc taacgcggta agcgcaccgc ctggggagta 660

cggccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 720

ggtttaattc gaagcaacgc gcagaacctt accagccctt gacatggcca cgaccggttc 780

agagatgaac ttttcccgca agggacgtgg tgcacaggtg ctgcatggct gtcgtcagct 840

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca accctcgcct ttagttgcca 900

gcacgtttgg gtgggcactc tagaggaact gccggtgaca agccggagga aggtggggat 960

gacgtcaagt cctcatggcc cttatgggct gggctacaca cgtgctacaa tggcggtgac 1020

aatgggaagc caggcagcga tgtcgagccg atcccaaaaa gccgtctcag ttcagatcgc 1080

agcctgcaac tcggctgcgt gaaggtggaa tcgctagtaa tcgcggatca gcacgccgcg 1140

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgggagt tggttctacc 1200

ttaagcaggt gcggtaaccg caaggagcta gcctgccacg gtagggtcag tgactggggt 1260

gaagtcgtaa caaggtagcc gtaggggaac ctgcggctgg atcacctcct tt 1312

<210> 1644
<211> 1482
<212> DNA
<213> Roseomonas mucosa

<400> 1644
ttagtttgat cctggctcag agcgaacgct ggcggcatgc ttaacacatg caagtcgcac 60

gggcagcaat gtcagtggcg gacgggtgag taacgcgtag gaacgtgtcc tgaggtgggg 120

gacaaccccg ggaaactggg gctaataccg catatgggct gaggcccaaa gccgagaggc 180

gcctttggag cggcctgcgt ccgattaggt agttggtggg gtaaaggcct accaagcctg 240

cgatcggtag ctggtctgag aggacgacca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggc gaaagcctga tccagcaatg 360

ccgcgtgggt gaagaaggtc ttcggatcgt aaagcccttt cgacggggac gatgatgacg 420

gtacccgtag aagaagcccc ggctaacttc gtgccagcag ccgcggtaat acgaaggggg 480

ctagcgttgc tcggaattac tgggcgtaaa gggcgcgtag gcggcggccc aagtcaggcg 540

tgaaattcct gggctcaacc tggggactgc gcttgatact gggttgcttg aggatggaag 600

aggctcgtgg aattcccagt gtagaggtga aattcgtaga tattgggaag aacaccggtg 660

gcgaaggcgg cgagctggtc cattactgac gctgaggcgc gacagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgtgc gctggatgtt ggggcccata 780

gggtctcagt gtcgtagcca acgcggtaag cgcaccgcct ggggagtacg gccgcaaggt 840

tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac cagcccttga catggtcacg accggtccag agatggactt 960

tcctagcaat aggcgtgatg cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac cctcgcctct agttgccagc atgttcgggt 1080

gggcactcta gaggaactgc cggtgacaag ccggaggaag gtggggatga cgtcaagtcc 1140

tcatggccct tatgggctgg gctacacacg tgctacaatg gcggtgacag agggaagcca 1200

ggtcgcgagg ccgagccgat cccgaaaagc cgtctcagtt cggattgcac tctgcaactc 1260

gggtgcatga aggtggaatc gctagtaatc gcggatcagc acgccgcggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc atgggagttg gttctacctt aagtcgttgc 1380

gctaaccagc gatgggggca ggcgaccacg gtagggtcag cgactggggt gaagtcgtaa 1440

caaggtagcc gtaggggaac ctgcggttgg atcacctcct aa 1482

<210> 1645
<211> 1295
<212> DNA
<213> Roseomonas sp. NML94-0193

<400> 1645
acgctggcgg catgcttaac acatgcaagt cgcacgagtg gcggacgggt gagtaacgcg 60

taggaacgtg tccagaggtg ggggacaacc ccgggaaact ggggctaata ccgcatgggc 120

aaaggcgcca ttggagcggc ctgcgtccga ttaggtagtt ggtggggtaa aggcctacca 180

agcctgcgat cggtagctgg tctgagagga cgaccagcca cactgggact gagacacggc 240

ccagactcct acgggaggca gcagtgggga atattggaca atgggcgaaa gcctgatcca 300

gcaatgccgc gtgggtgaag aaggtcttcg gatcgtaaag ccctttcgac ggggacgatg 360

acggtacccg tagaagaagc cccggctaac ttcgtgccag cagccgcggt aatacgaagg 420

gggctagcgt tgctcggaat tactgggcgt aaagggcgcg taggcggcgg cccaagtcag 480

gcgtgaaatt cctgggctca acctggggac tgcgcttgat actgggttgc ttgaggatgg 540

aagaggctcg tggaattccc agtgtagagg tgaaattcgt agatattggg aagaacaccg 600

gtggcgaagg cggcgagctg gtccaactga cgctgaggcg cgacagcgtg gggagcaaac 660

aggattagat accctggtag tccacgccgt aaacgatgtg cgctggatgt tggggtctca 720

gtgtcgtagc caacgcggta agcgcaccgc ctggggagta cggccgcaag gttgaaactc 780

aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 840

gcagaacctt accagccctt gacatgcaca ggtgctgcat ggctgtcgtc agctcgtgtc 900

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gcctctagtt gccagcatgt 960

gggcactcta gaggaactgc cggtgacaag ccggaggaag gtggggatga cgtcaagtcc 1020

tcatggccct tatgggctgg gctacacacg tgctacaatg gcggtcagag ggaagccagg 1080

tcgcgaggcc gagccgatcc cggccgtctc agttcggatg cactctgcaa ctcgggtgca 1140

gaaggtggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt tcccgggcct 1200

tgtacacacc gcccgtcaca ccatgggagt tggttctacc ttaagtcgtt cgctaggcag 1260

gcgaccacgg tagggtcagc gactggggtg aagtc 1295

<210> 1646
<211> 1319
<212> DNA
<213> Roseomonas sp. NML97-0121

<400> 1646
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gagtggcgga cgggtgagta 60

acgcgtagga acgtgtccag aggtggggga caaccccggg aaactggggc taataccgca 120

tatgcaaagg cgcctttgga gcggcctgcg tccgattagg tagttggtgg ggtaaaggcc 180

taccaagcct gcgatcggta gctggtctga gaggacgacc agccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgaaagcctg 300

atccagcaat gccgcgtggg tgaagaaggt cttcggatcg taaagccctt tcgacgggga 360

cgatgacggt acccgtagaa gaagccccgg ctaacttcgt gccagcagcc gcggtaatac 420

gaaggggct agcgttgctc ggaattactg ggcgtaaagg gcgcgtaggc ggcggcccaa 480

gtcaggcgtg aaattcctgg gctcaacctg gggactgcgc ttgatactgg gttgcttgag 540

gatggaagag gctcgtggaa ttcccagtgt agaggtgaaa ttcgtagata ttgggaagaa 600

caccggtggc gaaggcggcg agctggtcca actgacgctg aggcgcgaca gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtgcgctg gatgttgggg 720

tctcagtgtc gtagccaacg cggtaagcgc accgcctggg gagtacggcc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgcaga accttaccag cccttgacat gcacaggtgc tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccctcgcctc tagttgccag 960

catgtgggca ctctagagga actgccggtg acaagccgga ggaaggtggg gatgacgtca 1020

agtcctcatg gcccttatgg gctgggctac acacgtgcta caatggcggt cagagggaag 1080

ccaggtcgcg aggccgagcc gatcccggcc gtctcagttc ggatgcactc tgcaactcgg 1140

gtgcagaagg tggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcacaccatg ggagttggtt ctaccttaag tcgttcgcta 1260

ggcaggcgac cacggtaggg tcagcgactg gggtgaagtc gtaacaaggt agccgtagg 1319

<210> 1647
<211> 1314
<212> DNA
<213> Roseomonas sp. NML98-0009

<400> 1647
acgctggcgg catgcttaac acatgcaagt cgcacgagtg gcggacgggt gagtaacgcg 60

taggaacgtg tccagaggtg ggggacaacc ccgggaaact ggggctaata ccgcatatgc 120

aaaggcgcct ttggagcggc ctgcgtccga ttaggtagtt ggtggggtaa aggcctacca 180

agcctgcgat cggtagctgg tctgagagga cgaccagcca cactgggact gagacacggc 240

ccagactcct acgggaggca gcagtgggga atattggaca atgggcgaaa gcctgatcca 300

gcaatgccgc gtgggtgaag aaggtcttcg gatcgtaaag ccctttcgac ggggacgatg 360

acggtacccg tagaagaagc cccggctaac ttcgtgccag cagccgcggt aatacgaagg 420

gggctagcgt tgctcggaat tactgggcgt aaagggcgcg taggcggcgg cccaagtcag 480

gcgtgaaatt cctgggctca acctggggac tgcgcttgat actgggttgc ttgaggatgg 540

aagaggctcg tggaattccc agtgtagagg tgaaattcgt agatattggg aagaacaccg 600

gtggcgaagg cggcgagctg gtccaactga cgctgaggcg cgacagcgtg gggagcaaac 660

aggattagat accctggtag tccacgccgt aaacgatgtg cgctggatgt tggggtctca 720

gtgtcgtagc caacgcggta agcgcaccgc ctggggagta cggccgcaag gttgaaactc 780

aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 840

gcagaacctt accagccctt gacatgcaca ggtgctgcat ggctgtcgtc agctcgtgtc 900

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctc gcctctagtt gccagcatgt 960

gggcactcta gaggaactgc cggtgacaag ccggaggaag gtggggatga cgtcaagtcc 1020

tcatggccct tatgggctgg gctacacacg tgctacaatg gcggtcagag ggaagccagg 1080

tcgcgaggcc gagccgatcc cggccgtctc agttcggatg cactctgcaa ctcgggtgca 1140

gaaggtggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt tcccgggcct 1200

tgtacacacc gcccgtcaca ccatgggagt tggttctacc ttaagtcgtt cgctaggcag 1260

gcgaccacgg tagggtcagc gactggggtg aagtcgtaac aaggtagccg tagg 1314

<210> 1648
<211> 1297
<212> DNA
<213> Roseomonas sp. NML98-0157

<400> 1648
agcgaacgct ggcggcatgc ttaacacatg caagtcgcac gagtggcgga cgggtgagta 60

acgcgtagga acgtgtcctg aggtggggga caaccccggg aaactggggc taataccgca 120

tatgcaaagg cgcctttgga gcggcctgcg tccgattagg tagttggtgg ggtaaaggcc 180

taccaagcct gcgatcggta gctggtctga gaggacgacc agccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt ggacaatggg cgaaagcctg 300

atccagcaat gccgcgtggg tgaagaaggt cttcggatcg taaagccctt tcgacgggga 360

cgatgacggt acccgtagaa gaagccccgg ctaacttcgt gccagcagcc gcggtaatac 420

gaaggggct agcgttgctc ggaattactg ggcgtaaagg gcgcgtaggc ggcggcccaa 480

gtcaggcgtg aaattcctgg gctcaacctg gggactgcgc ttgatactgg gttgcttgag 540

gatggaagag gctcgtggaa ttcccagtgt agaggtgaaa ttsgtagata ttgggaagaa 600

caccggtggy gaaggcggcg agctggtcca actgacgctg aggcgcgaca gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtgcgctg gatgttgggg 720

tctcagtgtc gtagccaacg cggtaagcgc accgcctggg gagtacggcc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgcaga accttaccag cccttgacat gcacaggtgc tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa ccctcgcctc tagttgccag 960

catgtgggca ctctagagga actgccggtg acaagccgga ggaaggtggg gatgacgtca 1020

agtcctcatg gcccttatgg gctgggctac acacgtgcta cdatggcggt cagagggaag 1080

ccaggtcgcg aggccgagcc gatcccggcc gtctcagttc ggatgcactc tgcaactcgg 1140

gtgcagaagg tggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcacaccatg ggagttggtt ctaccttaag tcgttcgcta 1260

ggcaggcgac cacggtaggg tcagcgactg gggtgaa 1297

<210> 1649
<211> 1269
<212> DNA
<213> Rothia aeria

<220>
<221> modified_base
<222> (838)..(838)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1115)..(1115)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1200)..(1200)
<223> a, c, t, g, unknown or other

<400> 1649

ccgtggatta gtggcgaacg ggtgagtaat acgtgagtga cctacctttg actctgggat 60

aagcctggga aactgggtct aataccggat acgaccaatc tctgcatggg gtgttggtgg 120

aaagcgttat ggagtggttt tagatgggct cacggcctat cagcttgttg gtgaggtaat 180

ggcttaccaa ggcgacgacg ggtagccggc ctgagagggt gaccggccac actgggactg 240

agacacggcc cagactccta cgggaggcag cagtggggaa tattgcacaa tgggcgcaag 300

cctgatgcag cgacgccgcg tgagggatga cggccttcgg gttgtaaacc tctgttagca 360

tcgaagaagc gaaagtgacg gtaggtgcag agaaagcgcc ggctaactac gtgccagcag 420

ccgcggtaat acgtagggcg cgagcgttgt ccggaattat tgggcgtaaa gagcttgtag 480

gcggttggtc gcgtctgctg tgaaaggccg gggcttaact ccggttttgc agtgggtacg 540

ggctaactag agtgcagtag gggagactgg aattcctggt gtagcggtgg aatgcacaga 600

tatcaggagg aacaccgatg gcgaaggcag gtctctgggc tgtaactgac gctgagaagc 660

gaaagcatgg ggagcgaaca ggattagata ccctggtagt ccatgccgta aacgttgggc 720

actaggtgtg ggggacattc cacgttttcc gcgccgtagc taacgcatta agtgccccgc 780

ctggggagta cggccgcaag gctaaaactc aaaggaattg acgggggccc gcactatngg 840

cggagcatgc ggattaattc gatgcaacgc gaagaacctt accaaggctt gacatgcatt 900

agatcgcgtc agagatggcg tttcccttcg gggctggtgt acaggtggtg catggttgtc 960

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc ctcgttctat 1020

gttgccagcg gttcggccgg ggactcatag gagactgccg gggttaactc ggaggaaggt 1080

ggggatgacg tcaaatcatc atgcccctta tgttntgggc ttcacgcatg ctacaatggc 1140

cggtacagag ggttgcgata ctgtgaggtg gagctaatcc cttaaagccg gtctcagttn 1200

ggattggggt atgcaactcg accccatgaa gtcggagtcg ctagtaatcg cagatcagca 1260

acgctgcgg 1269

<210> 1650
<211> 1531
<212> DNA
<213> Rothia dentocariosa

<400> 1650
ttgtaacgga gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg atgaagccta gcttgctagg tggattagtg gcgaacgggt gagtaatacg 120

tgagtgacct acctttgact ctgggataag cctgggaaac tgggtctaat accggatacg 180

accaatctcc gcatggggtg ttggtggaaa gcgttatgga gtggttttag atgggctcac 240

ggcctatcag cttgttggtg aggtaatggc ttaccaaggc gacgacgggt agccggcctg 300

agagggtgac cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtga gggatgacgg 420

ccttcgggtt gtaaacctct gttagcatcg aagaagcgaa agtgacggta ggtgcagaga 480

aagcgccggc taactacgtg ccagcagccg cggtaatacg tagggcgcga gcgttgtccg 540

gaattattgg gcgtaaagag cttgtaggcg gttggtcgcg tctgctgtga aaggctgggg 600

cttaaccctg gttttgcagt gggtacgggc taactagagt gcagtagggg agactggaat 660

tcctggtgta gcggtggaat gcgcagatat caggaggaac accgatggcg aaggcaggtc 720

tctgggctgt aactgacgct gagaagcgaa agcatgggga gcgaacagga ttagataccc 780

tggtagtcca tgccgtaaac gttgggcact aggtgtgggg gacattccac gttttccgcg 840

ccgtagctaa cgcattaagt gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa 900

gaaattgacg ggggcccgca caagcggcgg agcatgcgga ttaattcgat gcaacgcgaa 960

gaaccttacc aaggcttgac atatactgga ctgcgtcaga gatggcgttt cccttcgggg 1020

ctggtataca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctc gttctatgtt gccagcacgt gatggtgggg actcatagga 1140

gactgccggg gtcaactcgg aggaaggtgg ggatgacgtc aaatcatcat gccccttatg 1200

tcttgggctt cacgcatgct acaatggccg gtacagaggg ttgcgatact gtgaggtgga 1260

gctaatccct aaaagccggt ctcagttcgg attggggtct gcaactcgac cccatgaagt 1320

cggagtcgct agtaatcgca gatcagcaac gctgcggtga atacgttccc gggccttgta 1380

cacaccgccc gtcaagtcac gaaagttggt aacacccgaa gccggtggcc taaccctggt 1440

gggggggagcc gtcgaaggtg ggactggcga ttgggactaa gtcgtaacaa ggtagccgta 1500

ccggaaggtg cggctggatc acctcctttc t 1531

<210> 1651
<211> 1535
<212> DNA
<213> Rothia mucilaginosa

<400> 1651
tttcaacgga gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg atgaagccta gcttgctagg tggattagtg gcgaacgggt gagtaatacg 120

tgagtaacct acctttaact ctgggataag cctgggaaac tgggtctaat accggatacg 180

accaatctcc gcatggggtg ttggtggaaa gcgttatgta gtggttatag atgggctcac 240

ggcctatcag cttgttggtg aggtaacggc tcaccaaggc gacgacgggt agccggcctg 300

agagggtgac cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tggggaatat tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtga gggatgacgg 420

ccttcgggtt gtaaacctct gttagcaggg aagaagagaa attgacggta cctgcagaga 480

aagcgccggc taactacgtg ccagcagccg cggtaatacg tagggcgcga gcgttgtccg 540

gaattattgg gcgtaaagag cttgtaggcg gtttgtcgcg tctgctgtga aaggccggag 600

cttaactccg tgtattgcag tgggtacggg cagactagag tgcagtaggg gagactggaa 660

ctcctggtgt agcggtggaa tgcgcagata tcaggaagaa caccgatggc gaaggcaggt 720

ctctgggctg taactgacgc tgagaagcga aagcatgggg agcgaacagg attagatacc 780

ctggtagtcc atgccgtaaa cgttgggcac taggtgtggg ggacattcca cgttttccgc 840

gccgtagcta acgcattaag tgccccgcct ggggagtacg gccgcaaggc taaaactcaa 900

agaaattgac gggggcccgc acaagcggcg gagcatgcgg attaattcga tgcaacgcga 960

agaaccttac caaggcttga catatactgg accgcatcag agatggtgtt tcccttcggg 1020

gctggtatac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct cgttctatgt tgccagcacg taatggtggg gactcatagg 1140

agactgccgg ggtcaactcg gaggaaggtg gggatgacgt caaatcatca tgccccttat 1200

gtcttgggct tcacgcatgc tacaatggcc ggtacagagg gttgcgatac tgtgaggtgg 1260

agctaatccc taaaagccgg tctcagttcg gattggggtc tgcaactcga ccccatgaag 1320

tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcaagtca cgaaagttgg taacacccaa agccggtggc ctaacctttt 1440

ggagggagcc gtctaaggtg ggattggcga ttgggactaa gtcgtaacaa ggtagccgta 1500

ccggaaggtg cggctggatc acctcctttc taagg 1535

<210> 1652
<211> 1481
<212> DNA
<213> Rothia nasimurium

<400> 1652
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gatgaagccc agcttgctgg 60

gtggattagt ggcgaacggg tgagtaatac gtgagtaacc tgcctttaac tctgggataa 120

gccttggaaa cgaggtctaa taccggatac gaccagttcc cgcatgggat gctggtggaa 180

agggatatgt actggtttta gatgggctca cggcctatca gcttgttggt gaggtaacgg 240

ctcaccaagg cgacgacggg tagccggcct gagagggtga ccggccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgcaagcc 360

tgatgcagcg acgccgcgtg agggatgacg gccttcgggt tgtaaacctc tttcagcagg 420

gaagaagcga aagtgacggt acctgcagaa gaagcgccgg ctaactacgt gccagcagcc 480

gcggtaatac gtagggcgcg agcgttgtcc ggaattattg ggcgtaaaga gcttgtaggc 540

ggtttgtcgc gtctgctgtg aaagcccggg gcttaacccc gggtttgcag tgggtacggg 600

ctaactagag tgcagtaggg gagactggaa ttcctggtgt agcggtgaaa tgcgcagata 660

tcaggaggaa caccaatggc gaaggcaggt ctctgggctg taactgacgc tgagaagcga 720

aagcatgggg agcaaacagg attagatacc ctggtagtcc atgccgtaaa cgttgggcac 780

taggtgtggg ggacattcca cgttttccgc gccgtagcta acgcattaag tgccccgcct 840

ggggagtacg gccgcaaggc taaaactcaa agaaattgac gggggcccgc acaagcggcg 900

gagcatgcgg attaattcga tgcaacgcga agaaccttac caaggcttga catatactgg 960

accgctctag agatagagtt tcccttcggg gctggtatac aggtggtgca tggttgtcgt 1020

cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct cgttctatgt 1080

tgccagcacg taatggtggg gactcatagg agactgccgg ggtcaactcg gaggaaggtg 1140

gggatgacgt caaatcatca tgccccttat gtcttgggct tcacgcatgc tacaatggcc 1200

ggtacaaagg gttgcgatac tgtgaggttg agctaatccc aaaaagccgg tctcagttcg 1260

gattggggtc tgcaactcga ccccatgaag tcggagtcgc tagtaatcgc agatcagcaa 1320

cgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcaagtca cgaaagttgg 1380

taacacccga agccgatggc ctaacccctt gtgggaggga gtcgtcgaag gtgggattgg 1440

cgattgggac taagtcgtaa caaggtagcc gtaccggaag g 1481

<210> 1653
<211> 1500
<212> DNA
<213> Rothia sp. oral taxon 188

<400> 1653
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

atgaagcggt gcttgcaccg tggattagtg gcgaacgggt gagtaatacg tgagtgacct 120

acctttgact ctgggataag cctgggaaac tgggtctaat accggatacg accaatctct 180

gcatggggtg ttggtggaaa gcgttatgga gtggttttag atgggctcac ggcctatcag 240

cttgttggtg aggtaatggc ttaccaaggc gacgacgggt agccggcctg agagggtgac 300

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt 420

gtaaacctct gttagcatcg aagaagcgaa agtgacggta ggtgcagaga aagcgccggc 480

taactacgtg ccagcagccg cggtaatacg tagggcgcga gcgttgtccg gaattattgg 540

gcgtaaagag cttgtaggcg gttggtcgcg tctgctgtga aaggccgggg cttaactccg 600

gttttgcagt gggtacgggc taactagagt gcagtagggg agactggaat tcctggtgta 660

gcggtggaat gcacagatat caggaggaac accgatggcg aaggcaggtc tctgggctgt 720

aactgacgct gagaagcgaa agcatgggga gcgaacagga ttagataccc tggtagtcca 780

tgccgtaaac gttgggcact aggtgtgggg gacattccac gttttccgcg ccgtagctaa 840

cgcattaagt gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg 900

ggggcccgca caagcggcgg agcatgcgga ttaattcgat gcaacgcgaa gaaccttacc 960

aaggcttgac atgcattaga tcgcgtcaga gatggcgttt cccttcgggg ctggtgtaca 1020

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctc gttctatgtt gccagcggtt cggccgggga ctcataggag actgccgggg 1140

ttaactcgga ggaaggtggg gatgacgtca aatcatcatg ccccttatgt cttgggcttc 1200

acgcatgcta caatggccgg tacagagggt tgcgatactg tgaggtggag ctaatccctt 1260

aaagccggtc tcagttcgga ttggggtctg caactcgacc ccatgaagtc ggagtcgcta 1320

gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcaagtcacg aaagttggta acacccgaag ccggtggcct aacccttgtg gggggagccg 1440

tcgaaggtgg gattggcgat tgggactaag tcgtaacaag gtagccgtac cggaaggtgc 1500

<210> 1654
<211> 1539
<212> DNA
<213> Ruminobacter amylophilus

<400> 1654
aaagtgaaga gtttgatcat ggctcagatt gaacgctggc ggcaggctta atacatgcaa 60

gtcgaacggt aacagcagga agcttgcttc ctggctgacg agtggcggac gggtgagtaa 120

tacctgggga gctgcctgaa tgagggggac aacacctgga aacgggtgct aataccgcgt 180

aagcctgagg gggaaaggct gggcaaccag tcgcattcag atgcgcccag gtgggattag 240

ctagttggtg gggtaacggc ctaccaaggc gacgatctct agctggtctg agaggatgat 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tagggaatat 360

tgcacaatgg gggaaaccct gatgcagcca tgccgcgtgt gtgaagaagg cctttgggtt 420

gtaaagcact ttcagtatgg aggaagtgta gtatgttaac agcatgctgc attgacgtta 480

catacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcga 540

gcgttaatcg gaataactgg gcgtaaagag ctcgtaggcg gtttgtcaag tcagatgtga 600

aagccccggg cttaacctgg gaaccgcatt tgaaactgac agactagagt actgtagagg 660

gaggtagaat tccaggtgta gcggtgaaat gcgtagatat ctggaggaat accggtggcg 720

aaggcggcct cctggacaga gactgacgct gaggagcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgtcaatt agaagcatgt tgccatgagt 840

agtgtgtttc taagctaacg cgataaattg accgcctggg gagtacggcc ggcaaggtta 900

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacct ggacttgaca tattgagaag tatttagaga tagatacgtg 1020

ccgcaaggag ctcaaataca ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt gttctttgtt gccagcacgt aaaggtggga 1140

actcaaagaa gactgccggt gacaaaccgg aggaaggcag ggatgacgtc aagtcatcat 1200

ggcccttacg tccagggcta cacacgtgct acaatgggtt gtacagaggg aagcgaagtc 1260

gcgaggtaga gcggaaccca gaaagcaact cgtagtccgg attggagtct gcaactcgac 1320

tccatgaagt cggaatcgct agtaatcgcg aatcagaatg tcgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgaatt gcaccagaag tagttagctt 1440

aacccgcaag ggagggcgat taccacggtg tggtttatga ctggggtgaa gtcgtaacaa 1500

ggtaaccata ggggaacctg tggttggatc acctcctta 1539

<210> 1655
<211> 1014
<212> DNA
<213> Ruminococcaceae bacterium D16

<220>
<221> modified_base
<222> (907)..(907)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (910)..(910)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (953)..(955)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (973)..(973)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (980)..(981)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (996)..(996)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1002)..(1002)
<223> a, c, t, g, unknown or other

<400> 1655
tgcctttgaa gaggattcgt ccaattgata aggttactta gtggcggacg ggtgagtaac 60

gcgtgaggaa cctgccttgg agtggggaat aacacagtga aaattgtgct aataccgcat 120

aatgcagttg ggtcgcatga ctctgactgc caaagattta tcgctctgag atggcctcgc 180

gtctgattag ctagttggtg gggtaacggc ccaccaaggc gacgatcagt agccggactg 240

agaggttggc cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatat tgggcaatgg gcgcaagcct gacccagcaa cgccgcgtga aggaagaagg 360

ctttcgggtt gtaaacttct tttcttaggg acgaagcaag tgacggtacc taaggaataa 420

gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc gttatccgga 480

tttactgggt gtaaagggcg tgtaggcggg attgcaagtc agatgtgaaa accacgggct 540

caacctgtgg cctgcatttg aaactgtagt tcttgagtac tggagaggca gacggaattc 600

ctagtgtagc ggtgaaatgc gtagatatta ggaggaacac cagtggcgaa ggcggtctgc 660

tggacagcaa ctgacgctga ggcgcgaaag cgtggggagc aaacaggatt agataccctg 720

gtagtccacg ctgtaaacga tggatactag gtgtgggggg tctgaccccc tccgtgccgc 780

agttaacaca ataagtatcc cacctgggga gtacgatcgc aaggttgaaa ctcaaaggaa 840

ttgacggggg cccgcacaag cggtggagta tgtggtttaa ttcgaagcaa cgcgaagaac 900

cttaccnggn ttgacatccc gaggtccggt ctagagatag acctttctct tcnnnacctc 960

ggtgacaggt ggngcatggn ngtcgtcagc tcgtgncgtg anatgttggg ttaa 1014

<210> 1656
<211> 1503
<212> DNA
<213> Ruminococcus albus

<400> 1656
agagtttgat cctggctcag gacgaacgct ggcggcacgc ttaacacatg caagtcgaac 60

gagcgaaaga gtgcttgcac tctctagcta gtggcggacg ggtgagtaac acgtgagcaa 120

tctgcctttc ggagagggat accaattgga aacgattgtt aatacctcat aacataacga 180

agccgcatga ctttgttatc aaatgaattt cgccgaaaga tgagctcgcg tctgattagg 240

tagttggtga ggtaacggcc caccaagccg acgatcagta gccggactga gaggttgaac 300

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg cgaaagcctg atgcagcgat gccgcgtgag ggaagaaggt tttaggattg 420

taaacctctg tctttgggga cgataatgac ggtacccaag gaggaagctc cggctaacta 480

cgtgccagca gccgcggtaa tacgtaggga gcgagcgttg tccggaatta ctgggtgtaa 540

agggagcgta ggcgggattg caagtcaggt gtgaaattta ggggcttaac ccctgaactg 600

cacttgaaac tgtagttctt gagtgaagta gaggtaagcg gaattcctag tgtagcggtg 660

aaatgcgtag atattaggag gaacatcagt ggcgaaggcg gcttactggg ctttaactga 720

cgctgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgat tactaggtgt ggggggactg acccccttccg tgccgcagtt aacacaataa 840

gtaatccacc tggggagtac ggccgcaagg ctgaaactca aaggaattga cgggggcccg 900

cacaagcagt ggagtatgtg gtttaattcg aagcaacgcg aagaacctta ccaggtcttg 960

acatcgtacg catagcatag agatatgtga aatcccttcg gggacgtata gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttactgtt agttgctacg caagagcact ctagcaggac tgccgttgac aaaacggagg 1140

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtactaca 1200

atggctgtta acagagggaa gcaaaacagt gatgtggagc aaaaccctaa aagcagtctt 1260

agttcggatt gtaggctgca acccgcctac atgaagtcgg aattgctagt aatcgcggat 1320

cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca cgccatggga 1380

gtcggtaaca cccgaagcct gtgttctaac cgcaaggagg aagcagtcga aggtgggatt 1440

gatgactggg gtgaagtcgt aacaaggtag ccgtatcgga aggtgcggct ggatcacctc 1500

ctt 1503

<210> 1657
<211> 1391
<212> DNA
<213> Ruminococcus bromii

<220>
<221> modified_base
<222> (21)..(21)
<223> a, c, t, g, unknown or other

<400> 1657
tcgaacggaa cttctttaaa nggatttctt cggaatgaat ttgattaagt ttagtggcgg 60

acgggtgagt aacgcgtgag taacctgcct ctaagagggg aataacattc tgaaaagaat 120

gctaataccg cataatatat atttatcgca tggtagatat atcaaagatt tatcgcttag 180

agatggactc gcgtccgatt agttagttgg tgaggtaacg gctcaccaag accgcgatcg 240

gtagccggac tgagaggttg aacggccaca ttgggactga gacacggccc agactcctac 300

gggaggcagc agtgggggat attgcgcaat gggggaaacc ctgacgcagc aacgccgcgt 360

gaaggatgaa ggtcttcgga ttgtaaactt cttttattaa ggacgaagaa agtgacggta 420

cttaatgaat aagctccggc taactacgtg ccagcagccg cggtaatacg tagggagcaa 480

gcgttgtccg gatttactgg gtgtaaaggg tgcgtaggcg gctttgcaag tcagatgtga 540

aatctatggg ctcaacccat agcctgcatt tgaaactgca gagcttgagt gaagtagagg 600

caggcggaat tccccgtgta gcggtgaaat gcgtagagat ggggaggaac accagtggcg 660

aaggcggcct gctgggcttt aactgacgct gagcacgaaa gcgtgggtag caaacaggat 720

tagataccct ggtagtccac gctgtaaacg atgattacta ggtgtggggg gtctgacccc 780

ttccgtgccg gagttaacac aataagtaat ccacctgggg agtacggccg caaggttgaa 840

actcaaagga attgacgggg gcccgcacaa gcagtgggta tgtggtttaa ttcgaagcaa 900

cgcgaagaac cttaccaggt cttgacatcc tactaacgag atagagatat gttataggcc 960

gtttgggaaa agtagagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt 1020

gggttaagtc ccgcaacgag cgcaaccctt gctattagtt gctacgcaag agcactctaa 1080

taggactgcc gttgacaaaa cggaggaagg tggggacgac gtcaaatcat catgcccctt 1140

atgacctggg ctacacacgt actacaatgg acattaacag agggaagcaa tacagtgatg 1200

tggagcaaac ccctaaaaat gttctcagtt cagattgcag gctgcaaccc gcctgtatga 1260

agatggaatt gctagtaatc gcagatcagc atgctgcggt gaatacgttc ccgggccttg 1320

tacacaccgc ccgtcacacc atgggagccg gtaatacccg aagtcagtag tctaaccgca 1380

aggaggacgc t 1391

<210> 1658
<211> 1371
<212> DNA
<213> Ruminococcus callidus

<400> 1658
ttaacacatg caagtcgaac ggagaacatt gagcttgctt aatgttctta gtggcggacg 60

ggtgagtaac acgtgagtaa cctgcctctg agagtgggat agcttctgga aacggatggt 120

aataccgcat aacatcatgg attcgcatgt ttctgtgatc aaagatttat cgcttagaga 180

tggactcgcg tctgattagc tagttggtaa ggtaacggct taccaaggcg acgatcagta 240

gccggactga gaggttgatc ggccacattg ggactgagac acggcccaga ctcctacggg 300

aggcagcagt ggggaatatt gcacaatggg ggaaaccctg atgcagcgat gccgcgtgga 360

ggaagaaggt tttcggattg taaactcctg ttgaagagga cgataatgac ggtactcttt 420

tagaaagctc cggctaacta cgtgccagca gccgcggtaa tacgtaggga gcgagcgttg 480

tccggaatta ctgggtgtaa agggagcgta ggcgggatgg caagtcagat gtgaaaacta 540

tgggctcaac ccatagactg catttgaaac tgttgttctt gagtgaggta gaggtaagcg 600

gaattcctgg tgtagcggtg aaatgcgtag agatcaggag gaacatcggt ggcgaaggcg 660

gcttactggg cctttactga cgctgaggct cgaaagcgtg gggagcaaac aggattagat 720

accctggtag tccacgccgt aaacgatgat tactaggtgt gggggggactg acccccttccg 780

tgccgcagtt aacacaataa gtaatccacc tggggagtac ggccgcaagg ttgaaactca 840

aaggaattga cgggggcccg cacaagcagt ggagtatgtg gtttaattcg aagcaacgcg 900

aagaacctta ccaggtcttg acatcgagtg acgtacctag agataggtat tttcttcgga 960

acacaaagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaaccct taccattagt tgctacgcaa gagcactcta atgggactgc 1080

cgttgacaaa acggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg 1140

gctacacacg tactacaatg gcaatataac agagggaagc aatacagcga tgtggagcaa 1200

atccccaaaa attgtcccag ttcagattgc aggctgcaac tcgcctgcat gaagtcggaa 1260

ttgctagtaa tcgcagatca gcatgctgcg gtgaatacgt tcccgggcct tgtacacacc 1320

gcccgtcaca ccatgggagt cggtaacacc caaagccggt cgtctaacct t 1371

<210> 1659
<211> 1494
<212> DNA
<213> Ruminococcus champanellensis

<400> 1659
agagtttgat cctggctcag gacgaacgct ggcggcacgc ctaacacatg caagtcgaac 60

ggagataaag acttcggttt ttatcttagt ggcggacggg tgagtaacac gtgagcaacc 120

tgcctctgag agagggatag cttctggaaa cggatggtaa tacctcataa catagcggta 180

ccgcatgata ctgctatcaa agatttatcg ctcagagatg ggctcgcgtc tgattagcta 240

gatggtgagg taacggctca ccatggcgac gatcagtagc cggactgaga ggttgaacgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatattgc 360

acaatgggcg caagcctgat gcagcgatgc cgcgtggagg aagaaggttt tcggattgta 420

aactcctgtc ttaagggacg ataatgacgg taccttagga ggaagctccg gctaactacg 480

tgccagcagc cgcggtaata cgtagggagc gagcgttgtc cggaattact gggtgtaaag 540

ggagcgtagg cgggattgca agtcagatgt gaaaactatg ggcttaaccc atagactgca 600

tttgaaactg tagttcttga gtgaagtaga ggtaagcgga attcctagtg tagcggtgaa 660

atgcgtagat attaggagga acatcggtgg cgaaggcggc ttactgggct tttactgacg 720

ctgaggctcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgctgtaa 780

acgatgatta ctaggtgtgg ggggactgac cccttccgtg ccgcagttaa cacaataagt 840

aatccacctg gggagtacgg ccgcaaggtt gaaactcaaa ggaattgacg ggggcccgca 900

caagcagtgg agtatgtggt ttaattcgaa gcaacgcgaa aaaccttacc aggtcttgac 960

atcgagtgaa tgatctagag atagatcagt ccttcgggac acaaagacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta 1080

cctttagttg ctacgcaaga gcactctaga gggactgccg ttgacaaaac ggaggaaggt 1140

ggggatgacg tcaaatcatc atgccccttа tgacctgggc tacacacgta ctacaatggc 1200

aatgaacaga gggaagcaat acagtgatgt ggagcaaatc cccaaaaatt gtcccagttc 1260

agattgtagg ctgcaactcg cctacatgaa gtcggaattg ctagtaatcg cagatcagca 1320

tgctgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgggagtcgg 1380

taacacccga agccagtagc ctaaccgcaa ggagggcgct gtcgaaggtg ggattgatga 1440

ctggggtgaa gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acct 1494

<210> 1660
<211> 1388
<212> DNA
<213> Ruminococcus flavefaciens

<220>
<221> modified_base
<222> (157)..(157)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (276)..(276)
<223> a, c, t, g, unknown or other

<400> 1660
gctggcggca cgcttaacac atgcaagtcg aacggagata atttgagttt acttaggtta 60

tcttagtggc ggacgggtga gtaacacgtg agcaacctac cttagagaga gggatagctt 120

ctggaaacgg atggtaatac ctcataacat aactganccg catgatttag ttatcaaaga 180

tttatcactc tgagatgggc tcgcgtctga ttagatagtt ggtgaggtaa cggctcacca 240

agtcgacgat cagtagccgg actgagaggt tgaacngcca cattgggact gagacacggc 300

ccagactcct acgggaggca gcagtgggga atattgcaca atgggggaaa ccctgatgca 360

gcgatgccgc gtggaggaag aaggttttcg gattgtaaac tcctgtctta aaggacgata 420

atgacggtac tttaggagga agctccggct aactacgtgc cagcagccgc ggtaatacgt 480

agggagcgag cgttgtccgg aattactggg tgtaaaggga gcgtaggcgg gagcgcaagt 540

cagatgtgaa atacatgggc tcaacccatg ggctgcattt gaaactgtgt ttcttgagtg 600

aagtagaggt aagcggaatt cctggtgtag cggtgaaatg cgtagatatc aggaggaaca 660

ccggtggcga aggcggctta ctgggctttt actgacgctg aggctcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gctgtaaacg atgattacta ggtgtggggg 780

gactgacccc ttccgtgccg cagttaacac aataagtaat ccacctgggg agtacgsccs 840

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcagtggagt atgtggttta 900

attcgaagca acgcgaagaa ccttaccagg tcttgacatc gtatgcatag tctagagata 960

gatgaaattc cttcggggac atatagacag gtggtgcatg gttgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta cctttagttg ctacgcaaga 1080

gcactctaaa gggactgccg ttgacamaac ggaggaaggt ggggatgacg tcaaatcatc 1140

atgcccctta tgacctgggc tacacacgta ctacaatggc aattaacaaa gagaagcaag 1200

acggtgacgt ggagcgaatc tcaccaaatt gtcccagttc agattgcagg ctgcaactcg 1260

cctgcatgaa gtcggaattg ctagtaatcg cggatcagca tgccgcggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca tgggagtcgg taacacccga agtcggtagt 1380

ctaacagc 1388

<210> 1661
<211> 1392
<212> DNA
<213> Ruminococcus gnavus

<220>
<221> modified_base
<222> (1378)..(1380)
<223> a, c, t, g, unknown or other

<400> 1661
gtcgagcgaa gcacttttgc ggatttcttc ggattgaagc aattgtgact gagcggcgga 60

cgggtgagta acgcgtgggt aacctgcctc atacaggggg ataacagttg gaaacggctg 120

ctaataccgc ataagcgcac agtaccgcat ggtaccgtgt gaaaaactcc ggtggtatga 180

gatggacccg cgtctgatta gctagttggt ggggtaacgg cctaccaagg cgacgatcag 240

tagccgacct gagagggtga ccggccacat tgggactgag acacggccca aactcctacg 300

ggaggcagca gtggggaata ttgcacaatg ggggaaaccc tgatgcagcg acgccgcgtg 360

agcgatgaag tatttcggta tgtaaagctc tatcagcagg gaagaaaatg acggtacctg 420

actaagaagc cccggctaac tacgtgccag cagccgcggt aatacgtagg gggcaagcgt 480

tatccggatt tactgggtgt aaagggagcg tagacggcat ggcaagccag atgtgaaagc 540

ccggggctca accccgggac tgcatttgga actgtcaggc tagagtgtcg gagaggaaag 600

cggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacacca gtggcgaagg 660

cggctttctg gacgatgact gacgttgagg ctcgaaagcg tggggagcaa acaggattag 720

ataccctggt agtccacgcc gtaaacgatg aatactaggt gtcgggtggc aaagccattc 780

ggtgccgcag caaacgcaat aagtattcca cctggggagt acgttcgcaa gaatgaaact 840

caaaggaatt gacggggatc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 900

cgaagaacct tacctggtct tgacatccct ctgaccgctc tttaatcgga gctttccttc 960

gggacagagg agacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1020

aagtcccgca acgagcgcaa cccctatctt tagtagccag catttaagat gggcactcta 1080

gagagactgc cagggataac ctggaggaag gtggggatga cgtcaaatca tcatgcccct 1140

tatgaccagg gctacacacg tgctacaatg gcgtaaacaa agggaagcga gcccgcgagg 1200

gggagcaaat cccaaaaata acgtctcagt tcggattgta gtctgcaact cgactacatg 1260

aagctggaat cgctagtaat cgcgaatcag aatgtcgcgg tgaatacgtt cccgggtctt 1320

gtacacaccg cccgtcacac catgggagtc agtaacgccc gaagtcagtg acccaacnnn 1380

aaggagggag ct 1392

<210> 1662
<211> 1373
<212> DNA
<213> Ruminococcus hansenii

<400> 1662
tatcattgac tcttcggaag atttgatatt tgactgagcg gcggacgggt gagtaacgcg 60

tgggtaacct gcctcataca ggggaataac agttagaaat ggctgctaat gccgcataag 120

cgcacaggac cgcatggtct ggtgtgaaaa actgaggtgg tatgagatgg acccgcgtct 180

gattaggtag ttggtggggt aacggcctac caagccgacg atcagtagcc ggcctgagag 240

ggtgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatattgca caatggggga aaccctgatg cagcgacgcc gcgtgaagga agaagtatct 360

cggtatgtaa acttctatca gcagggaaga aaagacggta cctgactaag aagccccggc 420

taactacgtg ccagcagccg cggtaatacg taggggcaa gcgttatccg gatttactgg 480

gtgtaaaggg agcgtagacg gaagagcaag tctgatgtga aaggctgggg cttaacccca 540

ggactgcatt ggaaactgtt tttctagagt gccggagagg taagcggaat tcctagtgta 600

gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcggctt actggacggt 660

aactgacgtt gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 720

cgccgtaaac gatgaatact aggtgtcggg gtgcaaagca gttcggtgcc gcagcaaacg 780

caataagtat tccacctggg gagtacgttc gcaagaatga aactcaaagg aattgacggg 840

gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga atcttaccaa 900

gtcttgacat ctgcctgacc gtcccttaac cggagctttc cttcgggaca ggcaagacag 960

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1020

gcaaccccta tccttagtag ccagcagtcc ggctgggcac tctagggaga ctgccgggga 1080

taacccggag gaaggcgggg acgacgtcaa atcatcatgc cccttatgat ttgggctaca 1140

cacgtgctac aatggcgtaa acaaagggaa gcgaagcggt gacgcttagc aaatctcaaa 1200

aataacgtcc cagttcggac tgcagtctgc aactcgactg cacgaagctg gaatcgctag 1260

taatcgcgaa tcagaatgtc gcggtgaata cgttcccggg tcttgtacac accgcccgtc 1320

acaccatggg agtcagtaac gcccgaagtc agtgacccaa ccttatggag gga 1373

<210> 1663
<211> 1386
<212> DNA
<213> Ruminococcus lactaris

<400> 1663
tcgagcgaag cacttaggaa agattcttcg gatgatttcc tatttgactg agcggcggac 60

gggtgagtaa cgcgtgggta acctgcctca tacaggggga taacagttag aaatgactgc 120

taataccgca taagaccaca gcaccgcatg gtgcaggggt aaaaactccg gtggtatgag 180

atggacccgc gtctgattag ttagttggtg gggtaacggc ctaccaaggc gacgatcagt 240

agccgacctg agagggtgac cggccacatt gggactgaga cacggcccaa actcctacgg 300

gaggcagcag tggggaatat tgcacaatgg gggaaaccct gatgcagcga cgccgcgtga 360

gcgaagaagt atttcggtat gtaaagctct atcagcaggg aagaaaatga cggtacctga 420

ctaagaagcc ccggctaact acgtgccagc agccgcggta atacgtaggg ggcaagcgtt 480

atccggattt actgggtgta aagggagcgt agacggagca gcaagtctga tgtgaaaacc 540

cggggctcaa ccccgggact gcattggaaa ctgttgatct ggagtgccgg agaggtaagc 600

ggaattccta gtgtagcggt gaaatgcgta gatattagga ggaacaccag tggcgaaggc 660

ggcttactgg acggtaactg acgttgaggc tcgaaagcgt ggggagcaaa caggattaga 720

taccctggta gtccacgccg taaacgatga ctactaggtg tcgggtggca aagccattcg 780

gtgccgcagc caacgcaata agtagtccac ctggggagta cgttcgcaag aatgaaactc 840

aaaggaattg acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 900

gaagaacctt acctgctctt gacatcccgg tgacggcaga gtaatgtctg cttttcttcg 960

gaacaccggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1020

agtcccgcaa cgagcgcaac ccctatcttc agtagccagc ggtaaggccg ggcactctgg 1080

agagactgcc agggataacc tggaggaagg tggggatgac gtcaaatcat catgcccctt 1140

atgagcaggg ctacacacgt gctacaatgg cgtaaacaaa gggaagcgaa cccgcgaggg 1200

tgggcaaatc ccaaaaataa cgtctcagtt cggattgtag tctgcaactc gactacatga 1260

agctggaatc gctagtaatc gcgaatcaga atgtcgcggt gaatacgttc ccgggtcttg 1320

tacacaccgc ccgtcacacc atgggagtca gtaacgcccg aagtcagtga cccaaccgta 1380

aggagg 1386

<210> 1664
<211> 1373
<212> DNA
<213> Ruminococcus obeum

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (762)..(762)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (899)..(899)
<223> a, c, t, g, unknown or other

<400> 1664
acgggaanta cttcattgag acttcggtgg atttgattta gtattctagt ggcggacggg 60

tgagtaacgc gtgggtaacc tgccttatac agggggataa cagtcagaaa tgactgctaa 120

taccgcataa gcgcacagga ccgcatggtc cggtgtgaaa aactccggtg gtataagatg 180

gacccgcgtt ggattagctt gttggtgggg taacggccca ccaaggcgac gatccatagc 240

cggcctgaga gggtgaacgg ccacattggg actgagacac ggcccagact cctacgggag 300

gcagcagtgg ggaatattgc acaatggggg aaaccctgat gcagcgacgc cgcgtgaagg 360

aagaagtatc tcggtatgta aacttctatc agcagggaag atagtgacgg tacctgacta 420

agaagccccg gcaactacgt gccagcagcc gcggtaatac gtaggggcca agcgttatcc 480

ggtttactgg gtgtaaaggg agcgtagacg gtgtggcaag tctgatgtga aaggcatggg 540

ctcaacctgt ggactgcatt ggaaactgtc atacttgagt gccggagggg taagcggaat 600

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcggctt 660

actggacggt aactgacgtt gaggctgaaa gcgtggggag caaacaggat tagataccct 720

ggtagtccac gccgtaaacg atgaatatag gtgtcgggat gntcggtgcc gtcgcaaacg 780

cagtaagtat tccacctggg gagtacgttc gcaagaatga aactcaaagg aattgacggg 840

gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga aacatggcna 900

gtcttgacat ccctttgacc gacttttaac cgagtttttc cttcgggaca gaggagacag 960

gtggtgcatg gttgttgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1020

gcaaccccta tcctcagtag ccagcaagtt gagttgggca ctctgtggag actgccaggg 1080

ataacctgga ggaaggcggg gatgacgtca aatcatcatg ccccttatga tttgggctac 1140

acacgtgcta caatggcgta aacaaaggga agcgagattg tgagatggag caaatcccaa 1200

aaataacgtc ccagttcgga ctgtagtctg caacccgact acacgaagct ggaatcgcta 1260

gtaatcgcgg atcagaatgc cgcggtgaat acgttcccgg gtcttgtaca caccgcccgt 1320

cacaccatgg gagtcagtaa cgcccgaagt cagtgaccta actgcaaaga agg 1373

<210> 1665
<211> 1368
<212> DNA
<213> Ruminococcus sp. 18P13

<400> 1665
tcgaacggag ataaagactt cggtttttat cttagtggcg gacggttgag taacacgtga 60

gcaacctgcc tttgagagag ggatagcttc tggaaacgga tggtaatacc tcataacata 120

gcggtaccgc atgatactgc tatcaaagat ttatcgctca gagatgggct cgcgtctgat 180

tagctagatg gtgaggtaac ggttcaccat ggcgacgatc agtagccgga ctgagaggtt 240

gaacggccac attgggactg agacacggcc cagactccta cgggaggcag cagtgcggaa 300

tattgcacaa tgacgcaagc ctgatgcagc gatgccgcgt ggaggaagaa ggttttcgga 360

ttgtaaactc ctgtcttaag ggacgataat gacggtacct taggaggaag ctccggctaa 420

ctacgtgcca gcagccgcgg taatacgtag ggagcgagcg ttgtccggaa ttactgggtg 480

taaagggagc gtaggcggga ttgcaagtca gatgtgaaaa ctatgggctt aacccataga 540

ctgcatttga aactgtagtt cttgagtgaa gtagaggtaa gcggaattcc tagtgtagcg 600

gtgaaatgcg tagatattag gaggaacatc ggtggcgaag gcggcttact gggcttttac 660

tgacgctgag gctcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc 720

tgtaaacgat gattactagg tgtgggggga ctgacccctt ccgtgccgca gttaacacaa 780

taagtaatcc acctggggag tacggccgca aggttgaaac tcaaaggaat tgacgggggc 840

ccgcacaagc agtggagtat gtggtttaat tcgaagcaac gcgaaaaacc ttaccaggtc 900

ttgacatcga gtgaatgatc tagagataga tcagtccttc gggacacaaa gacaggtggt 960

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1020

ccttaccttt agttgctacg caagagcact ctagagggac tgccgttgac aaaacggagg 1080

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtactaca 1140

atggcaatga acagagggaa gcaatacagt gatgtggagc aaatccccaa aaattgtccc 1200

agttcagatt gtaggctgca actcgcctac atgaagtcgg aattgctagt aatctgcagc 1260

tcagcatgct gcggtgaata cgttcccggg ccttgtacac gccgcccgtc acaccatggg 1320

agtcggtaac acccgaagcc agtagcctaa ccgcaaggag ggcgctgt 1368

<210> 1666
<211> 1368
<212> DNA
<213> Ruminococcus sp. 5_1_39BFAA

<220>
<221> modified_base
<222> (8)..(8)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (10)..(11)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (15)..(15)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (20)..(20)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (762)..(762)
<223> a, c, t, g, unknown or other

<400> 1666
acgggaantn nttcnttgan acttcggtgg atttagattt atttctagtg gcggacgggt 60

gagtaacgcg tgggtaacct gccttataca gggggataac agtcagaaat ggctgctaat 120

accgcataag cgcacagagc tgcatggctc agtgtgaaaa actccggtgg tataagatgg 180

acccgcgttg gattagctgg ttggtggggt aacggcccac caaggcgacg atccatagcc 240

ggcctgagag ggtgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg 300

cagcagtggg gaatattgca caatggggga aaccctgatg cagcgacgcc gcgtgaagga 360

agaagtatct cggtatgtaa acttctatca gcagggaaga tagtgacggt acctgactaa 420

gaagccccgg ctaactacgt gccagcagcc gcggtaatac gtaggggcca agcgttatcc 480

ggatttactg ggtgtaaagg gagcgtagac ggtgtggcaa gtctgatgtg aaaggcatgg 540

gctcaacctg tggactgcat tggaaactgt catacttgag tgccggaggg taagcggaat 600

tcctagtgta gcggtgaaat gcgtagatat taggaggaac accagtggcg aaggcggctt 660

actggacggt aactgacgtt gaggctcgaa agcgtgggga gcaaacagga ttagataccc 720

tggtagtcca cgccgtaaac gatgaatact agtgtcggca antcggtgcc gtcgcaaacg 780

cagtaagtat tccacctggg gagtacgttc gcaagaatga aactcaaagg aattgacggg 840

gaccgcacaa gcggtggaca tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaagt 900

cttgacatcc gcctgaccga tccttaaccg gatctttcct tcgggacagg cgagacaggt 960

ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc 1020

aacccctatc ctcagtagcc agcatttaag gtgggcactc tggggagact gccagggata 1080

acctggagga aggcggggat gacgtcaaat catcatgccc cttatgattt gggctacaca 1140

cgtgctacaa tggcgtaaac aaagggaagc gagattgtga gatggagcaa atcccaaaaa 1200

taacgtccca gttcggactg tagtctgcaa cccgactaca cgaagctgga atcgctagta 1260

atcgcggatc agaatgccgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac 1320

accatgggag tcagtaacgc ccgaagtcag tgacctaact gcaaagaa 1368

<210> 1667
<211> 1223
<212> DNA
<213> Ruminococcus sp. 9SE51

<400> 1667
cacgcctaac acatgcaagt cgaacgagtg gcggacgggt gagtaacacg tgagcaacct 60

gcctctgaga gagggatagc ttctggaaac ggatggtaat acctcataac caaagtcgct 120

cagagatggt ctcgcgtctg attagctaga tggtgaggta acggctcacc atggcgacga 180

tcagtagccg gactgagagg ttgaacggcc acattgggac tgagacacgg ccagactcct 240

acgggaggca gcagtgggga atattgcaca atgggcgcaa gcctgatgca gcgatgccgc 300

gtggaggaag aaggttttcg gattgtaaac tcctgtctta agggacgatg acggtacctt 360

aggaggaagc tccggctaac tacgtgccag cagccgcggt aatacgtagg gagcgagcgt 420

tgtccggaat tactgggtgt aaagggagcg taggcgggat tgcaagtcag atgtgaaaac 480

tatgggctta acccatagac tgcatttgaa actgtagttc ttgagtgaag tagaggtaag 540

cggaattcct agtgtagcgg tgaaatgcgt agatattagg aggaacatcg gtggcgaagg 600

cggcttactg ggcttactga cgctgaggct cgaaagcgtg gggagcaaac aggattagat 660

accctggtag tccacgctgt aaagatgatt actaggtgtg ggggcttccg tgccgcagtt 720

aacacaataa gtaatccacc tggggagtac ggccgcaagg ttgaaactca aaggaattga 780

cgggggcccg cacaagcagt ggagtatgtg gtttaattcg aagcaacgcg aaaaacctta 840

ccaggtcttg acatcgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 900

ggttaagtcc cgcagcgagc gcaaccctta cctttagttg ctacagcact ctagagggac 960

tgccgttgac aaaacggagg aaggtgggga tgtcgtcaaa tcatcatgcc ccttatgact 1020

gggctacaca cgtactacaa tggcaatcag agggaagcaa tacagtgatg tggagcaaat 1080

ccccattgtc ccagttcaga tgtaggctca actcgcctac agaagtcgga attgctagta 1140

atcgcagctc agcatgccgc ggtgaatacg ttaacgggcc ttgtacacgg cgcccgtcac 1200

accatgggag tcggtaacaa ccg 1223

<210> 1668
<211> 1339
<212> DNA
<213> Ruminococcus sp. ID8

<220>
<221> modified_base
<222> (27)..(27)
<223> a, c, t, g, unknown or other

<400> 1668
ggaggaagag gacagtgact gagcggngga cgggtgagta acggcggtgg gcaacctgcc 60

tcatacaggg ggataacagt tagaaatgac tgctaatacc gcataagcgc acaggaccgc 120

atggtgtagt gtgaaaaact ccggtggtat gagatggacc cgcgtctgat taggtagttg 180

gtggggtaaa ggcctaccaa gccgacgatc agtagccgac ctgagagggt gaccggccac 240

attgggactg agacacggcc caaactccta cgggaggcag cagtggggaa tattgcacaa 300

tgggggaaac cctgatgcag cgacgccgcg tgaaggaaga agtatttcgg tatgtaaact 360

tctatcagca gggaagaaga tgacggtacc tgagtaagaa gcaccggcta aatacgtgcc 420

acagccgcgg taatacgtat ggtgcagcgt tatccggatt tactgggtgt aaagggagcg 480

tagacggata ggcaagtctg gagtgaaaac ccagggctca accctgggac tgctttggaa 540

actgcagatc tggagtgccg gagaggtaag cggaattcct agtgtagcgg tgaaatgcgt 600

agatattagg aggaacacca gtggcgaagg cggcttactg gacggtgact gacgttgagg 660

ctcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg 720

actactagtg tcggtgtgca aagcacatcg gtgccgcagc aaacgcaata agtagtccac 780

ctggggagta cgttcgcaag aatgaaactc aaaggaattg accgggaccc gcacaagcgg 840

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctggtctt gacatccgga 900

tgacgggcga gtaatgtcgc cgtcccttcg gggcatccga gacaggtggt gcatggttgt 960

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttatcttc 1020

agtagccagc atataaggtg ggcactctgg agagactgcc agggagaacc tggaggaagg 1080

tggggatgac gtcaaatcat catgcccctt atggccaggg ctacacacgt gctacaatgg 1140

cgtaaacaaa gggaagcgag agggtgacct ggagcgaatc ccaaaaataa cgtctcagtt 1200

cggattgtag tctgcaactc gactacatga agctggaatc gctagtaatc gcggatcagc 1260

atgccgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc atgggagtca 1320

gtaacgcccg aagccagtg 1339

<210> 1669
<211> 898
<212> DNA
<213> Ruminococcus sp. K-1

<220>
<221> modified_base
<222> (719)..(720)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (723)..(723)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (824)..(824)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (877)..(877)
<223> a, c, t, g, unknown or other

<400> 1669
gtggcggacg ggtgagtaac gcgtgggtaa cctgccttat acaggggat aacagtcaga 60

aatggctgct aataccgcat aagcgcacag agctgcatgg ctcagtgtga aaaactccgg 120

tggtataaga tggacccgcg ttggattagc ttgttggtgg ggtaacggcc caccaaggcg 180

acgatccata gccggcctga gagggtgaac ggccacattg ggactgagac acggcccaga 240

ctcctacggg aggcagcagt ggggaatatt gcacaatggg ggaaaccctg atgcagcgac 300

gccgcgtgaa ggaagaagta tctcggtatg taaacttcta tcagcaggga agatagtgac 360

ggtacctgac taagaagccc cggctaacta cgtgccagca gccgcggtaa tacgtagggg 420

gcaagcgtta tccggattta ctgggtgtaa agggagcgta gacggtgtgg caagtctgat 480

gtgaaaggca tgggctcaac ctgtggactg cattggaaac tgtcatactt gagtgccgga 540

ggggtaagcg gaattcctag tgtagcggtg aaatgcgtag atattaggag gaacaccagt 600

ggcgaaggcg gcttactgga cggtaactga cgttgaggct cgaaagcgtg gggagcaaac 660

aggattagat accctggtag tccacgccgt aaacgatgaa tactaggtgt cggggagcnn 720

agntcttcgg tgccgtcgca aacgcagtaa gtattccacc tggggagtac gttcgcaaga 780

atgaaactca aaggaattga cggggacccg cacaagcggt ggancatgtg gtttaattcg 840

aagcaacgcg aagaacctta ccaagtcttg acatccncct gaccgatcct taaccgga 898

<210> 1670
<211> 1361
<212> DNA
<213> Ruminococcus torques

<400> 1670
ggatgaagag gattgtgact gagcggcgga cgggtgagta acgcgtgggt aacctgcctc 60

atacaggggg ataacagtta gaaatgactg ctaataccgc ataagaccac agcaccgcat 120

ggtgcggggg taaaaactcc ggtggtatga gatggacccg cgtctgatta gctagttggt 180

aaggtaacgg cttaccaagg cgacgatcag tagccgacct gagagggtga ccggccacat 240

tgggactgag acacggccca aactcctacg ggaggcagca gtggggaata ttgcacaatg 300

ggggaaaccc tgatgcagcg acgccgcgtg agcgaagaag tatttcggta tgtaaagctc 360

tatcagcagg gaagaaaatg acggtacctg actaagaagc accggctaaa tacgtgccag 420

cagccgcggt aatacgtatg gtgcaagcgt tatccggatt tactgggtgt aaagggagcg 480

tagacggatg ggcaagttga tgtgaaaacc cggggctcaa ccccgggact gcattggaaa 540

ctgttcatct agagtgctgg agaggtaagt ggaattccta gtgtagcggt gaaatgcgta 600

gatattagga ggaacaccag tggcgaaggc ggcttactgg acagtaactg acgttgaggc 660

tcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgccg taaacgatga 720

ctactaggtg tcgggtggca aagccattcg gtgccgcagc aaacgcaata agtagtccac 780

ctggggagta cgttcgcaag aatgaaactc aaaggaattg acggggaccc gcacaagcgg 840

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctgctctt gacatcccgc 900

tgaccggacg gtaatgcgtc cttcccttcg gggcagcgga gacaggtggt gcatggttgt 960

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctatcttt 1020

agtagccagc ggccaggccg ggcactctag agagactgcc ggggataacc cggaggaagg 1080

tggggatgac gtcaaatcat catgcccctt atgagcaggg ctacacacgt gctacaatgg 1140

cgtaaacaaa gggaagcgag accgcgaggt ggagcaaatc ccaaaaataa cgtctcagtt 1200

cggattgtag tctgcaactc gactacatga agctggaatc gctagtaatc gcgaatcaga 1260

atgtcgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc atgggagtca 1320

gtaacgcccg aagtcagtga cccaaccgta aggagggagc t 1361

<210> 1671
<211> 1375
<212> DNA
<213> Saccharomonospora viridis

<220>
<221> modified_base
<222> (95)..(95)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (128)..(128)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (155)..(155)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (167)..(167)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (293)..(293)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (341)..(341)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (776)..(776)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (854)..(854)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (890)..(890)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (917)..(917)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (920)..(920)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (1001)..(1001)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1030)..(1031)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1172)..(1172)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1179)..(1179)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1181)..(1181)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1289)..(1290)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1292)..(1292)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1294)..(1294)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1298)..(1298)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1333)..(1333)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1354)..(1354)
<223> a, c, t, g, unknown or other

<400> 1671
tgagtggcga acgggtgagt aacacgtggg taatctgccc tgtactctgg gataagcctg 60

ggaaactggg tctaataccg gataggcacc agctnccgca tggtggtgtg tggaaagctg 120

cggcggtnca ggatgagccg gcggcccatc agctngttgg tggggtnatg gcctaccaag 180

gcgacgacgg gtagccggcc tgagagggtg accggccaca ctgggactga gacacggccc 240

agactcctac cggaggcagc agtggggaat attgcacaat ggacggaagc ctnatgcagc 300

gacgccgcgt gggggatgac ggccttcggg ttgtaaaccc ntttcgcccg ggacgaagcg 360

agagtgacgg taccgggaga agaagcaccg gctaactacg tgccagcagc cgcggtaata 420

cgtagggtgc aagcgtggtc cggaatgatt gggcgtaaag agctcgtagg cggtgtgtcg 480

cgtctgccgt gaaaacctgc ggctgaaccg tgggcgtgcg gtggatacgg gcacactgga 540

gttcggtagg ggagactgga attcctggtg tagcggtgaa atgcgcagat atcaggagga 600

acgccagtgg cgaaggcggg gctctgggcc gaaactgacg ctgaggagcg aaagcgtggg 660

gagcgaacag gattagatac cctggtagtc cacgccgtaa acggtgggcg ctaggtgtgg 720

gatgctgtgc acgtgtcccg tgccgtagct aacgcatgaa gcgccccgcc tggggngtac 780

ggccgcaagg ctaaaactca aaggaatgga cgggggcccg cacaagcggc ggagcatgtg 840

gattaattcg atgnaacgcg aagaacctga cctgggtggg acatgcactn gaccggcgta 900

gagatacgcc ggccctngtn gctggtgcac aggtggtgca tggctgtcgt cagctcgtgt 960

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct ngtcccatgt tgccagcggg 1020

taatgccggn nactcgtggg agactgccgg ggttaactcg gaggaaggtg gggatgacgt 1080

caagtcatca tgccccttat gcccagggct gcacacatgc tacaatggcc agtacagagg 1140

gtggcgagac cgtgaggtgg agcgaatccc gnaaagctng nctgagttcg gatcgtggtc 1200

tgcaactcga ctgcgtgaag tcggagtcgc tagtaatcgc agatcagcaa cgctgcggtg 1260

aatrcgttcc cgggccttgt acacaccgnn cntnacgnca tgaaagtcgg taacacccga 1320

agcccatggc ctnaccccgt caggggaggg agtngtcgaa ggtgggaccc gcgat 1375

<210> 1672
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1672
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1673
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1673
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1674
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1674
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1675
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1675
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1676
<211> 1545

<212> DNA
<213> Salmonella enterica

<400> 1676
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1677
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1677
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag agggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1678
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1678
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag agggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1679
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1679
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1680
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1680
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1681
<211> 1416
<212> DNA
<213> Salmonella typhimurium

<400> 1681
catgcaagtc gaacggtaac aggaagcagc ttgctgcttc gctgacgagt ggcggacggg 60

tgagtaatgt ctgggaaact gcctgatgga gggggataac tactggaaac ggtggctaat 120

accgcataac gtcgcaagac caaagagggg gaccttcggg cctcttgcca tcagatgtgc 180

ccagatggga ttagcttgtt ggtgaggtaa cggctcacca aggcgacgat ccctagctgg 240

tctgagagga tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca 300

gcagtgggga atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag 360

aaggccttcg ggttgtaaag tactttcagc ggggaggaag gtgttgtggt taataaccgc 420

agcaattgac gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa 480

tacggagggt gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt 540

caagtcggat gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggctt 600

gagtcttgta gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag 660

gaataccggt ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgtc tacttggagg 780

ttgtgccctt gaggcgtggc ttccggagct aacgcgttaa gtagaccgcc tggggagtac 840

ggccgcaagg ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg 900

gtttaattcg atgcaacgcg aagaacctta cctggtcttg acatccacag aagtttccag 960

agatggattg gtgccttcgg gaactgtgag acaggtgctg catggctgtc gtcagctcgt 1020

gttgtgaaat gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg 1080

attaggtcgg gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg 1140

tcaagtcatc atggccctta cgaccagggc tacacacgtg ctacaatggc gcatacaaag 1200

agaagcgacc tcgcgagagc aagcggacct cataaagtgc gtcgtagtcc ggattggagt 1260

ctgcaactcg actccatgaa gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga 1380

agtaggtagc ttaaccttcg ggagggcgct taccac 1416

<210> 1682
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1682
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1683

<211> 1498
<212> DNA
<213> Salmonella bongori

<400> 1683
ttgatcatgg ctcagattga acgctggcgg caggcctaac acatgcaagt cgaacggtaa 60

caggaagcag cttgctgctt cgctgacgag tggcggacgg gtgagtaatg tctgggaaac 120

tgcctggtgg agggggataa ctactggaaa cggtggctaa taccgcataa cgtcgcaaga 180

ccaaagaggg ggaccttcgg gcctcttgcc atcagatgtg cccagatggg attagcttgt 240

tggtggggta acggcccacc aaggcgacga tccctagctg gtctgagagg atgaccagcc 300

acactggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg aatattgcac 360

aatgggcgca agcctgatgc agccatgccg cgtgtatgaa gaaggccttc gggttgtaaa 420

gtactttcag cggggaggaa ggcghcaagg ttaataacct tgttgattga cgttacccgc 480

agaagaagca ccggctaact ccgtgccagc agccgcggta atacggaggg tgcaagcgtt 540

aatcggaatt actgggcgta aagcgcacgc aggcggtctg tcaagtcgga tgtgaaatcc 600

ccgggctcaa cctgggaact gcatccgaaa ctggcaggct tgagtctcgt agaggggggt 660

agaattccag gtgtagcggt gaaatgcgta gagatctgga ggaataccgg tggcgaaggc 720

ggccccctgg acgaagactg acgctcaggt gcgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatgt cgacttggag gttgtgccct tgaggcgtgg 840

cttccggagc taacgcgtta agtcgaccgc ctggggagta cggccgcaag gttaaaactc 900

aaatgaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc 960

gaagaacctt acctggtctt gacatccaca gaaccttgta gagatacgag ggtgccttcg 1020

ggaactgtga gacaggtgct gcatggctgt cgtcagctcg tgttgtgaaa tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttatcctt tgttgccagc gattaggtcg ggaactcaaa 1140

ggagactgcc agtgataaac tggaggaagg tggggatgac gtcaagtcat catggccctt 1200

acgaccaggg ctacacacgt gctacaatgg cgcatacaaa gagaagcgac ctcgcgagag 1260

caagcggacc tcataaagtg cgtcgtagtc cggattggag tctgcaactc gactccatga 1320

agtcggaatc gctagtaatc gtggatcaga atgccacggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcacacc atgggagtgg gttgcaaaag aagtaggtag cttaaccttc 1440

gggagggcgc ttaccacttt gtgattcatg actggggtga agtcgtaaca aggtaacc 1498

<210> 1684
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1684
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag agggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1685
<211> 1545
<212> DNA
<213> Salmonella enterica

<400> 1685
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gcttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtgg ctaataccgc 180

ataacgtcgc aagaccaaag agggggacct tcgggcctct tgccatcaga tgtgcccaga 240

tgggattagc tagttggtga ggtaacggct caccaaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaaggtgtt gtggttaata accgcagcaa 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tctgtcaagt 600

cggatgtgaa atccccgggc tcaacctggg aactgcattc gaaactggca ggcttgagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcgattag 1140

gtcgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1686
<211> 1416
<212> DNA
<213> Salmonella typhimurium

<400> 1686
catgcaagtc gaacggtaac aggaagcagc ttgctgcttc gctgacgagt ggcggacggg 60

tgagtaatgt ctgggaaact gcctgatgga gggggataac tactggaaac ggtggctaat 120

accgcataac gtcgcaagac caaagagggg gaccttcggg cctcttgcca tcagatgtgc 180

ccagatggga ttagcttgtt ggtgaggtaa cggctcacca aggcgacgat ccctagctgg 240

tctgagagga tgaccagcca cactggaact gagacacggt ccagactcct acgggaggca 300

gcagtgggga atattgcaca atgggcgcaa gcctgatgca gccatgccgc gtgtatgaag 360

aaggccttcg ggttgtaaag tactttcagc ggggaggaag gtgttgtggt taataaccgc 420

agcaattgac gttacccgca gaagaagcac cggctaactc cgtgccagca gccgcggtaa 480

tacggagggt gcaagcgtta atcggaatta ctgggcgtaa agcgcacgca ggcggtctgt 540

caagtcggat gtgaaatccc cgggctcaac ctgggaactg cattcgaaac tggcaggctt 600

gagtcttgta gaggggggta gaattccagg tgtagcggtg aaatgcgtag agatctggag 660

gaataccggt ggcgaaggcg gccccctgga caaagactga cgctcaggtg cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgtc tacttggagg 780

ttgtgccctt gaggcgtggc ttccggagct aacgcgttaa gtagaccgcc tggggagtac 840

ggccgcaagg ttaaaactca aatgaattga cgggggcccg cacaagcggt ggagcatgtg 900

gtttaattcg atgcaacgcg aagaacctta cctggtcttg acatccacag aagtttccag 960

agatggattg gtgccttcgg gaactgtgag acaggtgctg catggctgtc gtcagctcgt 1020

gttgtgaaat gttgggttaa gtcccgcaac gagcgcaacc cttatccttt gttgccagcg 1080

attaggtcgg gaactcaaag gagactgcca gtgataaact ggaggaaggt ggggatgacg 1140

tcaagtcatc atggccctta cgaccagggc tacacacgtg ctacaatggc gcatacaaag 1200

agaagcgacc tcgcgagagc aagcggacct cataaagtgc gtcgtagtcc ggattggagt 1260

ctgcaactcg actccatgaa gtcggaatcg ctagtaatcg tggatcagaa tgccacggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacacca tgggagtggg ttgcaaaaga 1380

agtaggtagc ttaaccttcg ggagggcgct taccac 1416

<210> 1687
<211> 1363
<212> DNA
<213> Sarcina ventriculi

<220>
<221> modified_base
<222> (11)..(12)
<223> a, c, t, g, unknown or other

<400> 1687
tcgagcgaga nngttcttcg gagcttttct agcggcggac gggtgagtaa cacgtgggca 60

acctgcctca tagaggggaa tagccttccg aaaggaagat taataccgca taatattgtt 120

gaaaggcatc ttttaacaat caaaggagca atccgctatg agatgggccc gcggcgcatt 180

agctagttgg tgaggtaacg gctcaccaag gcgacgatgc gtagccgacc tgagagggtg 240

atcggccaca ttggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 300

attgcacaat gggggaaacc ctgatgcagc aacgccgcgt gagtgatgaa ggtcttcgga 360

ttgtaaagct ctgtctttag ggacgataat gacggtacct aaggaggaag ccacggctaa 420

ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg ttatccggat ttactgggcg 480

taaagggagc gtaggcggat atttaagtgg gatgtgaaat acccgagctt aacttgggag 540

ctgcattcca aactggatat ctagagtgca ggagaggaga atggaattcc tagtgtagcg 600

gtgaaatgcg tagagattag gaagaacacc agtggcgaag gcgattctct ggactgtaac 660

tgacgctgag gctcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc 720

cgtaaacgat gaatactagg tgtaggggcc ccaagcctct gtgccgccgc taacgcatta 780

agtattccgc ctggggagta cggtcgcaag attaaaactc aaaggaattg acggggaccc 840

gcacaagcag cggagcatgt ggtttaattc gaagcaacgc gaagaacctt acctagactt 900

gacctgtcct gaattaccag taatgtggga aattccttcg ggaacaggaa cacaggtggt 960

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1020

ccttattgtt agttggtacc attaagttga ccactctagc gagactgccc gggttaaccg 1080

ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgtctagggc tacacacgtg 1140

ctacaatggc aagtacaaag agaagcaata ctgtgaagtg gagcaaaact caaaaacttg 1200

tctcagttcg gattgtaggc tgaaactcgc ctacatgaag ctggagttgc tagtaatcgc 1260

gaatcagaat gtcgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat 1320

gagagttggc aatacccgaa gtccgtaagc taaccgtaag gag 1363

<210> 1688
<211> 1557
<212> DNA
<213> Scardovia inopinata

<220>
<221> modified_base
<222> (967)..(967)
<223> a, c, t, g, unknown or other

<400> 1688
agagtttgat catggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gggatcctgc ttggtttttg ctgggtgggt gagagtggcg aacgggtgag taatgcgtga 120

ctaacctgcc gtgtagttgg gtatagctcc tggaaacggg tggtaatacc gaatggtcca 180

ctgggctgca tggtctggtg ggaaagtttt gtgtgctatg cgatggggtc gcgtcctatc 240

agcttgttgg tggggtgatg gcctaccaag gcttcgacgg gtagccggcc taagagggcg 300

accggccaca ttgggactga gatacgccca gactcctacg ggaggcagca gtggggaata 360

ttgcacaatg gggggaaccc tgatgcagcg acgccgcgtg cgggatggag gccttcgggt 420

tgtgaaccgc ttttattggg gagcaagctg gccctgtgtt gggttggtga gtgtacttgg 480

tgaataagca ccggccaact acgtgccagc agccgcggta atacgtaggg tgccagcgtt 540

gtccggattt attgggcgta aagggctcgt aggcggttcg tcgcgtctgg tgtgaaagct 600

tactgcttaa cggtgggttt gcgttggata cgggcgggct tgagtgcagt aggggagact 660

ggaattctcg gtgtaacggt ggaatgtgta gatatcggga agaacaccta tggcgaaggc 720

aggtctctgg gctgttactg acgctgagga gcgaaagcgt ggggagcgaa caggattaga 780

taccctggta gtccacgctg taaacggtgg acgctggatg tggggcctat ttccacgggt 840

tctgtgtcgg agctaacgcg ttaagcgtcc cgcctgggga gtacggccgc aaggttaaaa 900

ctcaaagaaa ttgacggggg cccgcacaag cggcggagca tgcggattaa ttcgatgcaa 960

cgcgaanaac cttaccaggg cttgacatgt gagcgttgat cttagagata gggtttccct 1020

tcggggcgct ttcacaggtg gtgcatggtc gtcgtcagct cgtgtcgtga gatgttgggt 1080

taagtccccg caaacgagcg caacccttgc cttgtgttgc cagccggttc ttgcccgggg 1140

aactcaacaa agggaaccgc ccgggggtta aacttcggga aggaaagggt gggggatgac 1200

gtccagaatc atcatgcccc ttaacgtcct ggggcttcaa cgcatgctac aatggctggt 1260

acagcgggga tgcgatacgg tgacgtggag cggatcctgt aaaaccggtc tcagttcgga 1320

tcggagcctg caactcggct ccgtgaaggt ggagtcgcta gtaatcgcgg atcagcagtg 1380

ccgcggtgaa tgcgttcccg ggccttgtac acaccgcccg tcaagtcatg aaagtgggca 1440

gcacccgaag ccggtggcct aacccttgtg gggagaaccg tctaaggtga ggttcgcgat 1500

tgggactaag tcgtaacaag gtagccgtac cggaaggtgc ggctggatca cctcctt 1557

<210> 1689
<211> 1294
<212> DNA
<213> Scardovia wiggsiae

<400> 1689
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

atgcgtgact aacctgccgt atggttgggg atagctcctg gaaacgggtg gtaataccca 120

atgctgaaag gtgccatatg atggggtcgc gtcctatcag cttgttggtg gggtgatggc 180

ctaccaaggc gtcgacgggt agccggccta agagggcgac cggccacatt gggactgaga 240

tacggcccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 300

gatgcagcga cgccgcgtgc gggatggagg ccttcgggtt gtaaaccgct tttatagggg 360

ggcatgagtg gactttatga ataagcaccg gctaactacg tgccagcagc cgcggtaata 420

cgtagggtgc aagcgttgtc cggatttatt gggcgtaaag ggctcgtagg cggtttgttg 480

cgtctggtgt gaaagcttac tgcttaacgg taggttgcgc tggatacggg caggcttgag 540

tgcagtaggg gagactggaa ttctcggtgt aacggtggaa tgtgtagata tcgggaagaa 600

cacctatggc gaaggcaggt ctctgggctg actgacgctg aggagcgaaa gcgtggggag 660

cgaacaggat tagataccct ggtagtccat gctgtaaacg gtggacgctg gatgtggggc 720

gttctgtgtc ggagctaacg cgttaagcgt cccgcctggg gagtacggcc gcaaggttaa 780

aactcaaaga aattgacggg ggcccgcaca agcggcggag catgcggatt aattcgatgc 840

aacgcgaaga accttaccag ggcttgacat atacaggtgg tgcatggtcg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgcctt gtgttaccag 960

cggccgggga ctcacaaggg accgccgggg ttaactcgga ggaaggtggg gatgacgtca 1020

gatcatcatg ccccttacgt cctgggcttc acgcatgcta caatggctgg cagcgggatg 1080

cgatactgta aggtggagcg gatcctgtcc ggtctcagtt cggacggggc ctgcaactcg 1140

gcctcggaag gtggagtcgc tagtaatcgc ggatcagcag tgccgcggtg aatgcgttcc 1200

cgggccttgt acacaccgcc cgtcaagtca tgaaagtggg cagcacccga agccggtgcc 1260

tagggagccg tctaaggtga ggttcgcgat tggg 1294

<210> 1690
<211> 1504
<212> DNA
<213> Segniliparus rotundus

<400> 1690
agagtttgat tctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

ggtaaggccc ttcggggtac acgagtggcg aacgggtgag taacacgtgg gcaatctgcc 120

ctgcactctg ggataagcct gggaaactgg gtctaatacc ggatatgagt ctccaccgca 180

tggcggagac tggaaagttt ttcggtgcag gatgagcccg cggcctatca gctagttggt 240

ggggtaatgg cctaccaagg cgacgacggg tagccggcct gagagggtga tcggccacac 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg 360

ggcgaaagcc tgatgcagcg acgccgcgtg cgggatgacg gccttcgggt tgtaaaccgc 420

tttcagcagg gacgaagcgc aagtgacggt acctgcaaaa gaagcaccgg ctaactacgt 480

gccagcagcc gcggtaatac gtagggtgcg agcgttgttc ggaattactg ggcgtaaaga 540

gctcgtaggc ggactgtcgc gtcgcctgtg aaagcccgtg gctcaaccac gggtctgcag 600

gcgatacggg cagactagag tactgcaggg gagactggaa ttcctggtgt agcggtggaa 660

tgcgcagata tcaggaggaa caccggtggc gaaggcgggt ctctgggcag taactgacgc 720

tgaggagcga aagcgtgggg agcgaacagg attagatacc ctggtagtcc acgctgtaaa 780

cggtgggcgc taggtgtggg tttccttcca tgaaatccgt gccgtagcta acgcattaag 840

cgccccgcct ggggagtacg gccgcaaggc taaaactcaa agaaattgac gggggcccgc 900

acaagcggcg gagcatgtgg attaattcga tgcaacgcga agaaccttac ctgggtttga 960

catggactgg aaagccgtag agatacggcc ccccttgtgg tcggttcaca ggtggtgcat 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt 1080

gtcctgtgtt gccagcgcgt aatggcgggg actctcagga aactgccggg gtcaactcgg 1140

aggaaggtgg ggacgacgtc aagtcatcat gccccttatg tccagggctt cacacatgct 1200

acaatggcgc gtacagaggg cagcgatatc gcaaggtgga gcgaatccct taaagcgcgt 1260

ctcagttcgg attggggtct gcaactcgac cccatgaagt cggagtcgct agtaatcgca 1320

gatcagcaac gctgcggtga atacgttccc gggccttgta cacaccgccc gtcaagtcac 1380

gaaagtcggt aacacccgaa gccggtggcc caaccttta ggagggagcc gtcgaaggtg 1440

ggattggcga ttgggactaa gtcgaaacaa ggtagccgta ccggaaggtg cggctggatc 1500

acct 1504

<210> 1691
<211> 1520
<212> DNA
<213> Segniliparus rugosus

<400> 1691
ctttcacgga gagtttgatt ctggctcagg acgaacgctg gcggcgtgcc taacacatgc 60

aagtcgaacg atgaagccct tcggggtgga ttagtggcga acgggtgagt aacacgtggg 120

caatctgccc tgcactctgg gataagcctg ggaaactggg tctaataccg gatatgagct 180

tccaccgcat ggtggaggtt ggaaagtttt tcggtgcagg atgagcccgc ggcctatcag 240

ctagttggtg gggtaacggc ctaccaaggc gacgacgggt agccggcctg agagggtgat 300

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgaaagcct gatgcagcga cgccgcgtga gggatgacgg ccttcgggtt 420

gtaaacctct tcagcaggg acgaagcgca agtgacggta cctgcaaaag aagcaccggc 480

taactacgtg ccagcagccg cggtaatacg tagggtgcga gcgttgttcg gatttactgg 540

gcgtaaagag ctcgtaggcg gactgtcgcg tcgcctgtga aagcccgtgg ctcaaccacg 600

ggtctgcagg cgatacgggc agactagagt actgcagggg agactggaat tcctggtgta 660

gcggtggaat gcgcagatat caggaggaac accggtggcg aaggcgggtc tctgggcagt 720

aactgacgct gaggagcgaa agcgtgggga gcgaacagga ttagataccc tggtagtcca 780

cgctgtaaac ggtgggcgct aggtgtgggt ttccttccat gaaatccgtg ccgtagctaa 840

cgcattaagc gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa gaaattgacg 900

ggggcccgca caagcggcgg agcatgtgga ttaattcgat gcaacgcgaa gaaccttacc 960

tgggtttgac atggactgga aagccgtaga gatacggccc cccttgtggt cggttcacag 1020

gtggtgcatg gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc 1080

gcaacccttg tcctgtgttg ccagcgcgta atggcgggga ctctcaggaa actgccgggg 1140

tcaactcgga ggaaggtggg gacgacgtca agtcatcatg ccccttatgt ccagggcttc 1200

acacatgcta caatggcgcg tacagagggc agcgatatcg caaggtggag cgaatccctt 1260

aaagcgcgtc tcagttcgga ttggggtctg caactcgacc ccatgaagtc ggagtcgcta 1320

gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcaagtcacg aaagtcggta acacccgaag ccggtggccc aacctttag gagggagccg 1440

tcgaaggtgg gattggcgat tgggactaag tcgaaacaag gtagccgtac cggaaggtgc 1500

ggctggatca cctcctttct 1520

<210> 1692
<211> 1520
<212> DNA
<213> Selenomonas artemidis

<400> 1692
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gagcgaatga aagcttgctt ttatgagctt agtggcaaac gggtgagtaa cacgtagaca 120

acctgccgat cagatgggga caacattccg aaaggaatgc taataccgaa tggcgtgtag 180

gggaggcatc ttccctacat gaaagatggc ctctatatat aagctatcac tgatcgatgg 240

gtctgcgtct gattagctag taggtaaggt aacggcttac ctaggcgacg atcagtagcc 300

ggtctgagag gatgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg 360

cagcagtggg gaatcttccg caatgggcgc aagcctgacg gagcaacgcc gcgtgagtga 420

agaaggtctt cggatcgtaa agctctgttg aaggggacga acgtacataa gttgaataag 480

cttatgtaat gacggtacct tttgaggaag ccacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtggcgagcg ttgtccggaa tcattgggcg taaagggagc gcaggcggcc 600

atgtaagtct tgcttaaaag ttcggggctc aaccccgtga tgggcaagaa actatatggc 660

ttgagtgcag gagaggaaag cggaattccc agtgtagcgg tgaaatgcgt agatattggg 720

aggaacacca gtggcgaagg cggctttctg gactgcaact gacgctgagg ctcgaaagcc 780

aggggagcga acgggattag ataccccggt agtcctggcc gtaaacgatg gatactaggt 840

gtgggaggta tcgaccccta ccgtgccgga gttaacgcaa taagtatccc gcctggggag 900

tacggtcgca agactgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagtat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacattga ttgaaaggcg 1020

tagagatacg tccctctctt cggagacaag aaaacaggtg gtgcatggct gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctgtcc tttgttgcca 1140

gcatgtagtg gtgggcactc aaaggagact gccgcggaga acgcggagga aggcggggat 1200

gacgtcaagt catcatgccc cttatgacct gggctacaca cgtactacaa tgggacggac 1260

agagagcagc gagagagcga tcttaagcga acctcaaaaa ccgtttctca gttcggattg 1320

caggctgcaa ctcgcctgca tgaagtcgga atcgctagta atcgcaggtc agcatactgc 1380

ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accacggaag tcgttcacac 1440

ccgaagccgg cgcagccgtc taaggtgggg aaggtgactg gggtgaagtc gtaacaaggt 1500

agccgtatcg gaaggtgcgg 1520

<210> 1693
<211> 1520
<212> DNA
<213> Selenomonas dianae

<400> 1693
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gagcgaatga aagcttgctt ttatgagctt agtggcaaac gggtgagtaa cacgtagaca 120

acctgccgac aggatgggga caacattccg aaaggaatgc taataccgaa tgaagcggat 180

gggaggcatc tcctatccgt gaaagatggc ctctatttat aagctatcac ctgtcgatgg 240

gtctgcgtct gattagctgg ttggtgaggt aacggctcac caaggcgacg atcagtagcc 300

ggtctgagag gatgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg 360

cagcagtggg gaatcttccg caatgggcgc aagcctgacg gagcaacgcc gcgtgagtga 420

agaaggtctt cggatcgtaa agctctgttg acggggacga acgtgcgaga ggtgaataaa 480

ctcttgcaat gacggtacct gtcgaggaag ccacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtggcgagcg ttgtccggaa tcattgggcg taaagggagc gcaggcgggc 600

atataagtct ttcttaaaag ttcggggctc aaccccgtga tgggaaagaa actatgtgtc 660

ttgagtacag gagaggaaag cggaattccc agtgtagcgg tgaaatgcgt agatattggg 720

aggaacacca gtggcgaagg cggctttctg gactgcaact gacgctgagg ctcgaaagcc 780

aggggagcga acgggattag ataccccggt agtcctggcc gtaaacgatg gatactaggt 840

gtgggaggta tcgaccccta ccgtgccgga gttaacgcaa taagtatccc gcctggggag 900

tacggtcgca agactgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagtat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggcc ttgacattga ctgaaagcgc 1020

tagagatagc tccctctctt cggagacagg aaaacaggtg gtgcatggct gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctgttc tttgttgcca 1140

tcacgttatg gtgggcactc aaaggagact gccgcggaga acgcggagga aggcggggat 1200

gacgtcaagt catcatgccc cttatggtct gggctacaca tgtactacaa tggaacggac 1260

agagagcagc gaacccgcga gggcaagcga acctcaaaaa ccgtttccca gttcggattg 1320

caggctgcaa ctcgcctgca tgaagtcgga atcgctagta atcgcaggtc agcatactgc 1380

ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accacggaag tcgttcacac 1440

ccgaagccgg cgcagccgtc taaggtgggg aaggtgactg gggtgaagtc gtaacaaggt 1500

agccgtatcg gaaggtgcgg 1520

<210> 1694
<211> 1484
<212> DNA
<213> Selenomonas flueggei

<220>
<221> modified_base
<222> (77)..(77)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (82)..(82)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (89)..(90)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (216)..(216)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (218)..(218)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (574)..(574)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (593)..(593)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (602)..(602)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (657)..(657)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (731)..(731)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (781)..(781)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (821)..(821)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (946)..(946)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (948)..(948)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1019)..(1019)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1148)..(1148)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1158)..(1158)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1305)..(1305)
<223> a, c, t, g, unknown or other

<400> 1694
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cttaacacat gcaagtcgaa 60

cggagcgaat gaaagcntgc anttatgann cttagtggca aacgggtgag taacacgtag 120

acaacctgcc gacaggatgg ggacaacatt ccgaaaggaa tgctaatacc gaatgaagcg 180

gaggagaggc atctctcttc cgtgaaagat ggccantntt tatgctatca cctgttgatg 240

ggtctgcgtc tgattagctg gtaggtgagg taacggctca cctaggcgac gatcagtagc 300

cggtctgaga ggatgaacgg ccacattggg actgagacac ggcctagact cctacgggag 360

gcagcagtgg ggaatcttcc gcaatgggcg caagcctgac ggagcaacgc cgcgtgagtg 420

aagaaggtct tcggatcgta aagctctgtt gttcgggacg aacgtgcgtg atgcgaacag 480

tgtcatgcaa tgacggtacc tgtcgaggaa gccacggcta actacgtgcc agcagccgcg 540

gtaatacgta ggtggctagc gttgtccgga atcnttgggc gtaaagggag cgnaggcggg 600

cnagtaagtc tttcttaaaa gtgcggggct caaccccgtg atgggaaaga aactacntgt 660

cttgagtacg ggagaggaaa gcggaattcc cagtgtagcg gtgaaatgcg tagatattgg 720

gaggaacgcc ngtggcgaag gcggctttct ggactgcgac tgacgctgag gctcgaaagc 780

naggggagcg aacgggatta gataccccgg tagtcctggc ngtaaacgat ggatactagg 840

tgtgggaggt atcgacccct accgtgccgg agttaacgca ataagtatcc cgcctgggga 900

gtacggccgc aaggctgaaa ctcaaaggaa ttgacgggga cccgcncnag cggtggagta 960

tgtggtttaa ttcgaagcaa cgcgaacaac cttaccaggc cttgacattg actgaaagng 1020

ctagagatag ctccctctct tcggagacag gaaaacaggt ggtgcatggc tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctgtc ctttgttgcc 1140

atcacgtnaa ggtgggcnct caaaggagac tgccgcggag aacgcggagg aaggcgggga 1200

tgacgtcaag tcatcatgcc ccttatgctc tgggctacac acgtactaca atggaacgga 1260

cagagagcag cgaacccgcg agggcaagcg aacctcaaaa accgnttccc agttcggatt 1320

gcaggctgca acccgcctgc atgaagtcgg aatcgctagt aatcgcaggt cagcatactg 1380

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccacggaa gtcattcaca 1440

cccgaagccg gctargccgt ctaaggtggg gaaggtgact gggg 1484

<210> 1695
<211> 1296
<212> DNA
<213> Selenomonas genomosp. C1

<400> 1695
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcaaa cgggtgagta 60

acgcgtagac aacctgccgc aaagatgggg acaacagccc gaaagggctg ctaataccga 120

atgttcaaag tcgctttgcg atgggtctgc gcctgattag ctggttggcg gggcaacggc 180

ccgccaaggc gacgatcagt agccggtctg agaggatgga cggccacatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag tggggaatct tccgcaatgg gcgaaagcct 300

gacggagcaa cgccgcgtgg gtgaagaagg tcttcggatc gtaaagccct gttgcccggg 360

acgatgacgg taccgggcga ggaagccacg gccaactacg tgccagcagc cgcggtaata 420

cgtaggtggc gagcgttgtc cggaatcatt gggcgtaaag ggagcgcagg cgggcatgca 480

agtccatctt aaaagcgcgg ggcccaaccc cgtgagggga tggaaactgc gtgccttgag 540

tgcaggagag gaaagcggaa ttcccagtgt agcggtgaaa tgcgtagata ttgggaggaa 600

caccagtggc gaaggcggct ttctggactg actgacgctg aggctcgaaa gccaggggag 660

cgaacgggat tagatacccc ggtagtcctg gccgtaaacg atgaatgcta ggtgtggggg 720

ctcccgtgcc ggagtcaacg caataagcat tccgcctggg gagtacggcc gcaaggctga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttc aattcgacgc 840

aacgcgaaga accttaccag ggcttgacat taacaggtgg tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtc aagtcccgca acgagcgcaa cccctgtccc tcgttgccag 960

cgcgcgggga ctcaagggag actgccgcgg acaacgcgga ggaaggcggg gacgacgtca 1020

agtcatcatg ccccttatgc cctgggctac acacgtacta caatgggatg cagagggcag 1080

cgagcccgcg agggcgagcg aaccccggca tcccccagtt cggatgcagg ctgaaacccg 1140

cctgcagaag ttggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccac ggaagtcatt cacacccgaa gccggcacgc 1260

agcaagccgc ccaaggtggg ggcgatgact ggggtg 1296

<210> 1696
<211> 1319
<212> DNA
<213> Selenomonas genomosp. C2

<400> 1696
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcaaa cgggtgagta 60

acgcgtaggc aacctgccct caggatgggg acaacggctc gaaagagccg ctaataccga 120

atgactaaag tcgcctaagg atgggcctgc gtctgattag ccagttggtg aggtaacggc 180

tcaccaaagc gacgatcagt agccggtctg agaggatgaa cggccacaat gggactgaga 240

cacggcccat actcctacgg gaggcagcag tggggaatct tccgcaatgg gcgaaagcct 300

gacggagcaa cgccgcgtga gtgaagaagg tcttcggatc gtaaagctct gttgtcgggg 360

acgaagacgg tacctgacga ggaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggcggc aagcgttgtc cggaattatt gggcgtaaag ggagcgcagg tgggacggta 480

agtccgtctt aaaaggcagg ggctcagccc ctgtaaggga tggaaactat cgatcttgag 540

tgccggagag gaaagcggaa ttcccagtgt agcggtgaaa tgcgtagata ttgggaagaa 600

caccagtggc gaaggcggct ttctggacgg actgacactg aggctcgaaa gccaggggag 660

cgaacgggat tagatacccc ggtagtcctg gccgtaaacg atggatacta ggtgtaggag 720

ctcctgtgcc ggagttaacg caataagtat cccgcctggg gggtacggtc gcaagactga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc 840

aacgcgaaga accttaccag ggcttgacat taacaggtgg tgtatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatatt ctgttgccaa 960

cagctgggaa ctcaggatag actgccgcgg agaacgcgga ggaaggcggg gatgacgtca 1020

agtcatcatg ccccatatga cctgggctac acacgtacta caatgggatg cagagggcag 1080

cgaaagagcg atctggagcg aaccccagca tctcccagtt cggatgcagg ctgaaacccg 1140

cctgcagaag atggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccac ggaagtcatt cacacccgaa gccggaccgt 1260

cgaaggtggg ggcgatgact ggggtgaagt cgtaacaagg tagccgtatc ggaaggtgc 1319

<210> 1697
<211> 1329
<212> DNA
<213> Selenomonas genomosp. P5

<400> 1697
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcaaa cgggtgagta 60

acacgtaggc aacctgccga caggatgggg acaacattcc gaaaggaatg ctaataccga 120

atgaagaaag tcacctgtcg atgggcctgc gtctgattag ccagttggcg gggtaacggc 180

ccaccaaagc gacgatcagt agccggtctg agaggatgaa cggccacatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag tggggaatct tccacaatgg gcgaaagcct 300

gatggagcaa cgccgcgtga gtgaagaagg tcttcggatc gtaaagctct gttgtacggg 360

acgatgacgg taccgtacga ggaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc gagcgttgtc cggaattatt gggcgtaaag ggagcgcagg cggacatata 480

agtccatctt aaaagtgcgg ggctcaaccc cgtgagggga tggaaactgt atgccttgag 540

tgcaggagag gaaagcggaa ttcccagtgt agcggtgaaa tgcgtagata ttgggaggaa 600

caccagtggc gaaggcggct ttctggactg actgacgctg aggctcgaaa gccaggggag 660

cgaacgggat tagatacccc ggtagtcctg gccgtaaacg atgaatgcta ggtgtaggag 720

ctcctgtgcc ggagttaacg caataagcat tccgcctggg gagtacggtc gcaagactga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc 840

aacgcgaaga accttaccag ggcttgacat taacaggtgg tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctgtccc ttgttgccag 960

cacgtgggaa ctcaagggag actgccgtgg agaacgcgga ggaaggcggg gatgacgtca 1020

agtcatcatg ccccttatgt cctgggctac acacgtacta caatgggatg cagagggaag 1080

cgagggcgcg agccggagcg gatcccagca tcccccagtt cggatgcagg ctgcaacccg 1140

cctgcagaag tcggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccac ggaagtcatt cacgcccgaa gccggcggcc 1260

aggcagccgt ctaaggcggg ggcgatgact ggggtgaagt cgtaacaagg tagccgtatc 1320

ggaaggtgc 1329

<210> 1698
<211> 1287
<212> DNA
<213> Selenomonas genomosp. P6 oral clone MB3_C41

<400> 1698
gacgaacgct ggcggcgtgc ttaacacatg caagtcaaac gagtggcaaa cgggtgagta 60

acgcgtaggc aacctgccct taggatgggg acaacggccc gaaaggaccg ctaataccga 120

atgactaaag tcgccgaagg aagggcctgc gtctgattag ccagttggtg aggtaacggc 180

tcaccaaagc aacgatcagt agccggtctg agaggatgaa cggccacaat gggactgaga 240

cacggcccat actcctacgg gaggcagcag tggggaatct tccgcaatgg gcgcaagcct 300

gacggagcaa cgccgcgtga gtgaagaagg tcttcggatc gtaaaactct gttgacgggg 360

acgatgacgg tacctgtcga ggaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc gagcgttgtc cggaatcatt gggcgtaaag ggagcgcagg cgggcatgta 480

agtctttctt aaaagttcgg ggctcaaccc cgtgatggga aagaaactac atgtcttgag 540

tacaggagag gaaagcggaa ttcccagtgt agcggtgaaa tgcgtagata ttgggaggaa 600

caccagtggc gaaggcggct ttctggactg actgacgctg aggctcgaaa gccaggggag 660

cgaacgggat tagatacccc ggtagtcctg gccgtaaacg atggatacta ggtgtgggag 720

ctaccgtgtc ggagttaacg caataagtat cccgcctggg gagtacggtc gcaagactga 780

aactcaaagg aattgacggg gacccgcaca agcggtggag tatgtggttt aattcggagc 840

aacgcgaaga accttaccag gccttgacat taacaggtgg tgcatggctg tcgtcagctc 900

gtgtcatgag atgttgggtt aagtcccgca acgagcgcaa cccctgttct ttgttgccat 960

cacgtgggca ctcaaaggag actgccgcgg agaacgcgga ggaaggcggg gatgacgtca 1020

agtcatcatg ccccttatgg tctgggctac acacgtacta caatggaacg cagagagcag 1080

cgaacccgcg agggcaagcg aacctcaacg tttcccagtt cggatgcagg ctgcaactcg 1140

cctgcagaag tcggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc 1200

gggtcttgta cacaccgccc gtcacaccac ggaagtcgtt cacacccgaa gccggcgccg 1260

tctaaggtgg ggaaggtgac tggggtg 1287

<210> 1699
<211> 1460
<212> DNA
<213> Selenomonas genomosp. P7 oral clone MB5_C08

<400> 1699
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gggaaccttt atttcggtaa 60

aggtgagagt ggcaaacggg tgagtaacac gtaggcaacc tgccgacagg atggggacaa 120

cattccgaaa ggaatgctaa taccgaatgg agtccgggga tggcatcatc cctggataaa 180

agatggcctc tgaatatgct atcgcctgtc gatgggcctg cgtctgatta gccagttggc 240

ggggtaacgg cccaccaaag cgacgatcag tagccggtct gagaggatga acggccacat 300

tgggactgag acacggccca gactcctacg ggaggcagca gtggggaatc ttccacaatg 360

ggcgaaagcc tgacggagca acgccgcgtg agtgaagaag gtcttcggat cgtaaagctc 420

tgttgacggg gacgaacgtg caaagggtga ataatccttt gcaatgacgg tacctgtcga 480

ggaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc gagcgttgtc 540

cggaatcatt gggcgtaaag ggagcgcagg cgggcatgta agtctttctt aaaagttcgg 600

ggctcaaccc cgtgatggga aagaaactat gtgtcttgag tacaggagag gaaagcggaa 660

ttcccagtgt agcggtgaaa tgcgtagata ttgggaggaa caccagtggc gaaggcggct 720

ttctggactg caactgacgc tgaggctcga aagccagggg agcgaacggg attagatacc 780

ccggtagtcc tggccgtaaa cgatggatac taggtgtggg aggtatcgac ccctaccgtg 840

ccggagttaa cgcaataagt atcccgcctg ggaagtacga tcgcaagatt aaaactcaaa 900

ggaattgacg ggggcccgca caagcggtgg agtatgtggt ttaattcgac gcaacgcgaa 960

gaaccttacc agggcttgac attgagtgac agacttagag acaagtcatt ctcttcggag 1020

acacgaaaac aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaacccc tgttctttgt tgccatcacg taaaggtggg cactcaaagg 1140

agactgccgc ggagaacgcg gaggaaggcg gggatgacgt caagtcatca tgccccttat 1200

ggtctgggct acacacgtac tacaatggaa cggacagaga gcagcgaacc cgcgagggca 1260

agcgaacctc aaaaaccgtt tcccagttcg gattgcaggc tgcaactcgc ctgcatgaag 1320

tcggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc gggtcttgta 1380

cacaccgccc gtcacaccac ggaagtcgtt cacacccgaa gccggcggag ccgtctaagg 1440

tggggaaggt gactggggtg 1460

<210> 1700
<211> 1296
<212> DNA
<213> Selenomonas genomosp. P8 oral clone MB5_P06

<400> 1700
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcaaa cgggtgagta 60

acgcgtagac aacctgccgc aaagatgggg acaacagttc gaaaggactg ctaataccga 120

atgttcaaag tcgctttgcg atgggtctgc gtctgattag ctagttggca gggcaacggc 180

ctaccaaggc gacgatcagt agccggtctg agaggatgaa cggccacatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag tggggaatct tccgcaatgg gcgaaagcct 300

gacggagcaa cgccgcgtga gtgaagaagg tcttcggatc gtaaagctct gttgccgggg 360

acgatgacgg tacccggcga ggaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc gagcgttgtc cggaattatt gggcgtaaag ggagcgcagg cgggcgagta 480

agtctttctt aaaagtgcgg ggctcaaccc cgtgagggga gagaaactac tcatcttgag 540

tgcaggagag gaaagcggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaagaa 600

caccagtggc gaaggcggct ttctggactg actgacgctg aggctcgaaa gccaggggag 660

cgaacgggat tagatacccc ggtagtcctg gccgtaaacg atgaatgcta ggtgtagggg 720

ctcctgtgcc ggagttaacg caataagcat tccgcctggg gagtacggtc gcaagactga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc 840

aacgcgaaga accttaccag ggcttgacat taacaggtgg tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattct ctgttgccag 960

cacgtgggaa ctcagaggag actgccgcgg acaacgcgga ggaaggcggg gatgacgtca 1020

agtcatcatg ccccttatgt cctgggctac acacgtacta caatgggatg cggagagcag 1080

cgaagccgcg aggccaagcg aaccccaaca tttcccagtt cggatgcagg ctgcaactcg 1140

cctgcagaag atggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccac ggaagtcgtt cacacccgaa gccggtgggc 1260

agctagctgt ctaaggcggg ggcgatgact ggggtg 1296

<210> 1701
<211> 1519
<212> DNA
<213> Selenomonas infelix

<400> 1701
ggagagtttg atcctggctc aggacgaacg ctggcggcgt gcttaacaca tgcaagtcga 60

acggagcgaa tgaaagcttg cttttatgag cttagtggca aacgggtgag taacacgtag 120

acaacctgcc gacaggatgg ggacaacatt ccgaaaggaa tgctaatacc gaatgaagcg 180

gaggagaggc atctctcctc cgtgaaagat ggcctctgta tatgctatca cctgtcgatg 240

ggtctgcgtc tgattagcta gttggtgagg taacggctca ccaaggcgac gatcagtagc 300

cggtctgaga ggatgaacgg ccacattggg actgagacac ggcccagact cctacgggag 360

gcagcagtgg ggaatcttcc gcaatgggcg caagcctgac ggagcaacgc cgcgtgagtg 420

aagaaggtct tcggatcgta aagctctgtt gatggggacg aacgtgcgaa gggtgaataa 480

tcctttgcaa tgacggtacc tatcgaggaa gccacggcta actacgtgcc agcagccgcg 540

gtaatacgta ggtggcgagc gttgtccgga atcattgggc gtaaagggag cgcaggcggg 600

catgtaagtc tttcttaaaa gttcggggct caaccccgtg atgggaaaga aactacatgt 660

cttgagtaca ggagaggaaa gcggaattcc cagtgtagcg gtgaaatgcg tagatattgg 720

gaggaacacc agtggcgaag gcggctttct ggactgcaac tgacgctgag gctcgaaagc 780

caggggagcg aacgggatta gataccccgg tagtcctggc cgtaaacgat ggatactagg 840

tgtgggaggt atcgacccct accgtgccgg agttaacgca ataagtatcc cgcctgggga 900

gtacggtcgc aagactgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagta 960

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggc cttgacattg actgtaagag 1020

ctagagatag ctccctctct tcggagacag gaaaacaggt ggtgcatggc tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctgtt ctttgttgcc 1140

atcacgtaaa ggtgggcact caaaggagac tgccgcggag aacgcggagg aaggcgggga 1200

tgacgtcaag tcatcatgcc ccttatggtc tgggctacac acgtactaca atggaacgga 1260

cagagagcag cgaacccgcg agggcaagcg aacctcaaaa accgtttccc agttcggatt 1320

gcaggctgca actcgcctgc atgaagtcgg aatcgctagt aatcgcaggt cagcatactg 1380

cggtgaatac gttcccgggt cttgtacaca ccgcccgtca caccacggaa gtcgttcaca 1440

cccgaagccg gcgcagccgt ctaaggtggg gaaggtgact ggggtgaagt cgtaacaagg 1500

tagccgtatc ggaaggtgc 1519

<210> 1702
<211> 1520
<212> DNA
<213> Selenomonas noxia

<400> 1702
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gagcgaatga aagcttgctt ttataagctt agtggcaaac gggtgagtaa cacgtaggca 120

acctgccgac aggatgggga caacattccg aaaggaatgc taataccgaa tgaagtcaga 180

gaagggcatc cttttctgat gaaagatggc ctctatatat aagctatcac ctgtcgatgg 240

gcctgcgtct gattagctgg taggtgaggt aacggctcac ctaggcgacg atcagtagcc 300

ggtctgagag gatgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg 360

cagcagtggg gaatcttccg caatgggcgc aagcctgacg gagcaacgcc gcgtgagtga 420

agaaggtctt cggatcgtaa agctctgttg atggggacga acgtgcctaa tgcgaatagt 480

tttaggtaat gacggtaccc atcgaggaag ccacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtggctagcg ttgtccggaa tcattgggcg taaagggagc gcaggcgggc 600

atgtaagtct ttcttaaaag tgcggggctc aaccccgtga tgggaaagaa actatgtgtc 660

ttgagtacag gagaggaaag cggaattccc agtgtagcgg tgaaatgcgt agatattggg 720

aggaacacca gtggcgaagg cggctttctg gactgcaact gacgctgagg ctcgaaagcc 780

aggggagcga acgggattag ataccccggt agtcctggcc gtaaacgatg gatactaggt 840

gtgggaggta tcgaccccta ccgtgccgga gttaacgcaa taagtatccc gcctggggag 900

tacggccgca aggctgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagtat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggcc ttgacattga ctgaaagagc 1020

tagagatagc tccctctctt cggagacagg aaaacaggtg gtgcatggct gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctgttc tttgttgcca 1140

gcatgtaagg atgggcactc aaaggagact gccgcggaga acgcggagga aggcggggat 1200

gacgtcaagt catcatgccc cttatggtct gggctacaca cgtactacaa tgggacggac 1260

agagggcagc gagagagtga tcttaagcga atctcaaaaa ccgtttctca gttcggattg 1320

caggctgcaa ctcgcctgca tgaagtcgga atcgctagta atcgcaggtc agcatactgc 1380

ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac accacggaag tcattcacac 1440

ccgaagccgg ctaggccgtc taaggtgggg aaggtgactg gggtgaagtc gtaacaaggt 1500

agccgtatcg gaaggtgcgg 1520

<210> 1703
<211> 1565
<212> DNA
<213> Selenomonas ruminantium

<400> 1703
attttatgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg agacgattga aagcttgctt ttgagagtcg agtggcaaac gggtgagtaa 120

cgcgtagaca acctgccgca aagatgggga caacagtccg aaaggactgc taataccgaa 180

tgttgtcaga ttcccgcatg ggagactgat taaagatggc ctctacttgt aagctatcgc 240

tttgcgatgg gtctgcgtct gattagctag ttggtggggt aacggcctac caaggcgacg 300

atcagtagcc ggtctgagag gatgaacggc cacattggaa ctgagacacg gtccagactc 360

ctacgggagg cagcagtggg gaatcttccg caatgggcga aagcctgacg gagcaacgcc 420

gcgtgagtga agaagggttt cggctcgtaa agctctgttg acggggacga atgtgcgaaa 480

tgcgaatagt ttttcgcaat gacggtaccc gtcgaggaag ccacggctaa ctacgtgcca 540

gcagccgcgg taatacgtag gtggcgagcg ttgtccggaa ttattgggcg taaagggagc 600

gcaggcggga aggcaagtca gtcttaaaag tgcggggctc aaccccgtga tgggattgaa 660

actgtctttc ttgagtgcag gagaggaaag cggaattcct agtgtagcgg tgaaatgcgt 720

agatattagg aggaacacca gtggcgaagg cggctttctg gactgtaact gacgctgagg 780

ctcgaaagcg tggggagcga acaggattag ataccctggt agtccacgcc gtaaacgatg 840

aatgctaggt gtaggaggta tcgacccctt ctgtgccgga gttaacgcaa taagcattcc 900

gcctggggag tacggtcgca agactgaaac tcaaaggaat tgacgggggc ccgcacaagc 960

ggtggagtat gtggtttaat tcgacgcaac gcgaagaacc ttaccagggc ttgacattga 1020

gtgaaagatc tagagataga tccctctctt cggagacacg aaaacaggtg gtgcatggct 1080

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctatca 1140

tttgttgcca gcacgttatg gtgggaactc aaatgagact gccgcggaca acgcggagga 1200

aggcggggat gacgtcaagt catcatgccc cttatgtcct gggctacaca cgtactacaa 1260

tgggatggac agagagcagc gaacccgcga gggcaagcga accccataaa ccatctccca 1320

gttcggattg caggctgcaa cccgcctgca tgaagtcgga atcgctagta atcgctggtc 1380

agcatacagc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accacggaag 1440

tcattcacac ccgaagccgg tgggcaaacc gcaaggatgc agccgtctaa ggtgggggcg 1500

atgactgggg tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc 1560

tttct 1565

<210> 1704
<211> 1270
<212> DNA
<213> Selenomonas sp. FOBRC9

<220>
<221> modified_base
<222> (1084)..(1084)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1175)..(1175)
<223> a, c, t, g, unknown or other

<400> 1704
ccctatatga aagatggcct ctatatataa gctatcactg atcgatgggt ctgcgtctga 60

ttagctagta ggtaaggtaa cggcttacct aggcgacgat cagtagccgg tctgagagga 120

tgaacggcca cattgggact gagacacggc ccagactcct acgggaggca gcagtgggga 180

atcttccgca atgggcgcaa gcctgacgga gcaacgccgc gtgagtgaag aaggtcttcg 240

gatcgtaaag ctctgttgaa ggggacgaac gatcgagggg cgaacaggct ctcggtatga 300

cggtaccttt tgaggaagcc acggctaact acgtgccagc agccgcggta atacgtaggt 360

ggcgagcgtt gtccggaatc attgggcgta aagggagcgc aggcggccat gtaagtcttg 420

cttaaaagtt cggggctcaa ccccgtgatg ggcaagaaac tatatggctt gagtgcagga 480

gaggaaagcg gaattcccag tgtagcggtg aaatgcgtag atattgggag gaacaccagt 540

ggcgaaggcg gctttctgga ctgcaactga cgctgaggct cgaaagccag gggagcgaac 600

gggattagat accccggtag tcctggccgt aaacgatgga tactaggtgt gggaggtatc 660

gacccctacc gtgccggagt taacgcaata agtatcccgc ctggggagta cggtcgcaag 720

actgaaactc aaaggaattg acggggaccc gcacaagcgg tggagtatgt ggtttaattc 780

gaagcaacgc gaagaacctt accaggtctt gacattgatt gacagggata gagatatcct 840

attctctttg gagacaagaa aacaggtggt gcatggctgt cgtcagctcg tgtcgtgaga 900

tgttgggtta agtcccgcaa cgagcgcaac ccctgtcctt tgttgccagc atgtagtggt 960

gggcactcaa aggagactgc cgcggagaac gcggaggaag gcggggatga cgtcaagtca 1020

tcatgccccc tatgacctgg gctacacacg tactacaatg ggacggacag agagcagcga 1080

gagngcgacc ttaagcgaac ctcaaaaacc gtttctcagt tcggattgca ggctgcaact 1140

cgcctgcatg aagtcggaat cgctagtaat cgcangtcag catactgcgg tgaatacgtt 1200

cccgggtctt gtacacaccg cccgtcacac cacggaagtc gttcacaccc gaagccggcg 1260

cagccgtcta 1270

<210> 1705
<211> 1356
<212> DNA
<213> Selenomonas sp. oral clone FT050

<400> 1705
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcaaac gggtgagtaa cacgtagaca acctgccgac aggatgggga caacattccg 120

aaaggaatgc taataccgaa tgaagaaagt cacctgttga tgggtctgcg tctgattagc 180

tagttggtga ggtaacggct caccaaggcg acgatcagta gccggtctga gaggatgaac 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatctt 300

ccgcaatggg cgcaagcctg acggagcaac gccgcgtgag tgaagaaggt cttcggatcg 360

taaagctctg ttgacgggga cgatgacggt acctgtcgag gaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggaatcattg ggcgtaaagg 480

gagcgcaggc gggccggtaa gtcttactta aaagtgcggg gctcaacccc gtgatgggag 540

agaaactatc ggtcttgagt acaggagagg aaagcggaat tcccagtgta gcggtgaaat 600

gcgtagatat tgggaagaac accagtggcg aaggtggctt tctggactga ctgacgctga 660

ggctcgaaag ccaggggagc gaacgggatt agataccccg gtagtcctgg ccgtaaacga 720

tggatactag gtgtgggagc taccgtgccg gagttaacgc aataagtatc ccgcctgggg 780

agtacggccg caaggctgaa actcaaagga attgacgggg acccgcacaa gcggtggagt 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg ccttgacatt aacaggtggt 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctgttctt tgttgccatc agctgggcac tcaaaggaga ctgccgcgga gaacgcggag 1020

gaaggcgggg atgacgtcaa gtcatcatgc cccttatggc ctgggctaca cacgtactac 1080

aatggaacgc agagagcagc gaacccgcga gggcaagcga acctcaacgt ttcccagttc 1140

ggatgcaggc tgcaacccgc ctgcagaagt cggaatcgct agtaatcgca ggtcagcata 1200

ctgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccacg gaagtcattc 1260

acacccgaag ccggcgccgt ctaaggtggg gaaggtgact ggggtgaagt cgtaacaagg 1320

tagccgtatc ggaaggtgcg gctggaacac ctcctt 1356

<210> 1706
<211> 1356
<212> DNA
<213> Selenomonas sp. oral clone GI064

<400> 1706
gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcaaac gggtgagtaa cacgtagaca acctgccgac aggatgggga caacattccg 120

aaaggaatgc taataccgaa tgaagaaagt cacctgttga tgggtctgcg tctgattagc 180

tagttggtga ggtaacggct caccaaggcg acgatcagta gccggtctga gaggatgaac 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatctt 300

ccgcaatggg cgcaagcctg acggagcaac gccgcgtgag tgaagaaggt cttcggatcg 360

taaagctctg ttgacgggga cgatgacggt acctgtcgag gaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggaatcattg ggcgtaaagg 480

gagcgcaggc gggccggtaa gtcttactta aaagtgcggg gctcaacccc gtgatgggag 540

agaaactatc ggtcttgagt acaggagagg aaagcggaat tcccagtgta gcggtgaaat 600

gcgtagatat tgggaagaac accagtggcg aaggcggctt tctggactga ctgacgctga 660

ggctcgaaag ccaggggagc gaacgggatt agataccccg gtagtcctgg ccgtaaacga 720

tggatactag gtgtgggagc taccgtgccg gagttaacgc aataagtatc ccgcctgggg 780

agtacggccg caaggctgaa actcaaagga attgacgggg acccgcacaa gcggtggagt 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg ccttgacatt aacaggtggt 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctgttctt tgttgccatc agctgggcac tcaaaggaga ctgccgcgga gaacgcggag 1020

gaaggcgggg atgacgtcaa gtcatcatgc cccttatggc ctgggctaca cacgtactac 1080

aatggaacgc agagagcagc gaacccgcga gggcaagcga acctcaacgt ttcccagttc 1140

gggtgcaggc tgcaacccgc ctgcagaagt cggaatcgct agtaatcgca ggtcagcata 1200

ctgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccacg gaagtcattc 1260

acacccgaag ccggcgccgt ctaaggtggg gaaggtgact ggggtgaagt cgtaacaagg 1320

tagccgtatc ggaaggtgcg gctggatcac ctccttt 1356

<210> 1707
<211> 1356
<212> DNA
<213> Selenomonas sp. oral clone GT010

<400> 1707
gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcaaac gggtgagtaa cacgtaggca acctgccgac aggatgggga caacattccg 120

aaaggaatgc taataccgaa tgaagaaagt cacctgtcga tgggcctgcg tctgattagc 180

tagttggtga ggtaacggct caccaaggcg acgatcagta gccggtctga gaggatgaac 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatctt 300

ccgcaatggg cgcaagcctg acggagcaac gccgcgtgag tgaagaaggt cttcggatcg 360

taaagctctg ttgatgggga cgatgacggt acctatcgag gaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggaatcattg ggcgtaaagg 480

gagcgcaggc gggcatgtaa gtctttctta aaagttcggg gctcaacccc gtgatgggaa 540

agaaactaca tgtcttgagt acaggagagg aaagcggaat tcccagtgta gcggtgaaat 600

gcgtagatat tgggaggaac accagtggcg aaggcggctt tctggactga ctgacgctga 660

ggctcgaaag ccaggggagc gaacgggatt agataccccg gtagtcctgg ccgtaaacga 720

tggatactag gtgtgggagc taccgtgccg gagttaacgc aataagtatc ccgcctgggg 780

agtacggtcg caagactgaa actcaaagga attgacgggg acccgcacaa gcggtggagt 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg ccttgacatt aacaggtggt 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctgttctt tgttgccatc acgtgggcac tcaaaggaga ctgccgcgga gaacgcggag 1020

gaaggcgggg atgacgtcaa gtcatcatgc cccttatggt ctgggctaca cacgtactac 1080

aatggaacgc agagagcagc gaacccgcga gggcaagcga acctcaacgt ttcccagttc 1140

ggatgcaggc tgcaactcgc ctgcagaagt cggaatcgct agtaatcgca ggtcagcata 1200

ctgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccacg gaagtcgttc 1260

acacccgaag ccggcgccgt ctaaggtggg gaaggcgact ggggtgaagt cgtaacaagg 1320

tagccgtatc ggaaggtgcg gctggaacac ctccttt 1356

<210> 1708
<211> 1536
<212> DNA
<213> Selenomonas sp. oral clone HU051

<400> 1708
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gagctattta tttcggtaga tagcttagtg gcaaacgggt gagtaacacg tagacaacct 120

gccgatcaga tggggacaac attccgaaag gaatgctaat accgaatgag gtgtagggga 180

ggcatctccc ctacatgaaa gatggcctct atatataagc tatcactgat cgatgggtct 240

gcgtctgatt agctagtagg taaggtaacg gcttacctag gcgacgatca gtagccggtc 300

tgagaggatg aacggccaca ttgggactga gacacggccc agactcctac gggaggcagc 360

agtggggaat cttccgcaat gggcgcaagc ctgacggagc aacgccgcgt gagtgaagaa 420

ggtcttcgga tcgtaaagct ctgttgaagg ggacgaacgt gcataggatg aataagcctg 480

tgtaatgacg gtacctttg aggaagccac ggctaactac gtgccagcag ccgcggtaat 540

acgtatgtgg cgagcgttgt ccggaatcat tgggcgtaaa gggagcgcag gcggtcatgt 600

aagtcttact taaaagttcg gggctcaacc ccgtgatggg taagaaacta tatgacttga 660

gtacaggaga ggaaagcgga attcccagtg tagcggtgaa atgcgtatga tattgggagg 720

aacaccagtg gcgaaggcgg ctttctggac tgcaactgac actgaggctc gaaagccagg 780

ggagcgaacg ggattagata ccccggtagt cctggccgta cacgatggat actaggtgta 840

ggaggtatcg acccctcctg tgccggagtt aacgcaataa gtatcccgcc tggggagtac 900

ggtcgcaaga ctgaaactca gaggaattga cgggggcccg cacaagcggt ggagtatgtg 960

gtttaattcg acgcaacgcg aagaacctta ccagggcttg acattgagtg aaagggcaag 1020

agattgtccc cttatcttcg gataacacga aaacaggtgg tgcatggctg tcgtcagctc 1080

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatatt ctgttgccaa 1140

caggtaaagc tgggaactca ggatagactg ccgcggagaa cgcggaggaa ggcggggatg 1200

acgtcaagtc atcatgcccc atatgacctg ggctacacac gtactacaat gggatgtaca 1260

gagggcagcg aaagagcgat ctggagcgaa ccccagaaaa catctcccag ttcggattgc 1320

aggctgaaac ccgcctgcat gaagatggaa tcgctagtaa tcgcaggtca gcatactgcg 1380

gtgaatacgt tcccgggcct tgtacacacc agcccgtcac accacggaag tcattcacac 1440

ccgaagccgg tgaaagccgt cgaaggtggg ggcgatgact ggggtgaagt cgtaacaagg 1500

tagccgtatc ggaaggtgcg gctggaacac ctccttt 1536

<210> 1709
<211> 1356
<212> DNA

<213> Selenomonas sp. oral clone IK004

<400> 1709
gagtttgatt ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

agtggcaaac gggtgagtaa cacgtagaca acctgccgac aggatgggga caacattccg 120

aaaggaatgc taataccgaa tgaagaaagt cacctgccga tgggtctgcg tctgattagc 180

tagttggtga ggtaacggct caccaaggcg acgatcagta gccggtctga gaggatgaac 240

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatctt 300

ccgcaatggg cgcaagcctg acggagcaac gccgcgtgag tgaagaaggt cttcggatcg 360

taaagctctg ttgatgggga cgatgacggt acctatcgag gaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggcg agcgttgtcc ggaatcattg ggcgtaaagg 480

gagcgcaggc gggcatgtaa gtctttctta aaagttcggg gctcaacccc gtgatgggaa 540

agaaactaca tgtcttgagt acaggagagg aaagcggaat tcccagtgta gcggtgaaat 600

gcgtagatat tgggaggaac accagtggcg aaggcggctt tctggactga ctgacgctga 660

ggctcgaaag ccaggggagc gaacgggatt agataccccg gtagtcctgg ccgtaaacga 720

tggatactag gtgtgggagc taccgtgccg gagttaacgc aataagtatc ccgcctgggg 780

agtacggtcg caagactgaa actcaaagga attgacgggg acccgcacaa gcggtggagt 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg ccttgacatt aacaggtggt 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctgttctt tgttgccatc agctgggcac tcaaaggaga ctgccgcgga gaacgcggag 1020

gaaggcgggg atgacgtcaa gtcatcatgc cccttatggt ctgggctaca cacgtactac 1080

aatggaacgc agagagcagc gaacccgcga gggcaagcga acctcaacgt ttcccagttc 1140

ggatgcaggc tgcaactcgc ctgcagaagt cggaatcgct agtaatcgca ggtcagcata 1200

ctgcggtgaa tacgttcccg ggtcttgtac acaccgcccg tcacaccacg gaagtcgttc 1260

acacccgaag ccggcgccgt ctaaggtggg gaaggtgact ggggtgaagt cgtaacaagg 1320

tagccgtatc ggaaggtgcg gctggatcac ctcctt 1356

<210> 1710
<211> 1362
<212> DNA
<213> Selenomonas sp. oral clone IQ048

<400> 1710
agtttgattc tggctcagga cgaacgcggg cggcgtgctt aacacatgca agtcgaacga 60

gtggcaaacg ggtgagtaac acgtaggcaa cctgccgaca ggatggggac aacattccga 120

aaggaatgct aataccgaat gaagaaagtc acctgtcgat gggcctgcgt ctgattagcc 180

agttggcggg gtaacggccc accaaagcga cgatcagtag ccggtctgag aggatgaacg 240

gccacattgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatcttc 300

cacaatgggc gaaagcctga tggagcaacg ccgcgtgagt gaagaaggtc ttcggatcgt 360

aaagctctgt tgcacgggac gaggacggac cgagcgagga atccacggct aactacgtgc 420

cagcggccgc ggtaatacgt acgtggcgag cgttgtccgg aattattggg cgtaaaggga 480

gcgcaggggg acatataagt ccatcttaaa agtgcggtgc tcaaccccgt gaggggatgg 540

aaactgtatg ccttgagtgc aagataggaa agcggaattc ccagtgtagc ggtgaaatgc 600

gtaatattgg gaggaacacc agtggccaat gcggctttct ggactgactg acgctgaggc 660

tcgaaagcca ggggagcgaa cgggattaga taccccggta gtcctggccg taaacgatga 720

atgctaggtg taggagctcc tgtgccggag ttaacgcaat aagcattccg cctggggagt 780

acggtcgcaa gactgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagtatg 840

tggtttaatt cgaagcaacg cgaagaacct taccaggcct tgacattaac aggtggtgca 900

tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 960

tgttctttgt tgccagcata tgggcactca aaggagactg ccgcggagaa cgcggaggaa 1020

ggcggggatg acgtcaagtc atcatgcccc ttatggtctg ggctacacac gtactacaat 1080

gggacgcaga gggcagcgag agagtgatct taagcgaatc tcaacgtttc tcagttcgga 1140

tgcaggctgc aactcgcctg cagaagtcgg aatcgctagt aatcgcaggt cagcatactg 1200

cggtgaatac gttcccgggt cttgtacaca ccgcccatca caccacggaa gtcattcaca 1260

cccgaagccg gcacgcagca agccgcccaa ggtgggggcg atgactgggg tgaagtcgta 1320

acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tt 1362

<210> 1711
<211> 1366
<212> DNA
<213> Selenomonas sp. oral clone JI021

<400> 1711
ggagtttgat tctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagtggcaaa cgggtgagta acacgtaggc aacctgccga caggatgggg acaacattcc 120

gaaagggatg ctaataccga atggagaaag tcgcctgtcg atgggcctgc gtctgattag 180

ctagttggtg aggtaaaggc tcaccaaggc gacgatcagt agccggtctg agaggatgaa 240

cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatct 300

tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgaagaagg tcttcggatc 360

gtaaagctct gttgtcgagg acgatgacgg tacttgacga ggaagtcacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggaatcatt gggcgtaaag 480

ggagcgcagg tgggaactta ggtctttctt aaaagtgcgg ggctcaaccc cgtgatggga 540

gagaaaccga gattcttgag tgcaggagag gaaagcggaa ttcccggtgt agcggtgaaa 600

tgcgtagata tcgggaggaa caccagtggc gaaggcggct ttctggactg actgacactg 660

aggctcgaaa gccagggtag cgaacgggat tagataccc ggtagtcctg gccgtaaacg 720

atgaatgcta ggtgtaggag cttctgtgcc ggagttaacg caataagcat tccgcctggg 780

gagtacggcc gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

tatgtggttt aattcgacgc aacgcgaaga accttaccag ggcttgacat taacaggtgg 900

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctgtcct ttgttgccag cgcgcgggaa ctcaaaggag actgccgcgg agaacgcgga 1020

ggaaggcggg gatgacgtca agtcatcatg ccccttatgt cctgggctac acacgtacta 1080

caatgggatg cagagagcag cgaatgggcg accatgagcg aacccccttca tctctcagtt 1140

cggatgcagg ctgaaacccg cctgcagaag tcggaatcgc tagtaatcgc aggtcagcat 1200

actgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac gaaagtcatt 1260

cacacccgaa gtcggtgagg acctagccgc ctaaggtggg ggcgatgatt ggggtgaagt 1320

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctt 1366

<210> 1712
<211> 1356
<212> DNA
<213> Selenomonas sp. oral clone JS031

<400> 1712
ggagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagtggcaaa cgggtgagta acgcgtaggc aacctgccct caggatgggg acaacggctc 120

gaaagagccg ctaataccga atgactaaag tcgcccgagg atgggcctgc gtctgattag 180

ccagttggtg aggtaacggc tcaccaaagc aacgatcagt agccggtctg agaggatgaa 240

cggccacaat gggactgaga cacggcccat actcctacgg gaggcagcag tggggaatct 300

tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgaagaagg tcttcggatc 360

gtaaagctct gttgtcgggg acgaagacgg tacccgacga ggaagccacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggcggc aagcgttgtc cggaattatt gggcgtaaag 480

ggagcgcagg tgggacggta agtctgtctt aaaaggcaag ggctcagccc ctgtaaggga 540

cagaaactat cgttcttgag tgccggagag gaaagcggaa ttcccagtgt agcggtgaaa 600

tgcgtagata ttgggaagaa caccagtggc gaaggcggct ttctggacgg actgacactg 660

aggctcgaaa gccagggtag cgaacgggat tagatacccc ggtagtcctg gccgtaaacg 720

atggatacta ggtgtagggg ctcctgtgcc ggagttaacg caataggtat cccgcctggg 780

gagtacggtc gcaagactga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

tatgtggttt aattcgacgc aacgcgaaga accttaccag ggcttgacat taacaggtgg 900

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctatatt ctgttgccaa cagctgggaa ctcaggatag actgccgcgg agaacgcgga 1020

ggaaggcggg gatgacgtca agtcatcatg ccccttatga cctgggctac acacgtacta 1080

caatgggatg cagagggcag cgaaggagcg atctggagcg aaccccagca tctctcagtt 1140

cggatgcagg ctgaaacccg cctgcagaag gtggaatcgc tagtaatcgc aggtcagcat 1200

actgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac ggaagtcatt 1260

cacacccgaa gccggaccgt cgaaggtggg ggcgatgact ggggtgaagt cgtaacaagg 1320

tagccgtatc ggaaggtgcg gctggatcac ctcctt 1356

<210> 1713
<211> 1414
<212> DNA
<213> Selenomonas sp. oral clone OH4A

<400> 1713
tacggagcga tgaagcttgc ttttataagc ttatggcaac gggtgagtaa caggtggaca 60

acctgccgac aggatgggga caacattccg aaaggaatgc taataccgaa tgaacagagg 120

agaggcatct ctcctctgtg aaagatggcc tctttttatg ctatcacctg ttgatggggc 180

tgctctgatt agctggtagg tggagtaacg gctcacctag gggagaatca gtagccggtc 240

tgagaggatg aacggccaca ttgggactga gacacggccc agactcctac gggaggcagc 300

agtggggaat cttccgcaat gggcgcaagc ctgacggagc aacgccgcgt gagtgaagaa 360

ggtcttcgga tcgtaaagct ctgttgatgg ggcgaaacgt gcctaatgcg aatagtttta 420

ggtaatgacg gtacccatcg aggaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg cgagcgttgt ccggaatcat tgggcgtaaa gggagcgcag gcgggcatgt 540

aagtctttct taaaagtgcg gggctcaacc ccgtgatggg aaagaaacta tgtgtcttga 600

gtacaggaga ggaaagcgga attcccagtg tagcggtgaa atgcgtagat attgggagga 660

acaccagtgg cgaaggcggc tttctggact gcaactgacg ctgaggctcg aaagccaggg 720

gagcgaacgg gattagatac cccggtagtc ctggccgtaa acgatggata ctaggtgtgg 780

gaggtatcga cccctaccgt gccggagtta acgcaataag tatcccgcct ggggagtacg 840

gccgcaaggc tgaaactcaa aggaattgac ggggacccgc acaagcggtg gagtatgtgg 900

tttaattcga agcaacgcga agaaccttac caggccttga cattgactga aagagttaga 960

gataactccc tctcttcgga gacaggaaaa caggtggtgc atggctgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccacaacg agcgcaaccc ctgttctttg ttgccagcaa 1080

gtgaagttgg gcactcaaag gagactgccg cggagaacgc ggaggaaggc ggggatgacg 1140

tcaagtcatc atgcccctta tggtctgggc tacacacgta ctacaatggg acggacagag 1200

ggcagcgaga gagtgatatt aagcgaatct caaaaaccgt ttttcagttc ggattgcagg 1260

ctgcaactcg cctgcatgaa gtcggaatcg ttagtaatcg caggtcagca tactgcggtg 1320

aatacgttcc cgggtcttgt acacaccgcc cgtcacacca cggaagtcat tcacacccga 1380

agccggcaaa gccgtctaag gtggggaagg tgac 1414

<210> 1714
<211> 1319
<212> DNA
<213> Selenomonas sp. oral clone P2PA_80 P4

<400> 1714
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcaaa cgggtgagta 60

acgcgtaggc aacctgccct taggatgggg acaacggccc gaaaggaccg ctaataccga 120

atgcagaaag tcgccgaagg aagggcctgc gcctgattag ccagttggtg aggtaacggc 180

tcaccaaagc gacgatcagt agccggtctg agaggatgaa cggccacaat gggactgaga 240

cacggcccat actcctacgg gaggcagcag tggggaatct tccgcaatgg gcgaaagcct 300

gacggagcaa cgccgcgtga gtgaagaagg tcttcggatc gtaaagctct gttgttgggg 360

acgaagacgg tacccgacga gcaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc gagcgttgtc cgggatgatt gggcgtaaag ggagcgcagg tgggacggta 480

agtccttctt aaaagcgtgg ggctcagccc catgaaggga aggaaactat cgatcttgag 540

tgccagagag gaaagcggaa ttcccagtgt agcggtgaaa tgcgtagata ttgggaagaa 600

caccagtggc gaaggcggct ttctggacgg actgacgctg aggctcgaaa gccaggggag 660

cgaacgggat tagatacccc gctagtcctg gccgtaaacg atggatacta ggtgtaggag 720

cttctgtgcc ggagttaacg caataagtat cccgcctggg gagtacggtc gcaagattga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc 840

aacgcgaaga accttaccag ggcttgacat taacaggtgg tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatgtt ctgttgccag 960

cgcgcgggca ctcagaagag actgccgcgg agaacgcgga ggaaggcggg ggtgacgtca 1020

agtcatcatg ccccttatga cctgggctac acacgtacta caatgggatg cagagggcag 1080

cgaacgggcg accggaagcg aaccccagca tctcccagtt cggatgcagg ctgaaacccg 1140

cctgcagaag atggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccac ggaagtcatt cacacccgaa gccggaccgt 1260

cgaaggtggg ggcgatgact ggggtgaagt cgtaacaagg tagccgtatc ggaaggtgc 1319

<210> 1715
<211> 1541
<212> DNA
<213> Selenomonas sp. oral taxon 137

<400> 1715
ggagagtttg atcctggctc aggacgaacg ctggcggcgt gcttaacaca tgcaagtcga 60

acggagcgaa tgaaagcttg cttttatgag cttagtggca aacgggtgag taacacgtag 120

acaacctgcc gatcagatgg ggacaacatt ccgaaaggaa tgctaatacc gaatggcgtg 180

tggggaggca tcttccctac atgaaagatg gcctctattt ataagctatc actgatcgat 240

gggtctgcgt ctgattagct agtaggtaag gtaacggctt acctaggcga cgatcagtag 300

ccggtctgag aggatgaacg gccacattgg gactgagaca cggcccagac tcctacggga 360

ggcagcagtg gggaatcttc cgcaatgggc gcaagcctga cggagcaacg ccgcgtgagt 420

gaagaaggtc ttcggatcgt aaagctctgt tgaagggggc gaacgtacgc agtgcgaata 480

gtgctgagta atgacggtac cttttgagga agccacggct aactacgtgc cagcagccgc 540

ggtaatacgt aggtggcgag cgttgtccgg aatcattggg cgtaaaggga gcgcaggcgg 600

ccatgtaagt cttgcttaaa agttcggggc tcaaccccgt gatgggcaag aaactatatg 660

gcttgagtgc aggagaggaa agcggaattc ccagtgtagc ggtgaaatgc gtagatattg 720

ggaggaacac cagtggcgaa ggcggctttc tggactgcaa ctgacgctga ggctcgaaag 780

ccaggggagc gaacgggatt agataccccg gtagtcctgg ccgtaaacga tggatactag 840

gtgtgggagg tatcgacccc taccgtgccg gagttaacgc aataagtatc ccgcctgggg 900

agtacggtcg caagactgaa actcaaagga attgacgggg acccgcacaa gcggtggagt 960

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatt gattgacagg 1020

gatagagata tcctattctc tttggagaca agaaaacagg tggtgcatgg ctgtcgtcag 1080

ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccctgt cctttgttgc 1140

cagcatgtag tggtgggcac tcaaaggaga ctgccgcgga gaacgcggag gaaggcgggg 1200

atgacgtcaa gtcatcatgc cccttatgac ctgggctaca cacgtactac aatgggacgg 1260

acagagagca gcgagagggc gaccttaagc gaacctcaaa aaaccgtttc tcagttcgga 1320

ttgcaggctg caactcgcct gcatgaagtc ggaatcgcta gtaatcgcag gtcagcatac 1380

tgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccacgg aagtcgttca 1440

cacccgaagc cggcgcagcc gtctaaggtg gggaaggtga ctggggtgaa gtcgtaacaa 1500

ggtagccgta tcggaaggtg cggctggatc acctcctttc t 1541

<210> 1716
<211> 1265
<212> DNA
<213> Selenomonas sp. oral taxon 149

<400> 1716
ggctcaccaa ggcgacgatc agtagccggt ctgagaggat gaacggccac attgggactg 60

agacacggcc cagactccta cgggaggcag cagtggggaa tcttccgcaa tgggcgcaag 120

cctgacggag caacgccgcg tgagtgaaga aggtcttcgg atcgtaaagc tctgttgacg 180

gggacgaacg tgcggagtgc gaatagcgct ttgtaatgac ggtacctgtc gaggaagcca 240

cggctaacta cgtgccagca gccgcggtaa tacgtaggtg gcgagcgttg tccggaatca 300

ttgggcgtaa agggagcgca ggcgggccgg taagtcttac ttaaaagtgc ggggctcaac 360

cccgtgatgg gagagaaact atcggtcttg agtacaggag aggaaagcgg aattcccagt 420

gtagcggtga aatgcgtaga tattgggaag aacaccagtg gcgaaggcgg ctttctggac 480

tgcaactgac gctgaggctc gaaagccagg ggagcgaacg ggattagata ccccggtagt 540

cctggccgta aacgatggat actaggtgtg ggaggtatcg acccctaccg tgccggagtt 600

aacgcaataa gtatcccgcc tggggagtac ggccgcaagg ctgaaactca aaggaattga 660

cggggacccg cacaagcggt ggagtatgtg gtttaattcg aagcaacgcg aagaacctta 720

ccaggccttg acattgactg aaagagctag agatagcacc ctctcttcgg agacaggaaa 780

acaggtggtg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 840

gagcgcaacc cctgttcttt gttgccatca ggtaaagctg ggcactcaaa ggagactgcc 900

gcggagaacg cggaggaagg cggggatgac gtcaagtcat catgcccctt atggcctggg 960

ctacacacgt actacaatgg aacggacaga gagcagcgaa cccgcgaggg caagcgaacc 1020

tcaaaaaccg tttcccagtt cggattgcag gctgcaaccc gcctgcatga agtcggaatc 1080

gctagtaatc gcaggtcagc atactgcggt gaatacgttc ccgggtcttg tacacaccgc 1140

ccgtcacacc acggaagtca ttcacacccg aagccggcgc agccgtctaa ggtggggaag 1200

gtgactgggg tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc 1260

tttct 1265

<210> 1717
<211> 1548
<212> DNA
<213> Selenomonas sputigena

<400> 1717
ggagagtttg atcctggctc aggacgaacg ctggcggcgt gcttaacaca tgcaagtcga 60

acgggaacct ttatttcggt aaaggtgaga gtggcaaacg ggtgagtaac acgtaggcaa 120

cctgccgaca ggatggggac aacattccga ggaatgctaa taccgaatgg agtccgggga 180

tggcatcatc ctcggataag atggcctctg aatatgctat cgcctgtcga tgggcctgcg 240

tctgattagc cagttggcgg ggtaacggcc caccaaagcg acgatcagta gccggtctga 300

gaggatgaac ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatctt ccacaatggg cgaaagcctg atggagcaac gccgcgtgag tgaagaaggt 420

cttcggatcg taaagctctg ttgcacggga cgaaaaccga gcttgagaat attgagtttg 480

ggtgacggta ccgagcgagg aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcga gcgttgtccg gaattattgg gcgtaaaggg agcgcaggcg gacatataag 600

tccatcttaa aagtgcgggg ctcaaccccg tgaggggatg gaaactgtat gccttgagtg 660

caggagagga aagcggaatt cccagtgtag cggtgaaatg cgtagatatt gggaggaaca 720

ccagtggcga aggcggcttt ctggactgta actgacgctg aggctcgaaa gccaggggag 780

cgaacgggat tagatacccc ggtagtcctg gccgtaaacg atgaatgcta ggtgtaggag 840

gtatcgaccc ctcctgtgcc ggagttaacg caataagcat tccgcctggg gagtacggtc 900

gcaagactga aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt 960

aattcgacgc aacgcgaaga accttaccag ggcttgacat tgagtgaaag agctagagat 1020

agcttcctcc cttcggggac acgaaaacag gtggtgcatg gctgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccctg tcctttgttg ccagcgcgta 1140

atggcgggaa ctcaaaggag actgccgcgg agaacgcgga ggaaggcggg gatgacgtca 1200

agtcatcatg ccccttatgt cctgggctac acacgtacta caatgggatg gacagaggga 1260

agcgaaggcg cgagccggag cggaccccac aaaccatccc ccagttcgga ttgcaggctg 1320

caacccgcct gcatgaagtc ggaatcgcta gtaatcgcag gtcagcatac tgcggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacaccacgg aagtcattca cgcccaaagc 1440

cggtgggcca accgcaagga ggcagccgtc taaggcgggg gcgatgactg gggtgaagtc 1500

gtaacaaggt agccgtatcg gaaggtgcgg ctggatcacc tcctttct 1548

<210> 1718
<211> 1490
<212> DNA
<213> Serratia fonticola

<400> 1718
tcagattgaa cgctggcggc aggcctaaca catgcaagtc gagcggtagc acaaggagct 60

tgctcctggg tgacgagcgg cggacgggtg agtaatgtct gggaaactgc ccgatggagg 120

gggataacta ctggaaacgg tagctaatac cgcataacgt cttcggacca aagtggggga 180

ccttcgggcc tcacaccatc ggatgtgccc agatgggatt agctagtagg tgaggtaatg 240

gctcacctag gcgacgatcc ctagctggtc tgagaggatg accagccaca ctggaactga 300

gacacggtcc agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc 360

ctgatgcagc catgccgcgt gtgtgaagaa ggccttcggg ttgtaaagca ctttcagcga 420

ggaggaaggg ttctgtgtta atagcaccgt tcattgacgt tactcgcaga agaagcaccg 480

gctaactccg tgccagcagc cgcggtaata cggagggtgc aagcgttaat cggaattact 540

gggcgtaaag cgcacgcagg cggtttgtta agtcagatgt gaaatccccg agcttaactt 600

gggaactgca tttgaaactg gcaagctaga gtcttgtaga ggggggtaga attccaggtg 660

tagcggtgaa atgcgtagag atctggagga ataccggtgg cgaaggcggc cccctggaca 720

aagactgacg ctcaggtgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc 780

cacgctgtaa acgatgtcga cttggaggtt gtgcccttga ggcgtggctt ccggagctaa 840

cgcgttaagt cgaccgcctg gggagtacgg ccgcaaggtt aaaactcaaa tgaattgacg 900

ggggcccgca caagcggtgg agcatgtggt ttaattcgat gcaacgcgaa gaaccttacc 960

tactcttgac atccacagaa ctttccagag atggattggt gccttcggga actgtgagac 1020

aggtgctgca tggctgtcgt cagctcgtgt tgtgaaatgt tgggttaagt cccgcaacga 1080

gcgcaaccct tatcctttgt tgccagcacg taatggtggg aactcaaagg agactgccgg 1140

tgataaaccg gaggaaggtg gggatgacgt caagtcatca tggcccttac gagtagggct 1200

acacacgtgc tacaatggca tatacaaaga gaagcgaact cgcgagagca agcggacctc 1260

ataaagtatg tcgtagtccg gatcggagtc tgcaactcga ctccgtgaag tcggaatcgc 1320

tagtaatcgt agatcagaat gctacggtga atacgttccc gggccttgta cacaccgccc 1380

gtcacaccat gggagtgggt tgcaaaagaa gttagtagct taaccttcgg gagggcgctt 1440

accactttgt gattcatgac tggggtgaag tcctaacaag gtaaccgtag 1490

<210> 1719
<211> 1428
<212> DNA

<213> Serratia liquefaciens

<220>
<221> modified_base
<222> (1070)..(1070)
<223> a, c, t, g, unknown or other

<400> 1719
acacaagaag cttgctctct gggtgacgag cggcggacgg gtgagtaatg tctgggaaac 60

tgcctgatgg aggggataa ctactggaaa cggtagctaa taccgcataa cgtctacgga 120

ccaaagtggg ggaccttcgg gcctcatgcc atcagatgtg cccagatggg attagctagt 180

aggtggggta atggctcacc taggcgacga tccctagctg gtctgagagg atgaccagcc 240

acactggaac tgagacacgg tccagactcc tacgggaggc agcagtgggg aatattgcac 300

aatgggcgca agcctgatgc agccatgccg cgtgtgtgaa gaaggccttc gggttgtaaa 360

gcactttcag cgaggaggaa gggttcagtg ttaatagcac tgttcattga cgttactcgc 420

agaagaagca ccggctaact ccgtgccagc agccgcggta atacggaggg tgcaagcgtt 480

aatcggaatt actgggcgta aagcgcacgc aggcggtttg ttaagtcaga tgtgaaatcc 540

ccgcgcttaa cgtgggaact gcatttgaaa ctggcaagct agagtcttgt agaggggggt 600

agaattccag gtgtagcggt gaaatgcgta gagatctgga ggaataccgg tggcgaaggc 660

ggcccccctgg acaaagactg acgctcaggt gcgaaagcgt ggggagcaaa caggattaga 720

taccctggta gtccacgctg taaacgatgt cgacttggag gttgtgccct tgaggcgtgg 780

cttccggagc taacgcgtta agtcgaccgc ctggggagta cggccgcaag gttaaaactc 840

aaatgaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc 900

gaagaacctt acctactctt gacatccaga gaattcgcta gagatagctt agtgccttcg 960

ggaactctga gacaggtgct gcatggctgt cgtcagctcg tgttgtgaaa tgttgggtta 1020

agtcccgcaa cgagcgcaac ccttatcctt tgttgccagc gcgtaatggn gggaactcaa 1080

aggagactgc cggtgataaa ccggaggaag gtggggatga cgtcaagtca tcatggccct 1140

tacgagtagg gctacacacg tgctacaatg gcgtatacaa agagaagcga actcgcgaga 1200

gcaagcggac ctcataaagt acgtcgtagt ccggatcgga gtctgcaact cgactccgtg 1260

aagtcggaat cgctagtaat cgtagatcag aatgctacgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacac catgggagtg ggttgcaaaa gaagtaggta gcttaacctt 1380

cgggagggcg cttaccactt tgtgattcat gactggggtg aagtcgta 1428

<210> 1720
<211> 939
<212> DNA
<213> Serratia marcescens

<220>
<221> modified_base
<222> (35)..(35)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (75)..(76)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (81)..(82)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (120)..(120)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (122)..(122)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (129)..(129)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (131)..(132)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (141)..(141)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (165)..(165)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (294)..(294)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (484)..(484)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (492)..(492)
<223> a, c, t, g, unknown or other

<400> 1720
cagccgcggt aatacggagg gtgcaagcgt taatnggaaa ttactgggcg taaagcgcac 60

gcaggcggtc tgatnnaagt nnagatgtga aatccccggg cttaacctgg gaatggcatn 120

tnagactgnt nngctagagt nttgtagagg ggggtagaat tccangtgta gcggtgaaat 180

gcgtagagat gtggaggaat accggtggcg aaggcggccc cctggacaaa gactgacgct 240

caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgcngtaaac 300

gatgtcgatt tgaaggttgt tcccttgagg agtggctttc ggagctaacg cgttaaatcg 360

accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg ggcccgcaca 420

agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta ctcttgacat 480

ccanagaact tngcagagat gcttaggtgc cttcgggaac tgtgagacag gtgctgcatg 540

gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc gcaaccctta 600

tcctttgttg ccagcgattc ggccgggaac tcaaaggaga ctgccagtga taaaccggag 660

gaaggtgggg atgacgtcaa gtcatcatgg cccttacgac tagggctaca cacgtgctac 720

aatggcgtat acaaagagaa gcgacctcgc gagagcaagc ggacctcata aagtacgtcg 780

tagtccggat tggagtctgc aactcgactc catgaagtcg gaatcgctag taatcgtaga 840

tcagaatgcc acggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatggg 900

agtgggttgc aaaagaagta ggtagcttaa ccttcggga 939

<210> 1721
<211> 1545
<212> DNA
<213> Serratia odorifera

<400> 1721
tttaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgagcg gtagcacagg agagcttgct ctctgggtga cgagcggcgg acgggtgagt 120

aatgtctggg aaactgcccg atggaggggg ataaccactg gaaacggtgg ctaataccgc 180

ataacgtcta cggaccaaag agggggacct tcgggcctct tgccatcgga tgtgcccaga 240

tgggattagc tagtaggtgg ggtaacggct cacctaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt tcagcgagga ggaaggccaa tagcttaata cgctgttgga 480

ttgacgttac tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tttgttaagt 600

cagatgtgaa atccccgcgc ttaacgtggg aactgcattt gaaactggca agctagagtc 660

tcgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacgaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgattt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaaatcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc cagagaactt tccagagatg 1020

gaagggtgcc ttcgggaact ctgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcggttcg 1140

gccgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgagt agggctacac acgtgctaca atggcgtata caaagagaag 1260

cgaacttgcg agagtaagcg gacctcataa agtacgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtagat cagaatgcta cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1722
<211> 1546
<212> DNA
<213> Serratia proteamaculans

<400> 1722
tttaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgagcg gtagcacaag agagcttgct ctctgggtga cgagcggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtag ctaataccgc 180

ataacgtctt cggaccaaag tgggggacct tcgggcctca cgccatcaga tgtgcccaga 240

tgggattagc tagtaggtgg ggtaatggct cacctaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt tcagcgagga ggaagggtag tgtgttaata gcacattgca 480

ttgacgttac tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tttgttaagt 600

cagatgtgaa atccccgcgc ttaacgtggg aactgcattt gaaactggca agctagagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc cagagaattc gctagagata 1020

gcttagtgcc ttcgggaact ctgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcacgtaa 1140

tggtgggaac tcaaaggaga ctgccggtga taaaccggag gaaggtgggg atgacgtcaa 1200

gtcatcatgg cccttacgag tagggctaca cacgtgctac aatggcgtat acaaagagaa 1260

gcgaactcgc gagagccagc ggacctcata aagtacgtcg tagtccggat cggagtctgc 1320

aactcgactc cgtgaagtcg gaatcgctag taatcgtaga tcagaatgct acggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta 1440

ggtagcttaa ccttcgggag ggcgcttacc actttgtgat tcatgactgg ggtgaagtcg 1500

taacaaggta accgtagggg aacctgcggt tggatcacct ccttac 1546

<210> 1723
<211> 1546
<212> DNA
<213> Shewanella putrefaciens

<400> 1723
tttaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgagcg gcagcacaag ggagtttact tctgaggtgg cgagcggcgg acgggtgagt 120

aatgcctagg gatctgccca gtcgaggggg ataacagttg gaaacgactg ctaataccgc 180

atacgcccta cgggggaaag gaggggacct tcgggccttc cgcgattgga tgaacctagg 240

tgggattagc tagttggtga ggtaatggct caccaaggcg acgatcccta gctgttctga 300

gaggatgatc agccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg ggaaaccctg atgcagccat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt tcagtaggga ggaaagggtg tagcttaata cgctatatct 480

gtgacgttac ctacagaaga aggaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtccgag cgttaatcgg aattactggg cgtaaagcgt gcgcaggcgg tttgttaagc 600

gagatgtgaa agccctgggc tcaacctagg aatagcattt cgaactggcg aactagagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc atgcacgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactc ggagtttggt 840

gtcttgaaca ctgggctctc aagctaacgc attaagtaga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc cacggaattg gctagagata 1020

gcttagtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccctat ccttatttgc cagcacgtaa 1140

tggtgggaac tctagggaga ctgccggtga taaaccggag gaaggtgggg acgacgtcaa 1200

gtcatcatgg cccttacgag tagggctaca cacgtgctac aatggcgagt acagagggtt 1260

gcaaagccgc gaggtggagc taatctcaca aagctcgtcg tagtccggat tggagtctgc 1320

aactcgactc catgaagtcg gaatcgctag taatcgtgga tcagaatgcc acggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggctgc aaaagaagtg 1440

ggtagcttaa ccttcggggg ggcgctcacc actttgtggt tcatgactgg ggtgaagtcg 1500

taacaaggta gccctagggg aacctggggc tggatcacct ccttac 1546

<210> 1724
<211> 999
<212> DNA
<213> Shigella boydii

<220>
<221> modified_base
<222> (15)..(17)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (20)..(20)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (41)..(42)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (46)..(47)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (54)..(54)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (72)..(72)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (77)..(78)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (203)..(203)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (322)..(322)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (973)..(973)
<223> a, c, t, g, unknown or other

<400> 1724
tactttcagc ggggnnnaan ggagtaaagt naataccttt nntcanngac gttnccgcag 60

aagaagcacc gnctaanncc gtgccagcag ccgcggtaat acggagggtg caagcgttaa 120

tcggaattac tgggcgtaaa gcgcacgcag gcggtttgtt aagtcagatg tgaaatcccc 180

gggctcaacc tgggaactgc atntgatact ggcaagcttg agtctcgtag agggggggtag 240

aattccaggt gtagcggtga aatgcgtaga gatctggagg aataccggtg gcgaaggcgg 300

ccccctggac gaagactgac gntcaggtgc gaaagcgtgg ggagcaaaca ggattagata 360

ccctggtagt ccacgccgta aacgatgtcg acttggaggt tgtgcccttg aggcgtggct 420

tccggagcta acgcgttaag tcgaccgcct ggggagtacg gccgcaaggt taaaactcaa 480

atgaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga tgcaacgcga 540

agaaccttac ctggtcttga catccacgga agttttcaga gatgagaatg tgccttcggg 600

aaccgtgaga caggtgctgc atggctgtcg tcagctcgtg ttgtgaaatg ttgggttaag 660

tcccgcaacg agcgcaaccc ttatcctttg ttgccagcgg tccggccggg aactcaaagg 720

agactgccag tgataaactg gaggaaggtg gggatgacgt caagtcatca tggcccttac 780

gaccagggct acacacgtgc tacaatggcg catacaaaga gaagcgacct cgcgagagca 840

agcggacctc ataaagtgcg tcgtagtccg gattggagtc tgcaactcga ctccatgaag 900

tcggaatcgc tagtaatcgt ggatcagaat gccacggtga atacgttccc gggccttgta 960

cacaccgccc gtnacaccat gggagtgggt tgcaaaaga 999

<210> 1725
<211> 805
<212> DNA
<213> Shigella dysenteriae

<220>
<221> modified_base
<222> (21)..(22)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (272)..(272)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (436)..(436)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (523)..(523)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (536)..(536)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (561)..(561)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (603)..(603)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (621)..(621)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (642)..(642)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (669)..(669)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (684)..(684)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (687)..(687)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (699)..(699)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (713)..(713)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (730)..(730)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (754)..(754)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (770)..(770)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (778)..(778)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (791)..(792)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (797)..(797)
<223> a, c, t, g, unknown or other

<400> 1725
tcgaacggta acaggaagca nnttgctgct ttgctgacga gtggcggacg ggtgagtaat 60

gtctgggaaa ctgcctgatg gaggggggata actactggaa acggtagcta ataccgcata 120

acgtcgcaag accaaagagg gggaccttcg ggcctcttgc catcggatgt gcccagatgg 180

gattagctag taggtggggt aaaggctcac ctaggcgacg atccctagct ggtctgagag 240

gatgaccagc cacactggaa ctgagacacg gnccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtatga agaaggcctt 360

cgggttgtaa agtactttca gcggggagga agggagtaaa gttaatacct ttgctcattg 420

acgttacccg cagaanaagc accggctaac tccgtgccag cagccgcggt aatacggagg 480

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg cangcggttt gttaantcag 540

atgtgaaatc cccgggctca ncctgggaac tgcatctgat actggcaagc ttgagtctcg 600

tanaggggg tagaattcca ngtgtagcgg tgaaatgcgt anagatctgg aggaataccg 660

gtggcgaang cggccccctg gacnaanact gacgctcang tgcgaaagcg tgnggagcaa 720

acaggattan ataccctggt agtccacgcc gtanacgatg tcgacttggn ggttgtgncc 780

ttgaggcgtg nnttccngag ctaac 805

<210> 1726
<211> 1545
<212> DNA
<213> Shigella flexneri

<400> 1726
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgaacg gtaacaggaa gcagcttgct gtttcgctga cgagtggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtag ctaataccgc 180

ataacgtcgc aagaccaaag aggggacct tcgggcctct tgccatcgga tgtgcccaga 240

tgggattagc tagtaggtgg ggtaacggct cacctaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagcgggga ggaagggagt aaagttaata cctttactca 480

ttgacgttac ccgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tttgttaagt 600

cagatgtgaa atccccgggc tcaacctggg aactgcatct gatactggca agcttgagtc 660

tcgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacgaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgactt ggaggttgtg 840

cccttgaggt gtggcttccg gagctaacgc gttaagtcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctgg tcttgacatc cacggaagtt ttcagagatg 1020

agaatgtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcggtccg 1140

gccgggaact caaaggagac tgccagtgat aaactggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgacc agggctacac acgtgctaca atggcgcata caaagagaag 1260

cgacctcgcg agagcaagcg gacctcataa agtgcgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttac 1545

<210> 1727
<211> 1368
<212> DNA
<213> Shigella sonnei

<400> 1727
gcttcgctga cgagtggcgg acgggtgagt aatgtctggg aaactgcctg atggaggggg 60

ataactactg gaaacggtag ctaataccgc ataacgtcgc aagaccaaag aggggacct 120

tcgggcctct tgccatcgga tgtgcccaga tgggattagc ttgttggtgg ggtaacggct 180

caccaaggcg acgatcccta gctggtctga gaggatgacc agccacactg gaactgagac 240

acggtccaga ctcctacggg aggcagcagt ggggaatatt gcacaatggg cgcaagcctg 300

atgcagccat gccgcgtgta tgaagaaggc cttcgggttg taaagtactt tcagcgggga 360

ggaagggagt aaagttaata cctttgctca ttgacgttac ccgcagaaga agcaccggct 420

aactccgtgc cagcagccgc ggtaatacgg agggtgcaag cgttaatcgg aattactggg 480

cgtaaagcgc acgcaggcgg tttgttaagt cagatgtgaa atccccgggc tcaacctggg 540

aactgcatct gatactggca agcttgagtc tcgtagaggg gggtagaatt ccaggtgtag 600

cggtgaaatg cgtagagatc tggaggaata ccggtggcga aggcggcccc ctggacgaag 660

actgacgctc aggtgcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac 720

gccgtaaacg atgtcgactt ggaggttgtg cccttgacgc gtggcttccg gagctaacgc 780

gttaagtcga ccgcctgggg agtacggccg caaggttaaa actcaaatga attgacgggg 840

gcccgcacaa gcggtggagc atgtggttta attcgatgca acgcgaagaa ccttacctgg 900

tcttgacatc cacggaagtt tcagtctcgt agaatgtgcc ttcgggaacg gtgagacagt 960

ggctgcatgg ctgtcgtcag ctcgtgttgt gaaatgttgg gttaagtccc gcaacgagcg 1020

caacccttat cctttgttgc cagcggtccg gccgggaact caaaggagac tgccagtgat 1080

aaactggagg aaggtgggga tgacgtcaag tcatcatggc ccttacgacc agggctacac 1140

acgtgctaca atggcgcata caaagagaag cgacctcgcg agagcaagcg gacctcataa 1200

agtgcgtcgt agtccggatt ggagtctgca actcgactcc atgaagtcgg aatcgctagt 1260

aatcgtggat cagaatgcca cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1320

caccatggga gtgggttgca aaagaagtag gtagcttaac cttcggga 1368

<210> 1728
<211> 1539
<212> DNA
<213> Shuttleworthia satelles

<400> 1728
tttaacatga gagttcgatc ctggctcagg atgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg agaaatgata ttacgatctc ttcggagtga cggttttatt tcgagtggcg 120

gacgggtgag taacgcgtga gcaacctgcc ctataccggg ggataccagt tggaaacgac 180

tgttaatacc gcataagcgc acgataagac atcttgttgt gtgaaaaact ccggtggtat 240

aggatgggct cgcgtatgat tagccagttg gcggggtaaa ggcccaccaa agcgacgatc 300

attagccgac ctgagagggc gaccggccac attgggactg agacacggcc caaactccta 360

cgggaggcag cagtggggaa tattgcacaa tgggcgaaag cctgatgcag cgacgccgcg 420

tgagtgagga agtatttcgg tatgtaaagc tctatcagca gggaagaaag aaatgacggt 480

acctgagtaa gaagctccgg ctaaatacgt gccagcagcc gcggtaatac gtatggagca 540

agcgttatcc ggatttactg ggtgtaaagg gagcgtaggc ggcagagcaa gtctgatgtg 600

aaagcccggg gctcaacccc ggtagtgcat tggaaactgt tcggctcgag tgtcggaggg 660

gtaagcggaa ttcctggtgt agcggtgaaa tgcgtagata tcaggaagaa caccggaggc 720

gaaggcggct tactggacga ttactgacgc tgaggctcga aagcgtgggg agcgaacagg 780

attagatacc ctggtagtcc acgctgtaaa cgatgaatac taggtgtcgg tacccgaagg 840

gtatcggtgc cgtcgcaaac gcattaagta ttccacctgg ggagtacgtt cgcaagaatg 900

aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt taattcgaag 960

caacgcgaag aaccttacca agtcttgaca tcccgatgac aagcgatgta atgtcgtctc 1020

tcttcggagc atcggagaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt gttcttagta gccagcaggt gaagctgggc 1140

actctaagga gactgccggg gtgaacccgg aggaaggtgg ggatgacgtc aaatcatcat 1200

gccccttatg acttgggcta cacacgtgct acaatggcgt aaacaaaggg aggcgaagcc 1260

gtgaggccaa gcgaatccca aaaataacgt ctcagttcgg attgtagtct gcaactcgac 1320

tacatgaagc tggaatcgct agtaatcgca gatcagcatg ctgcggtgaa tacgttcccg 1380

ggtcttgtac acaccgcccg tcacaccatg ggagttggta atgcccgaag tcagtgaccc 1440

aaccgcaagg agggagctgc cgaaggcagg actgataact ggggtgaagt cgtaacaagg 1500

tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1539

<210> 1729
<211> 1451
<212> DNA
<213> Shuttleworthia sp. MSX8B

<400> 1729
gaacgctggc ggcgtgctta acacatgcaa gtcgaacgag aaatgatatt acgatctctt 60

cggagtgacg attttatttc gagtggcgga cgggtgagta acgcgtgagc aacctgccct 120

gtaccggggg ataccagttg gaaacgactg ttaataccgc ataagcgcac gataagacat 180

cttgttgtgt gaaaaactcc ggtggtatag gatgggctcg cgtatgatta gccagttggc 240

ggggtaaagg cccaccaaag cgacgatcat tagccgacct gagagggcga ccggccacat 300

tgggactgag acacggccca aactcctacg ggaggcagca gtggggaata ttgcacaatg 360

ggcgaaagcc tgatgcagcg acgccgcgtg agtgaggaag tatttcggta tgtaaagctc 420

tatcagcagg gaagaaagaa atgacggtac ctgagtaaga agctccggct aaatacgtgc 480

cagcagccgc ggtaatacgt atggagcaag cgttatccgg atttactggg tgtaaaggga 540

gcgtaggcgg cagagcaagt ctgatgtgaa agcccggggc tcaaccccgg tagtgcattg 600

gaaactgttc agctggagtg tcggaggggt aagcggaatt cctggtgtag cggtgaaatg 660

cgtagatatc aggaagaaca ccggaggcga aggcggctta ctggacgatt actgacgctg 720

aggctcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac gctgtaaacg 780

atgaatacta ggtgtcggta cccgaagggt atcggtgccg tcgcaaacgc attaagtatt 840

ccacctgggg agtacgttcg caagaatgaa actcaaagga attgacgggg acccgcacaa 900

gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttaccaag tcttgacatc 960

ccgatgacaa gcgatgtaat gtcgtctctc ttcggagcat cggagacagg tggtgcatgg 1020

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttgt 1080

tcttagtagc cagcaggtga cgctgggcac tctaaggaga ctgccggggt gaacccggag 1140

gaaggtgggg atgacgtcaa atcatcatgc cccttatgac ttgggctaca cacgtgctac 1200

aatggcgtaa acaaagggag gcgaagccgt gaggccaagc gaatcccaaa aataacgtct 1260

cagttcggat tgtagtctgc aactcgacta catgaagctg gaatcgctag taatcgcaga 1320

tcagcatgct gcggtgaata cgttcccggg tcttgtacac accgcccgtc acaccatggg 1380

agttggtaat gcccgaagtc agtgacccaa ccgcaaggag ggagctgccg aaggcaggac 1440

tgataactgg g 1451

<210> 1730
<211> 1241
<212> DNA
<213> Shuttleworthia sp. oral taxon G69

<400> 1730
gatgaacgct ggcggcgtgc ttaacacaag caagtcgaac gagaaatgat attacgatct 60

cttcggagtg acggttttat ttcgagtggc ggacgggtga gtaacgcgtg agcaacctgc 120

cctgtaccgg gggataccag ttggaaacga ctgttaatac cgcataagcg cacgataaga 180

catcttgttg tgtgaaaaac tccggtggta taggatgggc tcgcgtatga ttagccagtt 240

ggcggggtaa aggcccacca aagcgacgat cattagccga cctgagaggg cgaccggcca 300

cattgggact gagacacggc ccaaactcct acgggaggca gcagtgggga atattgcaca 360

atgggcgaaa gcctgatgca gcgacgccgc gtgagtgagg aagtatttcg gtatgtaaag 420

ctctatcagc agggaagaaa gaaatgacgg tacctgagta agaagctccg gctaaatacg 480

tgccagcagc cgcggtaata cgtatggagc aagcgttatc cggatttact gggtgtaaag 540

ggagcgtagg cggcagagca agtctgatgt gaaagcccgg ggctcaaccc cggtagtgca 600

ttggaaactg ttcagctcga gtgtcggagg ggtaagcgga attcctggtg tagcggtgaa 660

atgcgtagat atcaggaaga acaccggagg cgaaggcggc ttactggacg attactgacg 720

ctgaggctcg aaagcgtggg gagcgaacag gattagatac cctggtagtc cacgctgtaa 780

acgatgaata ctaggtgtcg gtacccgaag ggtatcggtg ccgtcgcaaa cgcattaagt 840

attccacctg gggagtacgt tcgcaagaat gaaactcaaa ggaattgacg gggacccgca 900

caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc cagtcttgac 960

atcccgatga caagcgatgt aatgtcgtct ctcttcggag catcggagac agggtggtgc 1020

atggctagtc gtcagcctcg tgtcgtgaga agttggggtt aagttcccgc gacgagcgcc 1080

acccctggtt cttgttagcc agcaggtgac gctgggcacc ctaggaaact ggcgaggtga 1140

cccgggagaa gggtgggaat acgtcaatca tcatgcccct tattacctgg gctacacgtt 1200

cctcaagggc ttacccaggg gaggcaagcc cgtaaggcac c 1241

<210> 1731
<211> 1547
<212> DNA
<213> Simonsiella muelleri

<400> 1731
ttgaacataa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcggacg gcagcggggt agtgcttgca ttactgccgg cgagtggcga acgggtgagt 120

ataatattgg aacgtaccga gtaatggggg ataactatcc gaaaggatgg ctaataccgc 180

atacgtcctg agggagaaag cgggggacag gcaactgcct cgcgttattt gagcggccaa 240

tatcggatta gctagttggt ggggtaaagg cttaccaagg cgacgatccg tagcgggtct 300

gagaggatga tccgccacac tgggactgag acacggccca gactcctacg ggaggcagca 360

gtggggaatt ttggacaatg gggggaaccc tgatccagcc atgtcgcgtg tatgaagaag 420

gccttagggt tgtaaagtac ttttgttagg gaagaaaagg catttgctaa tatcagatgc 480

tgatgacggt acctaaagaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac 540

gtagggtgcg agcgttaatc ggaattactg ggcgtaaagc gagcgcagac ggttacttaa 600

gcaagatgtg aaatccccga gctcaacttg ggaactgcgt tttgaactgg gtagctagag 660

tgtgtcagag gggggtagaa ttccacgtgt agcagtgaaa tgcgtagaga tgtggaggaa 720

taccgatggc gaaggcagcc ccctgggata gcactgacgt tcatgctcga aagcgtgggt 780

agcaaacagg attagatacc ctggtagtcc acgccctaaa cgatgtcaat tagctgttgg 840

ggcactagat gccttagtag cgaagctaac gcgtgaaatt gaccgcctgg ggagtacggt 900

cgcaagatta aaactcaaag gaattgacgg ggacccgcac aagcggtgga tgatgtggat 960

taattcgatg caacgcgaag aaccttacct ggtcttgaca tgtacggaat ctctcagaga 1020

cgggagagtg ccttcgggag ccgtaacaca ggtgctgcat ggctgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt gtcattagtt gccatcattt 1140

ggttgggcac tctaatgaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1200

gtcctcatgg cccttatgac cagggcttca cacgtcatac aatggtcggt acagagggta 1260

gccaagccgc gaggtggagc caatcccaaa aaaccgatcg tagtccggat tgcactctgc 1320

aactcgagtg catgaagtcg gaatcgctag taatcgcagg tcagcatact gcggtgaata 1380

cgttcccggg tcttgtacac accgcccgtc acaccatggg agtgggggat accagaagta 1440

ggtagaataa ccgcgaggag ttcgcttacc acggtatgct tcatgactgg ggtgaagtcg 1500

taacaaggta gccgtagggg aacctgcggc tggatcacct cctttct 1547

<210> 1732
<211> 1474
<212> DNA
<213> Slackia equolifaciens

<400> 1732
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

gagtaaggcg ccttcgggcg cgtatagagt ggcgaacggg tgagtaacac gtgaccaacc 120

tgcccccgc cccgggacaa ccgcccgaaa gggcggctaa taccgggcga accggagagg 180

acgcatgccc cctccggcaa agctcaggcg gcgggggatg gggtcgcggc ccatcaggta 240

gacggcgggg tgacggccca ccgtgcctac aacgggtagc cgggctgaga ggccgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaattttgc 360

gcaatggggg caaccctgac gcagcaacgc cgcgtgcggg acgaaggcct tcgggtcgta 420

aaccgctttc agcagggaag aaaccatgac ggtacctgca gaagaagccc cggctaacta 480

cgtgccagca gccgcggtaa tacgtagggg gcgagcgtta tccggattca ttgggcgtaa 540

agcgcgcgca ggcggcctct caagcggcac cgtcgaagcc gggggctcaa cccccggaag 600

cgggccgaac tgggggctc gaggcaggca gaggaaggcg gaattcccgg tgtagcggtg 660

gaatgcgcag atatcgggaa gaacaccgac ggcgaaggca gccttctggg cctgtcctga 720

cgctcaggcg cgaaagccgg gggagcgaac aggattagat accctggtag tcccggccgt 780

aaacgatggg cgctaggtgt gggggcgaca tgcctccgtg ccgaagccaa cgcattaagc 840

gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca 900

caagcggcgg agcatgtggc ttaattcgaa gcaacgcgaa gaaccttacc agggcttgac 960

atcaccgtga gccggcggag acgccggggc cgagaggagc ggtgacaggt ggtgcatggc 1020

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctgcc 1080

gtatgttgcc agcatgtaac gatggggact catacgggac cgccggcgtc aagccggagg 1140

aaggcgggga cgacgtcaag tcatcatgcc ccttacgccc tgggctgcac acgtgctaca 1200

atggccggta cagagggaag ccaccccgcg agggggagcc gatcccgaaa agccggcccc 1260

agttcggatc ggaggctgca acccgcctcc gtgaagccgg agtcgctagt aatcgcggat 1320

cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacccga 1380

gtcgtctgca cccgaagccg ccggccgaac ccgagagggg cggaggcgtc gaaggtgtgg 1440

agggtgaggg gggtgaagtc gtaacaaggt aacc 1474

<210> 1733
<211> 1509
<212> DNA
<213> Slackia exigua

<400> 1733
ggagagtttg atcctggctc aggatgaacg ctggcggcgc gcctaacaca tgcaagtcga 60

acggttaagg ccccctttag ggggcgcata gagtggcgaa cgggtgagta acacgtgacc 120

aacccgcccc cccaccggga caacctcggg aaaccgaggc taataccgga tacgccgggg 180

cccccgcatg ggggccccgg gaaagccttg gcgggagggg acggggtcgc ggcccatcag 240

gtagacggcg gggcgaaggc ccgccgtgcc gacgacgggt agccgggctg agaggccgat 300

cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatat 360

tgcgcaatgg ggggaaccct gacgcagcga cgccgcgtgc gggaaggagg ccttcgggtc 420

gtaaaccgct ttcagcaggg aagaagcctg acggtacctg cagaagaagc cccggctaac 480

tacgtgccag cagccgcggt aatacgtagg gggcgagcgt tatccggatt cattgggcgt 540

aaagcgcgcg caggcggccc gccaagcggc ctcgtcgaag ccgggggctc aacccccgga 600

agcgacccga actggcgggc tcgagtgggg caggggagga tggaattccc ggtgtagcgg 660

tgaaatgcgc agatatcggg aggaacaccg acggcgaagg cagccctctg ggccttcact 720

gacgctgagg cgcgaaagct gggggagcga acaggattag ataccctggt agtcccagcc 780

gtaaacgatg ggcgctaggt gcgggggggac acgaccctcc gtgccgcagc caacgcatta 840

agcgccccgc ctggggagta cggccgcaag gctaaaactc aaaggaattg acgggggccc 900

gcacaagcag cggagcatgt ggcttaattc gaagcaacgc gaagaacctt accagggctt 960

gacatgcggg tgaagcggcg gagacgccgt ggccggaagg agcccgcgca ggtggtgcat 1020

ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag cgcaaccccc 1080

gccgcatgtt gccagcattc agttgggcac tcatgcggga ccgccggcgc caagccggag 1140

gaaggcgggg acgacgtcaa gtcatcatgc cccccatgcc ctgggccgca cacgtgctac 1200

aatggccggc acagcgggca gcggacccgc gagggcgagc gaatccctta aagccggccc 1260

cagttcggat cggaggctgc aacccgcctc cgtgaagccg gagttgctag taatcgcgga 1320

tcagcacgcc gcggtgaatg cgttcccggg ccttgtacac accgcccgtc acaccacccg 1380

agtcgtctgc acccgaagcc gccggcccaa cccgcaaggg ggggaggcgt cgaaggtgtg 1440

gagggtgagg ggggtgaagt cgtaacaagg tagccgtacc ggaaggtgcg gctggatcac 1500

ctcctttct 1509

<210> 1734
<211> 1476
<212> DNA
<213> Slackia faecicanis

<400> 1734
gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac ggttaaggcg ccttcgggcg 60

cgaatagagt ggcgaacggg tgagtaacgc gtggccaacc tgccccctcc tccgggacaa 120

cctcgggaaa ccgaggctaa taccggatgc tccgggcccc ccgcatgggg ggcccgggaa 180

agcccaggcg ggaggggatg gggccgcgtc ccatcaggta gtaggcgggg tgacggccca 240

cctagctgac gacgggtagc cggactgaga ggtcgatcgg ccacattggg actgagacac 300

ggcccagact cctacgggag gcagcagtgg ggaattttgc gcaatggggg aaaccctgac 360

gcagcaacgc cgcgtgcggg acgaaggcct tcgggtcgta aaccgctttc ggcagggaag 420

aattttgacg gtacctgcag aagaagcccc ggctaactac gtgccagcag ccgcggtaat 480

acgtaggggg cgagcgttat ccggattcat tgggcgtaaa gcgcgcgtag gcgtctcctc 540

aagcggcacc gtcgaagccg ggggctcaac ccccggaagc gggccgaact ggggggatcg 600

agtgcggtag gggcaggcgg aattcccggt gtagcggtga aatgcgcaga tatcgggaag 660

aacaccgacg gcgaaggcag cctgctgggc cggcactgac gctgaggcgc gaaagctggg 720

ggagcgaaca ggattagata ccctggtagt cccagccgta aacgatgggc gctaggtgtg 780

ggggagccat tcctccgtgc cgcagccaac gcattaagcg ccccgcctgg ggagtacggc 840

cgcaaggcta aaactcaaag gaattgacgg gggcccgcac aagcagcgga gcatgtggct 900

taattcgaag caacgcgaag aaccttacca gggcttgaca tcaccgtgag ccggcggaga 960

cgccggggcc gaaaggagcg gtgacaggtg gtgcatggct gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca acccccgccg tatgttgcca tcgggtaatg 1080

ccgggcactc gtacgggacc gccggagcca atccggagga aggcggggac gacgtcaagt 1140

catcatgccc ctcatgccct gggctgcaca cgtgctacaa tggccggtac aacgggccgc 1200

cacgccgcga ggcggagcga atccctcaaa gccggcccca gttcggatcg caggctgcaa 1260

cccgcctgcg tgaagccgga gttgctagta atcgcggatc agcatgccgc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcac accacccgag tcgtctgcac ccgaagccgc 1380

cggccgaacc cgaaaggggc ggaggcgtcg aaggtgtgga gggtgagggg ggtgaagtcg 1440

taacaaggta gccgtaccgg aaggtgcggc tggatc 1476

<210> 1735
<211> 1505
<212> DNA
<213> Slackia heliotrinireducens

<400> 1735
agagtttgat cctggctcag gatgaacgct ggcggcgcgc ctaacacatg caagtcgaac 60

gattaaaccg ccctcgggcg gacatacagt ggcgaacggg tgagtaacac gtgaccaacc 120

cgccccctcc tccgggacaa cctcgggaaa ccgtggctaa taccggatac tccggcagca 180

gcgcatgctg cggccgggaa agcccagacg ggaggggatg gggtcgcggc ccatcaggta 240

gacggcgggg caacggcccg ccgtgccgac gacgggtagc cgggctgaga ggctgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaatcttgc 360

gcaatggggg gaaccctgac gcagcgacgc cgcgtgcggg acgaaggcct tcgggtcgta 420

aaccgctttc agcagggaag aaacatgacg gtacctgcag aagaagctcc ggctaactac 480

gtgccagcag ccgcggtaat acgtagggag cgagcgttat ccggattcat tgggcgtaaa 540

gcgcgcgcag gcggccggcc aagcgggcct cgtcgaagcc gtgggctcaa cccgcggaag 600

cgacccgaac tggccggctc gagtgaggta ggggaggatg gaattcccgg tgtagcggtg 660

gaatgcgcag atatcgggag gaacaccgac ggcgaaggca gtcctctggg ccttcactga 720

cgctgaggcg cgaaagctgg gggagcgaac aggattagat accctggtag tcccagccgt 780

aaacgatggg cgctaggtgt ggggggccgg acccccccgtg ccgcagccaa cgcattaagc 840

gccccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca 900

caagcagcgg agcatgtggc ttaattcgaa gcaacgcgaa gaaccttacc agggcttgac 960

atgcaggtga agcggcggaa acgccgtggc ctgaccggag cctgcacagg tggtgcatgg 1020

ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccctgc 1080

cgcatgttgc cagcatcaag ttggggactc atgcgggacc gccggcgcca agccggagga 1140

aggcggggac gacgtcaagt catcatgccc ctcatgccct gggctgcaca cgtgctacaa 1200

tggccggcac agcgggctgc gacgcagcga tgcggagcga atccctcaaa gccggcccca 1260

gttcggatcg gaggctgcaa cccgcctccg tgaagccgga gttgctagta atcgcggatc 1320

agcacgccgc ggtgaatgcg ttcccgggcc ttgtacacac cgcccgtcac accacccgag 1380

tcgtctgcac ccgaagccgc cggccgaacc cgttaagggg cggaggcgtc gaaggtgtgg 1440

agggtgaggg gggtgaagtc gtaacaaggt agccgtacgg gaacgtgcgg ctggatcacc 1500

tcctt 1505

<210> 1736
<211> 1473
<212> DNA
<213> Slackia isoflavoniconvertens

<400> 1736
agagtttgat cctggctcag gatgaacgct ggcggcgcgc ctaacacatg caagtcgaac 60

gagtaagacg ccttcgggcg tggatagagt ggcgaacggg tgagtaacac gtgaccaacc 120

tgcccccctcc tccgggacaa cctcgggaaa ccgaggctaa taccggatac tccgggcacc 180

ccgcatggga tgcccgggaa agccctggcg ggaggggatg gggtcgcggc ccatcaggta 240

gacggcgggg taacggccca ccgtgcccgc aacgggtagc cgggctgaga ggccgatcgg 300

ccacattggg actgagacac ggcccagact cctacgggag gcagcagtgg ggaattttgc 360

gcaatggggg caaccctgac gcagcgacgc cgcgtgcggg acgaagtcat tcgtgacgta 420

aaccgctttc agcgaggaag aaccatgacg gtactcgcag aagaagcccc ggctaactac 480

gtgccagcag ccgcggtaat acgtaggggg cgagcgttat ccggaatcat tgggcgtaaa 540

gcgcgcgcag gcgggctttc aagcggcggc gtcgaagccg ggggctcaac ccccggaagc 600

gccccgaact ggaagcctcg gatgcggcag ggggaggcgg aattcccggt gtagcggtga 660

aatgcgcaga tatcgggaag aacaccgacg gcgaaggcag cctcctgggc cggcatcgac 720

gctgaggcgc gaaagctggg ggagcgaaca ggattagata ccctggtagt cccagccgta 780

aacgatggac gctaggtgtg ggggaggaat ctcctccgtg ccgaagccaa cgcattaagc 840

gtcccgcctg gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca 900

caagcagcgg agcatgtggc ttaattcgaa gcaacgcgaa gaaccttacc agggcttgac 960

atatcggtga agccggagag atccggtggc cgagaggagc ccacacaggt ggtgcatggc 1020

tgtcgtcagc tcgtgccgtg aggtgttggg ttaagtcccg caacgagcgc aacccccgcc 1080

gcgtgttgcc agcattcagt tgggcactca cgcgggactg ccggcgtcaa gccggaggaa 1140

ggcggggacg acgtcaagtc atcatgcccc tcatgccctg ggccgcacac gtgctacaat 1200

ggccggcaca acgggttgcc accccgcgag ggggagcgga tccctaaagc cggccccagt 1260

tcggatcgca ggctgcaacc cgcctgcgtg aagccggagt tgctagtaat cgcggatcag 1320

cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacccgagtc 1380

gtctgcaccc gaagccgccg gccgaacccc tccgggggggc ggaggcgtcg aaggtgtgga 1440

gggtgagggg ggtgaagtcg taacaaggta acc 1473

<210> 1737
<211> 1463
<212> DNA
<213> Slackia piriformis

<400> 1737
gatgaacgct ggcggcgtgc ctaacacatg caagtcgaac ggttaaggcg ccttcgggcg 60

cgcatagagt ggcgaacggg tgagtaacac gtgaccaacc tgcccctcc tccgggacaa 120

cctcgggaaa ccgaggctaa taccggatgg tcccgccggg ccgcatggcc gggcggggaa 180

agcccaggcg ggaggggatg gggtcgcggc ccatcaggta gtaggcgggg tgacggccca 240

cctagctgac gacgggtagc cgcgctgaga ggcggaccgg ccacattggg actgagacac 300

ggcccagact cctacgggag gcagcagtgg ggaattttgc gcaatggggg aaaccctgac 360

gcagcaacgc cgcgtgcggg acgaaggcct tcgggtcgta aaccgctttc agcagggaag 420

aagaatgacg gtacctgcag aagaagcccc ggctaactac gtgccagcag ccgcggtaat 480

acgtaggggg cgagcgttat ccggattcat tgggcgtaaa gcgcgcgtag gcgtcccttc 540

aagcggcacc gtcgaagccg ggggctcaac ccccggaagc gggccgaact ggggggatcg 600

agtgcggtag gggaaggcgg aattcccggt gtagcggtga aatgcgcaga tatcgggaag 660

aacaccgacg gcgaaggcag ccttctgggc cgccactgac gctgaggcgc gaaagctggg 720

ggagcgaaca ggattagata ccctggtagt cccagccgta aacgatgggc gctaggtgtg 780

gggggagatg tccctccgtg ccgcagccaa cgcattaagc gccccgcctg gggagtacgg 840

ccgcaaggct aaaactcaaa ggaattgacg ggggcccgca caagcagcgg agcatgtggc 900

ttaattcgaa gcaacgcgaa gaaccttacc agggcttgac atcaccgtga gccgccggag 960

acggcggggc cgaaaggagc ggtgacaggt ggtgcatggc tgtcgtcagc tcgtgtcgtg 1020

agatgttggg ttaagtcccg caacgagcgc aacccccgcc gcgtgttgcc agcattgagt 1080

tgggcactcg cgcgggactg ccggcgtcaa gccggaggaa ggtggggacg acgtcaagtc 1140

atcatgcccc tcatgccctg ggctgcacac gtgctacaat ggccggtaca gcgggctgcg 1200

acgccgcgag gcggagcgaa tcccacaaag ccggccccag ttcggaccgc aggctgcaac 1260

ccgcctgcgc gaagccggag ttgctagtaa tcgcggatca gcatgccgcg gtgaatacgt 1320

tcccgggcct tgtacacacc gcccgtcaca ccacccgagt cgtctgcacc cgaagccgcc 1380

ggccgaaccc gcaaggggcg gaggcgtcga aggtgtggag ggtgaggggg gtgaagtcgt 1440

aacaaggtag ccgtaccgga agg 1463

<210> 1738
<211> 1355
<212> DNA
<213> Slackia sp. NATTS

<400> 1738
tttgatcatg gctcaggatg aacgctggcg gcgcgcctaa cacatgcaag tcgaacgagt 60

ggcgaacggg tgagtaacac gtgaccaacc tgcccccctcc tccgggacaa cctcgggaaa 120

ccgaggctaa taccggatac tgaaaggcgg gaggggatgg ggtcgcggcc catcaggtag 180

acggcggggt aacggcccac cgtgcctgca acgggtagcc gggctgagag gccgatcggc 240

cacattggga ctgagacacg gcccagactc ctacgggagg cagcagtggg gaattttgcg 300

caatgggggc aaccctgacg cagcgacgcc gcgtgcggga cgaagtcatt cgtgacgtaa 360

accgctttca gcgaggaaga tgacggtact cgcagaagaa gccccggcta actacgtgcc 420

agcagccgcg gtaatacgta gggggcgagc gttatccgga atcattgggc gtaaagcgcg 480

cgcaggcggg ctttcaagcg gggcgtcgaa gccgggggct caacccccgg aagcgccccg 540

aactggaagc ctcggatgcg gcaggggggag gcggaattcc cggtgtagcg gtgaaatgcg 600

cagatatcgg gaagaacacc gacggcgaag gcagcctcct gggccgatcg acgctgaggc 660

gcgaaagctg ggggagcgaa caggattaga taccctggta gtcccagccg taaacgatgg 720

acgctaggtg tgggggcctc cgtgccgaag ccaacgcatt aagcgtcccg cctggggagt 780

acggccgcaa ggctaaaact caaaggaatt gacgggggcc cgcacaagca gcggagcatg 840

tggcttaatt cgaagcaacg cgaagaacct taccagggct tgacatatac aggtggtgca 900

tggctgtcgt cagctcgtgc cgtgaggtgt tgggttaagt cccgcaacga gcgcaacccc 960

cgccgcgtgt tgccagcatg ggcactcacg cgggactgcc ggcgtcaagc cggaggaagg 1020

cggggacgac gtcaagtcat catgcccctc atgccctggg ccgcacacgt gctacaatgg 1080

ccggcaacgg gttgccaccc cgcgaggggg agcggatccc tccggcccca gttcggacgc 1140

aggctgcaac ccgcctgcgg aagccggagt tgctagtaat cgcggatcag cacgccgcgg 1200

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacccgagtc gtctgcaccc 1260

gaagccgccg ccgacggagg cgtcgaaggt gtggagggtg agggggggtga agtcgtaaca 1320

aggtagccgt accggaaggt gcggctggat cacct 1355

<210> 1739
<211> 1528
<212> DNA
<213> Solobacterium moorei

<400> 1739
tcaaatgaag agtttgatcc tggctcagga tgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacgc tggagatcta gcttgctaga tcgaaggagt ggcgaacggg tgagtaatac 120

ataagcaacc tacccacgaa gactgggata atctctggaa acggggacta ataccggata 180

ggtaatcgga aggcatcttc tggttattaa aggttaaaaa cactggtgga tgggcttatg 240

gcgcattagt tagttggtga ggtaacggcc caccaagacg atgatgcgta gccggcctga 300

gagggtgaac ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

agggaatttt cggcaatggg ggcaaccctg accgagcaac gccgcgtgag tgaagacggc 420

cttcgggttg taaagctctg ttgtaaggga agaacggtag atagagaata tctaagtgac 480

ggtaccttac cagaaagcca cggctaacta cgtgccagca gccgcggtaa tacgtaggtg 540

gcgagcgtta tccggaatta ttgggcgtaa agggtgcgta ggcggcctgt taagtaagtg 600

gttaaattgt tgggctcaac ccaatccagc cacttaaact ggcaggctag agtattggag 660

aggcaagtgg aattccatgt gtagcggtaa aatgcgtaga tatatggagg aacaccagtg 720

gcgaaggcgg cttgctagcc aaagactgac gctcatgcac gaaagcgtgg ggagcaaata 780

ggattagata ccctagtagt ccacgccgta aacgatgaat actaagtatt ggggaaactc 840

agtgctgcag ctaacgcaat aagtattccg cctgtggagt atgcacgcaa gtgtgaaaca 900

taaaggaatt gacgggggcc cgcacaagcg gtggagtatg tggtttaatt cgacgcaacg 960

cgaagaacct taccaggcct tgacatccct tgcaaagctg tagagataca gtagaggtta 1020

tcaaggagac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaaccct tgccttcagt taccagcatt cagttgggga ctctggaggg 1140

actgccggtg ataaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatgg 1200

cctgggctac acacgtacta caatggctgt tacaacgtgc agcgacctag cgataggaag 1260

cgaatcacta aaagacagtc tcagttcgga ttgaagtctg caactcgact tcatgaagct 1320

ggaatcgcta gtaatcgcgg atcagaatgc cgcggtgaat acgttctcgg gccttgtaca 1380

caccgcccgt cataccatga gagctggtaa tacccgaagc cggtggccta accgcaagga 1440

aggagccgtc gaaggtagga ctagtgattg gggtcaagtc gtaacaaggt atccctacga 1500

gaacgtgggg atggatcacc tcctttct 1528

<210> 1740
<211> 1494
<212> DNA
<213> Sphingobacterium faecium

<400> 1740
ggctcaggat gaacgctagc ggcaggccta atacatgcaa gtcggacggg attcagggag 60

tagcttgcta cgaactgatg agagtggcgc acgggtgcgt aacgcgtgag caacctaccc 120

atatcagggg gatagcctct cgaaagagag attaacaccg cataacatca tttaccggca 180

tcggttaatg atcaaatatt tataggatat ggatgggctc gcgtgacatt agctagttgg 240

aggggtaacg gcccaccaag gctacgatgt ctaggggctc tgagaggaga atcccccaca 300

ctggtactga gacacggacc agactcctac gggaggcagc agtaaggaat attggtcaat 360

ggagggaact ctgaaccagc catgccgcgt gcaggatgac tgccctatgg gttgtaaact 420

gcttttgtca gggaataaac ctttctacgt gtaggaagct gaatgtacct gaagaataag 480

gatcggctaa ctccgtgcca gcagccgcgg taatacggag gatccaagcg ttatccggat 540

ttattgggtt taaagggtgc gtaggcggtc ctataagtca gtggtgaaag acggcagctt 600

aactgtcgca gtgcctttga tactgtagga cttgaatcta tttgaagtgg gcggaataag 660

acaagtagcg gtgaaatgca tagatatgtc ttagaactcc gattgcgaag gcagctcact 720

aagttagtat tgacgctgat gcacgaaagc gtggggatca aacaggatta gataccctgg 780

tagtccacgc cctaaacgat gataactcga tgtttgcgat acacagtaag cgtccaagcg 840

aaagcgttaa gttatccacc tggggagtac ggtcgcaaga ttgaaactca aaggaattga 900

cgggggcccg cacaagcgga ggagcatgtg gtttaattcg atgatacgcg aggaacctta 960

cccgggcttg aaagttagtg aatgatccag agacggatca gtccttcggg acacgaaact 1020

aggtgctgca tggctgtcgt cagctcgtgc cgtgaggtgt tgggttaagt cccgcaacga 1080

gcgcaacccc tatgtttagt tgccagcatg taatgatggg gactctaaac agactgccag 1140

cgtaagctgt gaggaaggtg gggacgacgt caagtcatca tggcccttac gtccggggct 1200

acacacgtgc tacaatggat ggtacagcgg gcagctacat agcaatatga tgctaatctc 1260

taaaagccat tcacagttcg gattgaggtc tgcaactcga cctcatgaag ttggattcgc 1320

tagtaatcgc gtatcagcaa tgacgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcaagcca tgaaagttgg gggtacctaa agcatgtaac cgcaaggagc gtgttagggt 1440

aaaaccgata attggggcta agtcgtaaca aggtagccgt accggaaggt gcgg 1494

<210> 1741
<211> 1454
<212> DNA
<213> Sphingobacterium mizutaii

<400> 1741
gctcaggatg aacgctagcg gcaggcctaa tacatgcaag tcggacggga tccatcggta 60

gcttgctacc gatggtgaga gtggcgcacg ggtgcgtaac gcgtgagcaa cctgcccata 120

tcaggggat agcccggaga aatccggatt aacaccgcat gacactgctt tccggcatcg 180

ggaggtagtc aaatattcat aggatatgga tgggctcgcg tgacattagc tagttggtgg 240

ggtaacggcc caccaaggcg acgatgtcta ggggctctga gaggagaatc ccccacactg 300

gtactgagac acggaccaga ctcctacggg aggcagcagt aaggaatatt ggtcaatggg 360

ggcaaccctg aaccagccat gccgcgtgca ggacgactgc cctatgggtt gtaaactgct 420

tttgttaggg aataaacccc gctacgtgta gcgggctgaa tgtacctaaa gaataaggat 480

cggctaactc cgtgccagca gccgcggtaa tacggaggat ccgagcgtta tccggattta 540

ttgggtttaa agggtgcgta ggcggcactt taagtcaggg gtgaaagacg gcagctcaac 600

tgtcgcagtg cccttgatac tgaagtgctt gaatgcggtt gaagacggcg gaatgagaca 660

agtagcggtg aaatgcatag atatgtctca gaacaccgat tgcgaaggca gctgtctaag 720

ccgttattga cgctgatgca cgaaagcgtg gggatcgaac aggattagat accctggtag 780

tccacgccct aaacgatgat gactcgatgt ttgcgatata ccgtaagcgt ccaagcgaaa 840

gcgttaagtc atccacctgg ggagtacgcc cgcaagggtg aaactcaaag gaattgacgg 900

gggcccgcac aagcggagga gcatgtggtt taattcgatg atacgcgagg aaccttaccc 960

gggcttgaaa gttactgaag ggcgcagaga cgcgcccgtc cttcgggaca ggaaactagg 1020

tgctgcatgg ctgtcgtcag ctcgtgccgt gaggtgttgg gttaagtccc gcaacgagcg 1080

caacccctat gtttagttgc cagcacgtca aggtggggac tctaaacaga ctgcctgcgc 1140

aagcagagag gaaggcgggg acgacgtcaa gtcatcatgg cccttacgtc cggggctaca 1200

cacgtgctac aatggatggt acagcgggca gctacacagc aatgtggtgc caatctcgaa 1260

aagccattca cagttcggat cggggtctgc aactcgaccc cgtgaagttg gattcgctag 1320

taatcgcgta tcagcaatga cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

caagccatga aagctggggg tacctaaagc atgtaaccgc aaggagcgtg ttagggtaaa 1440

accggtaatt gggg 1454

<210> 1742
<211> 1439
<212> DNA
<213> Sphingobacterium multivorum

<220>
<221> modified_base
<222> (1112)..(1112)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1114)..(1114)
<223> a, c, t, g, unknown or other

<400> 1742
ggctcaggat gaacgctagc ggcaggccta atacatgcaa gtcggacggg atccatcgga 60

gagcttgctc gaagatggtg agagtggcgc acgggtgcgt aacgcgtgag caacctacct 120

ctatcagggg gatagcctct cgaaagagag attaacaccg cataacatca acagttcgca 180

tgttcggttg attaaatatt tataggatag agatgggctc gcgtgacatt agctagttgg 240

tagggtaacg gcttaccaag gcgacgatgt ctaggggctc tgagaggaga atcccccaca 300

ctggtactga gacacggacc agactcctac gggaggcagc agtaaggaat attggtcaat 360

gggcggaagc ctgaaccagc catgccgcgt gcaggatgac tgccctatgg gttgtaaact 420

gcttttgtcc aggaataaac ctaaatacgt gtatttagct gaatgtactg gaagaataag 480

gatcggctaa ctccgtgcca gcagccgcgg taatacggag gatccgagcg ttatccggat 540

ttattgggtt taaagggtgc gtaggcggcc tattaagtca ggggtgaaat acggtggctc 600

aaccatcgca gtgcctttga tactgatggg cttgaatcca tttgaagtgg gcggaataag 660

acaagtagcg gtgaaatgca tagatatgtc ttagaactcc gattgcgaag gcagctcact 720

aagctggtat tgacgctgat gcacgaaagc gtggggatcg aacaggatta gataccctgg 780

tagtccacgc cctaaacgat gataactcga tgttggcgat agacagccag cgtcccagcg 840

aaagcgttaa gttatccacc tggggagtac gcccgcaagg gtgaaactca aaggaattga 900

cgggggcccg cacaagcgga ggagcatgtg gtttaattcg atgatacgcg aggaacctta 960

cccgggcttg aaagttagtg aagagtgcag agacgcactc gtccttcggg acacgaaact 1020

aggtgctgca tggctgtcgt cagctcgtgc cgtgaggtgt tgggttaagt cccgcaacga 1080

gcgcaacccc tatgtttagt tgccagcatg tnanggtggg gactctaaac agactgcctg 1140

tgcaaacaga gaggaaggtg gggacgacgt caagtcatca tggcccttac gtccggggct 1200

acacacgtgc tacaatggat ggtacagcgg gcagctacat agcaatatga tgctaatctc 1260

taaaagccat tcacagttcg gattggggtc tgcaactcga ccccatgaag ttggattcgc 1320

tagtaatcgc gtatcagcaa tgacgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcaagcca tgaaagttgg gggtacctaa agcatgttac cgcaaggagc gtgttaggg 1439

<210> 1743
<211> 1527
<212> DNA
<213> Sphingobacterium spiritivorum

<400> 1743
ttacaatgga gagtttgatc ctggctcagg atgaacgcta gcggcaggcc taatacatgc 60

aagtcgaacg agattatcca gcttgctgga tatgaaagtg gcgcacgggt gcgtaacgcg 120

tgagcaacct acctctgtca gggggatagc ccggcgaaag tcggattaac accgcatgac 180

attattgatg tggcatcaca ttataatcaa atatttatag gacagagatg ggctcgcgtg 240

acattagcta gttggagagg taacggctca ccaaggcaac gatgtctagg ggctctgaga 300

ggagaatccc ccacactggt actgagacac ggaccagact cctacgggag gcagcagtaa 360

ggaatattgg tcaatggagg gaactctgaa ccagccatgc cgcgtgcagg atgactgccc 420

tatgggttgt aaactgcttt tgtcggggaa taaacctacg tttgtaaacg tagctgaatg 480

tacccgaaga ataaggatcg gctaactccg tgccagcagc cgcggtaata cggaggatcc 540

aagcgttatc cggatttatt gggtttaaag ggtgcgtagg cggttcttta agtcagaggt 600

gaaagacggc agcttaactg tcgcagtgcc tttgatactg aagaacttga attaggttga 660

ggaatgcgga atgagacaag tagcggtgaa atgcatagat atgtctcaga accccgattg 720

cgaaggcagc attccaagcc tttattgacg ctgatgcacg aaagcgtggg gatcgaacag 780

gattagatac cctggtagtc cacgccctaa acgatgataa ctcgatgttg gcgatagaca 840

gtcagcgtcc cagcgaaagc gttaagttat ccacctgggg agtacgcccg caagggtgaa 900

actcaaagga attgacgggg gcccgcacaa gcggaggagc atgtggttta attcgatgat 960

acgcgaggaa ccttacccgg gcttgaaagt tagtgaatga tccagagacg gatcagtcct 1020

tcgggacacg aaactaggtg ctgcatggct gtcgtcagct cgtgccgtga ggtgttgggt 1080

taagtcccgc aacgagcgca acccctatgt ttagttgcca gcatgtcatg atggggactc 1140

taaacagact gcctgcgcaa gcagagagga aggtggggac gacgtcaagt catcatggcc 1200

cttacgtccg gggctacaca cgtgctacaa tggtcggtac agcgggcagc tacacagtaa 1260

tgtgatgcca atctctgaaa gccgatcaca gttcggattg aggtctgcaa ctcgacctca 1320

tgaagttgga ttcgctagta atcgcgtatc agcaatgacg cggtgaatac gttcccgggc 1380

cttgtacaca ccgcccgtca agccatgaaa gttgggggtg cctaaagcat gtaaccgcaa 1440

ggagcgtgtt agggcaaaac cgataattgg ggctaagtcg taacaaggta gccgtaccgg 1500

aaggtgcggc tggaatacct cctttct 1527

<210> 1744
<211> 1463
<212> DNA
<213> Sphingomonas echinoides

<220>
<221> modified_base
<222> (439)..(439)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (956)..(959)
<223> a, c, t, g, unknown or other

<400> 1744
tgatcatggc tcagaatgaa cgctggcggc atgcctaaca catgcaagtc gaacgaaggc 60

tttggcctta gtggcgcacg ggtgcgtaac gcgtgggaat ctgccctcag gttcggaata 120

acagcgagaa attgctgcta ataccggatg atatcgcgag atcaaagatt tatcgcctga 180

ggatgagccc gcgtaggatt agctagttgg tgtggtaaag gcgcaccaag gcgacgatcc 240

ttagctggtc tgagaggatg atcagccaca ctgggactga gacacggccc agactcctac 300

gggaggcagc agtggggaat attggacaat gggcgaaagc ctgatccagc aatgccgcgt 360

gagtgatgaa ggccttaggg ttgtaaagct cttttacccg ggatgataat gacagtaccg 420

ggagaataag ctccggctna ctccgtgcca gcagccgcgg taatacggag ggagctagcg 480

ttattcggaa ttactgggcg taaagcgcac gtaggcggct ttgtaagtta gaggtgaaag 540

cctggagctc aactcctgaa ttgcctttaa gactgcatcg cttgaatcca ggagaggtga 600

gtggaattcc gagtgtagag gtgaaattcg tagatattcg gaagaacacc agtggcgaag 660

gcggctcact ggactggtat tgacgctgag gtgcgaaagc gtggggagca aacaggatta 720

gataccctgg tagtccacgc cgtaaacgat gataactagc tgtcggggct cttagagctt 780

cggtggcgca cgtaacgcat taagttatcc gcctggggag tacggccgca aggttaaaac 840

tcaaatgaat tgacgggggc ctgcacaagc ggtggagcat gtggtttaat tcgaagcaac 900

gcgcagaacc ttaccagcgt ttgacatgtc cggacgattt cgggagaccg atctcnnnnt 960

cggggactgg aacacaggtg ctgcatggct gtcgtcagct cgtgtcgtga gatgttgggt 1020

taagtcccgc aacgagcgca accctcgtcc ttagttgcca tcattcagtt gggcactcta 1080

aggaaaccgc cggtgataag ccggaggaag gtggggatga cgtcaagtcc tcatggccct 1140

tacgcgctgg gctacacacg tgctacaatg gcggtgacag tgggcagcaa tctcgcaagg 1200

gtgagctaat ctccaaaagc cgtctcagtt cggattgttc tctgcaactc gagagcatga 1260

aggcggaatc cgtagtaatc gcggatcagc atgccgcggt gaatacgttc ccaggccttg 1320

tacacaccgc ccgtcacacc atgggagttg gattcacccg aaggcagtgc gctaaccgca 1380

aggaggcagc tgaccacggt gggttcagcg actggggtga agtcgtaaca aggtagccgt 1440

aggggaacct gcggctggat cac 1463

<210> 1745
<211> 1362
<212> DNA
<213> Sphingomonas sp. oral clone FI012

<400> 1745
gagtttgatc ctggctcaga acgaacgctg gcggcgtgcc taacacatgc aagtcgaacg 60

agtggcgcac gggtgcgtaa cgcgtgggaa tctgcctctt gcttcggaat aacagtggga 120

aactactgct aataccggat gatcaaagtc ggcaagagat gagcccgcgt aggattaggt 180

agttggtggg gtaaaggcct accaagccga cgatccttag ctggtctgag aggatgatca 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg gggaatattg 300

gacaatgggg gcaaccctga tccagcaatg ccgcgtgagt gatgaaggcc ttagggttgt 360

aaagctcttt taccagggat gatgacagta cctggagaat aagctccggc taactccgtg 420

ccagcagccg cggtaatacg gagggagcta gcgttgttcg gaattactgg gcgtaaagcg 480

cacgtaggcg gttactcaag tcagaggtga aagcccgggg ctcaaccccg gaactgcctt 540

tgaaactagg taactagaat cctggagagg tgagtggaat tccgagtgta gaggtgaaat 600

tcgtagatat tcggaagaac accagtggcg aaggcggctc actggacaga ttgacgctga 660

ggtgcgaaag cgtggggagc aaacaggatt agatacccag gtagtccacg ccgtaaacga 720

tgataactag ctgtccgggt ttgggtggcg cagctaacgc attaagttat ccgcctgggg 780

agtacggtcg caagattaaa actcaaagga attgacgggg gcctgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgcagaa ccttaccagc gtttgacatc gacaggtgct 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

cctcgtcctt agttgccatc atgggcactc taaggaaacc gccggtgata agccggagga 1020

aggtggggat gacgtcaagt cctcatggcc cttacacgct gggctacaca cgtgctacaa 1080

tggcggtcag tgggcagcga cctcgcgagg ggtagctaat ctccgccgtc tcagttcgga 1140

tgttctctgc aactcgagag cagaaggcgg aatcgctagt aatcgcggat cagcatgccg 1200

cggtgaatgc gttcccaggc cttgtacaca ccgcccgtca caccatggga gttggattca 1260

ctcgaaggcg ttaggtaggt aggcgaccac agtgggttta gcgactgggg tgaagtcgta 1320

acaaggtagc cgtaggggaa cctgcggttg gatcacctcc tt 1362

<210> 1746
<211> 1362
<212> DNA
<213> Sphingomonas sp. oral clone FZ016

<400> 1746
gagtttgatt ctggctcaga acgaacgctg gcggcatgcc taatacatgc aagtcgaacg 60

agtggcgcac gggtgcgtaa cgcgtgggaa tctgcccttg ggttcggaat aacagctgga 120

aacggctgct aataccggat gatcaaagtc gcccagggat gagcccgcgt aggattagct 180

agttggtggg gtaaaggcct accaaggcga cgatccttag ctggtctgag aggatgatca 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta gggaatattg 300

gacaatgggg gcaaccctga tccagcaatg ccgcgtgagt gatgaaggcc ttagggttgt 360

aaagctcttt tacccgagat gatgacagta tcgggagaat aagctccggc taactccgtg 420

ccagcagccg cggtaatacg gagggagcta gcgttgttcg gaattactgg gcgtaaagcg 480

cacgtaggcg gcgatttaag tcagaggtga aagcccgggg ctcaaccccg gaactgcctt 540

tgagactgga ttgcttgaat ccgggagagg tgagtggaat tccgagtgta gaggtgaaat 600

tcgtagatat tcggaagaac accagtggcg aaggcggctc actggaccga ttgacgctga 660

ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 720

tgataactag ctgccggggt ttcggtggcg cagctaacgc attaagttat ccgcctgggg 780

agtacggtcg caagattaaa actcaaagga attgacgggg gcctgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgcagaa ccttaccaac gtttgacatc gacaggtgct 900

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

cctcgccttt agttgccagc atgggtactc taaaggaacc gccggtgata agccggagga 1020

aggtggggat gacgtcaagt cctcatgscc cttacgcgtt gggctacaca cgtgctacaa 1080

tggcgaccag tgggcagcga ccgtgcgagc ggaagctaat ctccgtcgtc tcagttcggg 1140

cgttctctgc aactcgagag cggaaggcgg aatcgctagt aatcgcggat cagcatgccg 1200

cggtgaatac gttcccaggc cttgtacaca ccgcccgtca caccatggga gttggattca 1260

ctcgaaggcg ttagctaggc aggcgaccac agtgggttta gcgactgggg tgaagtcgta 1320

acaaggtagc cgtaggggaa cctgcggctg gatcacctcc tt 1362

<210> 1747
<211> 1405
<212> DNA
<213> Sphingomonas sp. oral taxon A09

<400> 1747
agagtttgat cctggctcag aatgaacgct ggcggcatgc ctaacacatg caagtcgaac 60

gaagccttcg ggcttagtgg cgcacgggtg cgtaacgcgt gggaatctgc ccttgggttc 120

ggaataacag ttggaaacga ctgataatac cggatgatga cgtaagtcca aagatttatc 180

gcccaaggat gagcccgcgt aggattagct agttggtgag gtaaaggctc accaaggcga 240

cgatccttag ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggc gaaagcctga tccagcaatg 360

ccgcgtgagt gatgaaggcc ttagggttgt aaagctcttt tacccgggat gataatgaca 420

gtaccgggag aataagctcc ggctaactcc gtgccagcag ccgcggtaat acggagggag 480

ctagcgttat tcggaattac tgggcgtaaa gcgcacgtag gcggctttgt aagttagagg 540

tgaaagccca gagctcaact ctggaattgc ctttaagact gcatcgcttg aatccaggag 600

aggtgagtgg aattccgagt gtagaggtga aattcgtaga tattcggaag aacaccagtg 660

gcgaaggcgg ctcactggac tggtattgac gctgaggtgc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgata actagctgtt cggggactta 780

gtccgtgagt ggcgcagcta acgcattaag ttatccgcct ggggagtacg gccgcaaggt 840

taaaactcaa atgaattgac gggggcctgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac cagcgtttga catggtagga cgactggcag agatgccttt 960

cttcccttcg gggacctaca cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac cctcgccttt agttgccatc atttagttgg 1080

gcactctaaa ggaaccgccg gtgataagcc ggaggaaggt ggggatgacg tcaagtcctc 1140

atggcccttа cgcgctgggc tacacacgtg ctacaatggc ggtgacagtg ggcagcaatc 1200

ccgcaagggg gagctaatct ccaaaagccg tctcagttcg gattgcactc tgcaactcga 1260

gtgcatgaag gcggaatcgc tagtaatcgc ggatcagcac gccgcggtga atacgttccc 1320

aggccttgta cacaccgccc gtcacaccat gggagttggg ttcacccgaa ggcgttgcgc 1380

taactcgcaa gagaggcagg cgacc 1405

<210> 1748
<211> 1450
<212> DNA
<213> Sphingomonas sp. oral taxon F71

<400> 1748

agagtttgat cctggctcag aacgaacgct ggcggcacgc ctaacacatg caagtcgaac 60

gaaggcttcg gccttagtgg cgcacgggtg cgtaacgcgt gggaatctgc ccttgggtct 120

gggataacgg cgggaaactg ccgctaatac cggatgatat cgcgagatca aagatttatc 180

gcctgaggat gagcccgcgt aggattaggt agttggtgtg gtaaaggcgc accaagccga 240

cgatccttag ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggc gcaagcctga tccagcaatg 360

ccgcgtgagt gatgaaggcc ttagggttgt aaagctcttt tacccgggaa gataatgact 420

gtaccgggag aataagcccc ggctaactcc gtgccagcag ccgcggtaat acggaggggg 480

ctagcgttgt tcggaattac tgggcgtaaa gcgcacgtag gcggctttgt aagtcagggg 540

tgaaagcctg gagctcaact ccagaactgc ctttgagact gcatcgcttg aatccgggag 600

aggtgagtgg aattccgagt gtagaggtga aattcgtaga tattcggaag aacaccagtg 660

gcgaaggcgg ctcactggac cggtattgac gctgaggtgc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgata actagctgtc cgggggcttg 780

gcctttgggt ggcgcagcta acgcattaag ttatccgcct ggggagtacg gccgcaaggt 840

taaaactcaa aggaattgac gggggcctgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac cagcgtttga catgtccgga cgactggcag agatgccttt 960

cttcccttcg gggactggaa cacaggtgct gcatggctgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac cctcgccttt agttaccatc atttggttgg 1080

gtactctaaa ggaaccgccg gtgataagcc ggaggaaggt ggggatgacg tcaagtcctc 1140

atggcccttа cgcgctgggc tacacacgtg ctacaatggc ggtgacagtg ggcagcaatc 1200

ccgcgagggt gagctaatct ccaaaagccg tctcagttcg gattgttctc tgcaactcga 1260

gagcatgaag gcggaatcgc tagtaatcgc ggatcagcat gccgcggtga atacgttccc 1320

aggccttgta cacaccgccc gtcacaccat gggagttggg ttcacccgaa ggcgttgcac 1380

taactcgcaa gagaggcagg cgaccacggt gggcttagcg actggggtga agtcgtaaca 1440

aggtagccgt 1450

<210> 1749
<211> 1484
<212> DNA
<213> Sphingopyxis alaskensis

<400> 1749
ttgagagttt gatcctggct cagaacgaac gctggcggca tgcctaacac atgcaagtcg 60

aacgagacct tcgggtctag tggcgcacgg gtgcgtaacg cgtgggaatc tgcccttggg 120

tacggaataa ctcagagaaa tttgagctaa taccgtataa tgacttcggt ccaaagattt 180

atcgcccaag gatgagcccg cgtaagatta gctagttggt ggggtaaagg cctaccaagg 240

cgacgatctt tagctggtct gagaggatga tcagccacac tgggactgag acacggccca 300

gactcctacg ggaggcagca gtggggaata ttggacaatg ggcgaaagcc tgatccagca 360

atgccgcgtg agtgatgaag gccttagggt tgtaaagctc ttttacccgg gatgataatg 420

acagtaccgg gagaataagc tccggctaac tccgtgccag cagccgcggt aatacggagg 480

gagctagcgt tgttcggaat tactgggcgt aaagcgcgcg taggcggttt tttaagtcag 540

aggtgaaagc ccagtgctca acactggaac tgcctttgaa actggaaaac ttgaatcttg 600

gagaggtcag tggaattccg agtgtagagg tgaaattcgt agatattcgg aagaacacca 660

gtggcgaagg cgactgactg gacaagtatt gacgctgagg tgcgaaagcg tggggagcaa 720

acaggattag ataccctggt agtccacgcc gtaaacgatg ataactagct gtccgggttc 780

atggaacttg ggtggcgcag ctaacgcatt aagttatccg cctggggagt acggtcgcaa 840

gattaaaact caaaggaatt gacgggggcc tgcacaagcg gtggagcatg tggtttaatt 900

cgaagcaacg cgcagaacct taccagcgtt tgacatcctg atcgcggatt agagagatct 960

tttccttcag ttcggctgga tcagtgacag gtgctgcatg gctgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctca tccctagttg ccatcattca 1080

gttgggcact ctaaggaaac tgccggtgat aagccggagg aaggtgggga tgacgtcaag 1140

tcctcatggc ccttacgcgc tgggctacac acgtgctaca atggcaacta cagtgggcag 1200

caacctcgcg aggggtagct aatctccaaa agttgtctca gttcggattg ttctctgcaa 1260

ctcgagagca tgaaggcgga atcgctagta atcgcggatc agcatgccgc ggtgaatacg 1320

ttcccaggcc ttgtacacac cgcccgtcac accatgggag ttggtttcac ccgaaggcag 1380

tgctctaacc cgcaagggag gaagctgacc acggtgggat cagcgactgg ggtgaagtcg 1440

taacaaggta gccgtagggg aacctgcggc tggatcacct cctt 1484

<210> 1750
<211> 1515
<212> DNA
<213> Spiroplasma insolitum

<400> 1750
tggagagttt gatcctggct caggatgaac gctggcggca tgcctaatac atgcaagtcg 60

aacggggtgc ttgcacccag tggcgaacgg gtgagtaaca cgtatctaat ctacccatta 120

gcgggggata acagttggaa acgactgcta ataccgcata cgacattttc tggcatcaga 180

gaatgttaaa aggtccgttt ggaccactaa tggatgaggg tgcggcgtat tagttagttg 240

gtggggtaat ggcctaccaa gacaatgata cgtagccgaa ctgagaggtt gaacggccac 300

atcgggactg agacacggcc cgaactccta cgggaggcag cagtagggaa tttttcacaa 360

tgggcgaaag cctgatggag caatgccgcg tgactgaaga cggtcttcgg attgtaaagg 420

tctgttgtaa gggaagaaca gtaagtatag gaaatgatac ttatttgacg gtaccttacc 480

agaaagccac ggctaactat gtgccagcag ccgcggtaat acataggtgg caagcgttat 540

ccggatttat tgggcgtaaa gcgtgcgcag acggtttaac aagtttgggg tcaaattctg 600

gagcttaact ccagttcgcc ttgaaaactg ttaagctaga gtgtaggaga ggtcgatgga 660

attccatgtg tagcggtgaa atgcgtagat atatggagga acaccagtgg cgaaggcggt 720

cgactggcct atcactgacg tttaggcacg aaagcgtagg gagcaaatag gattagatac 780

cctagtagtc tacgccgtaa acgatgagta ctaagtgtcg gactaagttc ggtgctgcag 840

ctaacgcatt aagtactccg cctgagtagt atgctcgcaa gagtgaaact caaaggaatt 900

gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct 960

taccaaggct tgacatccag tgcaaagctg tagaaataca gtggaggtta acattgagac 1020

aggtggtgca tggttgtcgt cagctcgtgc cgtgaggtgt ttggttaagt ccagtaacga 1080

gcgcaaccct tgccgttagt tactccatta agttgagata ctctaacggg actgctagtg 1140

taagctagag gaaggtgggg atgacgtcaa atcatcatgc cccttatgtc ttgggctaca 1200

cacgtgctac aatggccggt acaaacagtt gcgatctcgt aagagggagc taatctgaaa 1260

aagccggtct cagttcggat tgagggctgc aactcgccct cataaagccg gaatcgctag 1320

taatcgcgaa tcagcaatgt cgcggtgaat acgttctcgg gtcttgtaca caccgcccgt 1380

cacaccatga gagttgataa taccagaagt cggtattcta accgtaagga ggaagccgcc 1440

caaggtagga ttgatgatta gggtgaagtc gtaacaaggt atccgtacga gaacgtgcgg 1500

ctggatcacc tcctt 1515

<210> 1751
<211> 1506
<212> DNA
<213> Sporobacter termitidis

<220>
<221> modified_base
<222> (361)..(361)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (377)..(377)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (863)..(863)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1094)..(1094)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1104)..(1104)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1110)..(1110)
<223> a, c, t, g, unknown or other

<400> 1751

agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaacacatg caagtcgaac 60

ggagacaatt ggttcgctga ttgtcttagt ggcggacggg tgagtaacgc gtgagcaatc 120

tgcccttcgg aggggacaa cagctggaaa cggctgctaa taccgcataa tgtatattca 180

aggcatcttg gatataccaa agatttatcg ccgaaggatg agctcgcgtc tgattagcta 240

gttggtgagg taaaggctca ccaaggctgc gatcagtagc cggactgaga ggttgaacgg 300

ccacattgga actgagatac gggccagact cctacgggag ggagcagtgg ggaattttgg 360

ncaatggggg aaagccntac ccagcaacgc cgcgtgaagg aagaaggcct tcgggttgta 420

aacttctttg accagggacg aaacaaatga cggtacctgg aaaacaagcc acggctaact 480

acgtgccagc agccgcggta ttacgtaggt ggcaagcgtt gtccggattt actgggtgta 540

aagggcgcgt aggcgggagt acaagtcaga tgtgaaatct gggggcttaa ccctcaaact 600

gcatttgaaa ctgtatttct tgagtatcgg agaggcaggc ggaattccta gtgtagcggt 660

gaaatgcgtt gatattagga ggaacaccag tggcgaaggc ggcctgctgg acgacaactg 720

actctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta gtccacgctg 780

taaacgatga atactaggtg tgggggact gacccctcc gtgccggagt taacacaata 840

agtattccac ctggggagta cgnccgcaag gttgaaactc aaaggaattg acgggggccc 900

gcacaagcag tggattatgt ggtttaattc gaagcaacgc gaagaacctt accagggctt 960

gacatcgtac taacgaagca gagatgcatt aggtgccctt ccggggaaag tatagacagg 1020

tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccctat tgtnatttgc tacncgagan cactctagcg aggctgccga tgacaaaccg 1140

gaggaaggtg gggacgacgt caaatcatca tgccccttat gtcctgggct acacacgtaa 1200

tacaatgtct ctcacagagg gaagcaagac cgcgaggtgg agcaaatccc taaaatgcgt 1260

ctcagttcag attgcaggct gcaactcgcc tgcatgaagt cggaattgct agtaatcgcg 1320

gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccatg 1380

agagccggga acacccgaag tccgtagtct aaccgcaagg gggacgcggc cgaaggtggg 1440

tttggtaatt ggggtgaagt cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac 1500

ctcctt 1506

<210> 1752
<211> 1503
<212> DNA
<213> Sporolactobacillus inulinus

<220>
<221> modified_base
<222> (62)..(62)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (174)..(174)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (243)..(243)
<223> a, c, t, g, unknown or other

<400> 1752
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gcacagaagg gagcttgctc 60

cnggacgtga gcggcggatg ggtgagtaac acgtgggcaa cctgcctgta agacggggat 120

aacttcggga aaccggagct aataccggat aatccctcgc accgcatggt gcgnggttga 180

aagatggttt cggccatcac ttacagatgg gcccgcggtg cattagttag ttggcggggt 240

aanggcccac caagaccgcg atgcatagcc gacctgagag ggtgatcggc cacattggga 300

ctgagacacg gcccaaactc ctacgggagg cagcagtagg gaatcttcca caatggacga 360

aagtctgatg gagcaacgcc gcgtgagcga agaaggtttt cggatcgtaa agctctgttg 420

ccggagaaga acgagtgcca gaggaaatgc tggtgctgtg acggtatccg gccagaaagc 480

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tgtccggaat 540

tattgggcgt aaagcgcgcg caggcggctt cttaagtctg atgtgaaatc ttgcggctca 600

accgcaaaag gtcattggaa actggggagc ttgagtgcag aagaggagag tagaattcca 660

cgtgtagcgg tgaaatgcgt agagatgtgg aggaatacca gtggcgaagg cggctctctg 720

gtctgttact gacgctgagg tgcgaaagca tggggagcaa acaggattag ataccctggt 780

agtccatgcc gtaaacgatg aatgctaggt gttaggggtg tccaacccct tagtgctgaa 840

gttaacacat taagcattcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc agtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttaccaggtc ttgacatcct ctgacaagtc tagagatagg ccgttcccct tcgggggaca 1020

gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttga tcttagttgc cagcattaag ttgggcactc taaggtgact 1140

gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc cttatgatct 1200

gggctacaca cgtgctacaa tgggcggtac aaagggcagc gaaaccgcaa ggtcaagcca 1260

atcccataaa gccgccccca gttcggattg caggctgcaa ctcgcctgca tgaagccgga 1320

attgctagta atcgcggatc agcatgccgc ggtgaatccg ttcccgggcc ttgtacacac 1380

cgcccgtcac accacgagag tttgtaacac ccgaagtcgg tgtgggaacc tttatggacc 1440

cagccgccga aggtgggaca aatgattggg gtgaagtcgt aacaaggtag ccgtatcgga 1500

agg 1503

<210> 1753
<211> 1518
<212> DNA
<213> Sporolactobacillus nakayamae

<400> 1753
tttcctggct caggacgaac gctggcggcg tgcctaatac atgcaagtcg agcgcattga 60

agggagcttg ctcccggatg tgagcggcgg atgggtgagt aacacgtggg taacctgcct 120

gtcagattgg gataactgtg ggaaaccgca gctaataccg aatgatcccc tgcaccacat 180

ggtgcagggt tgaaagatgg tttcggccat cactgacaga tgggcccgcg gtgcattagt 240

tagttggcgg ggtaacggcc caccaagaca gcgatgcata gccgacctga gagggtgatc 300

ggccacattg ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt 360

ccacaatgga cgaaagtctg atggagcaac gccgcgtgag cgaagaaggt tttcggatcg 420

taaagctctg ttgccggaga agaatgagta tgagaggaaa tgcttgtact gtgacggtat 480

ccggccagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt aggtggcaag 540

cgttgtccgg aattattggg cgtaaagcgc gcgcaggcgg cttcttaagt ctgatgtgaa 600

atcttgcggc tcaaccgcaa atggtcattg gaaactggga agcttgagtg cagaagagga 660

gagtagaatt ccacgtgtag cggtgaaatg cgtagatatg tggaggaata ccagtggcga 720

aggcggctct ctggtctgta actgacgctg aggcgcgaaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gccgtaaacg atgaatgcta ggtgttaggg ggtccaaccc 840

ttagtgctga agttaacaca ttaagcattc cgcctgggga gtacgaccgc aaggttgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cagtggagca tgtggtttaa ttcgaagcaa 960

cgcgaagaac cttaccaggt cttgacatcc tctgacaagt ctagagatag gccgttcccc 1020

ttcgggggac agagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaacccttg atcttagttg ccagcattca gttgggcact 1140

ctaaggtgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc 1200

ccttatgatc tgggctacac acgtgctaca atgggtggta caaagggcag cgaaaccgcg 1260

aggtcaagcg aatcccataa agccaccccc agttcggatt gcaggctgca actcgcctgc 1320

atgaagccgg aattgctagt aatcgcggat cagcatgccg cggtgaatcc gttcccgggc 1380

cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg gtgcgagaac 1440

ctttatgggc tcagccgccg aaggtgggac agatgattgg ggtgaagtcg taacaaggta 1500

gccgtatcgg aaggtgcg 1518

<210> 1754
<211> 1539
<212> DNA
<213> Sporosarcina newyorkensis

<400> 1754
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaatctttgg gagcttgctc ccaaagatta gcggcggacg ggtgagtaac acgtgggcaa 120

cctaccttac agatggggat aactccggga aaccggggct aataccgaat aatccatttc 180

ttcgcatgaa gagatgttga aagacggttt cggctgtcac tgtgagatgg gcccgcggcg 240

cattagttag ttggtggggt aacggcctac caagaccacg atgcgtagcc gacctgagag 300

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 360

gaatcttcca caatggacga aagtctgatg gagcaacgcc gcgtgagtga agaaggtttt 420

cggatcgtaa agctctgttg taagggaaga acacgtacag gagtaactgc ctgtaccttg 480

acggtacctt accagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg 540

tggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg caggcggtcc tttaagtctg 600

atgtgaaagc ccacggctca accgtggagg gtcattggaa actggaggac ttgagtacag 660

aagaggaaag cggaattcca cgtgtagcgg tgaaatgcgt agagatgtgg aggaacacca 720

gtggcgaagg cggctttctg gtctgtaact gacgctgagg cgcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaagt gttaggggt 840

ttccgcccct tagtgctgca gctaacgcat taagcactcc gcctggggag tacggccgca 900

aggctgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat 960

tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc gctgcccggc atggagacat 1020

gctttccctt cggggacagc ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttaat cttagttgcc atcattcagt 1140

tgggcactct aaggtgactg ccggtgacaa accggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggacggtaca gagggctgca 1260

aacccgcgag ggggagccaa tcccacaaaa ccgttcccag ttcggattgc aggctgcaac 1320

tcgcctgcat gaagccggaa tcgctagtaa tcgtggatca gcatgccacg gtgaatacgt 1380

tcccgggtct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt 1440

ggggtaaccc ttacgggagc cagccgccga aggtgggaca gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgcggct ggatcacct 1539

<210> 1755
<211> 1474
<212> DNA
<213> Sporosarcina sp. 2681

<400> 1755
gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc gratcttygg gagcttgctc 60

cyraagrtta gcggcggacg ggtgagtaac acgtgggcaa cctaccttac agatggggat 120

aactccggga aaccggggct aataccgaat aatccatytc ttcgcatgra gagatgttga 180

aagacggttt cggctgtcac tgtgagatgg gcccgcggcg cattagttag ttggtggggt 240

aacggcctac caagaccacg atgcgtagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttcca caatggacga 360

aagtctgatg gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg 420

taagggaaga acacgtacag gagtaactgc ctgtaccttg acggtacctt accagaaagc 480

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tgtccggaat 540

tattgggcgt aaagcgcgcg caggcggtcc tttaagtctg atgtgaaagc ccacggctca 600

accgtggagg gtcattggaa actggaggac ttgagtacag aagaggaaag cggaattcca 660

cgtgtagcgg tgaaatgcgt agagatgtgg aggaacacca gtggcgaagg cggctttctg 720

gtctgtaact gacgctgagg cgcgaaagcg tggggagcaa acaggattag ataccctggt 780

agtccacgcc gtaaacgatg agtgctaagt gttaggggtt ttccgcccct tagtgctgca 840

gctaacgcat taagcactcc gcctggggag tacggccgca aggctgaaac tcaaaggaat 900

tgacggggac ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttaccaggtc ttgacatccc gctgcccggc atggagacat gcytttccct tcggggacag 1020

cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc 1080

gcaacgagcg caacccttaa tcttagttgc catcattyag ttgggcactc taaggtgact 1140

gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc cttatgacct 1200

gggctacaca cgtgctacaa tggacggtac agagggctgc aaacccgcga gggggagcca 1260

atcccacaaa accgttccca gttcggattg caggctgcaa ctcgcctgca tgaagccgga 1320

atcgctagta atcgtggatc agcatgccac ggtgaatacg ttcccgggtc ttgtacacac 1380

cgcccgtcac accacgagag tttgtaacac ccgaagtcgg tggggtaacc cttacgggag 1440

ccagccgccg aaggtgggac agatgattgg ggtg 1474

<210> 1756
<211> 1509
<212> DNA
<213> Staphylococcaceae bacterium NML 92-0017

<400> 1756
gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc gcgactgatt acaccgtyct 60

tcggracacc gtaatcatcg agcggcggac gggtgagtaa cacgtgggca acctaccctt 120

aagactggga taaccgcggg aaaccgtggc taataccgga taatactttt atacaacggt 180

atagaagttg aaaggtggat ttctatcact taaggatggg cctgcggcgc attagctggt 240

tggtaaggta acggcttacc aaggcgacga tgcgtagccg acctgagagg gtgatcggcc 300

acactggaac tgagacacgg tccagactcc tacgggaggc agcagtaggg aatcttccgc 360

aatgggcgaa agcctgacgg agcaacgccg cgtgtgcgaa gaaggtcttc ggatcgtaaa 420

gcactgttgt taaggaagaa cgacagtaag agtaactgyt tactgtgtga cggtacttaa 480

ccagaaagcc acggctaact acgtgccagc agccgcggta atacgtaggt ggcaagcgtt 540

atccggaatt attgggcgta aagcgcgcgt aggcggcgag attagtctga tgtgaaagcc 600

cccggctcaa ccggggaagg tcattggaaa ctgtttcgct tgagtgcaga agaggagagt 660

ggaattccat gtgtagcggt gaaatgcgca gagatatgga ggaacaccag tggcgaaggc 720

ggctctctgg tctgcaactg acgctgatgt gcgaaagcgt ggggatcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga gtgctaagtg ttaggggttt tccgcccctt 840

agtgctgcag caaacgcatt aagcactccg cctggggagt acggccgcaa ggctgaaact 900

caaaggaatt gacggggacc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaaatct tgacatcctc tgaccgtcat ggagacatga ttttcccttt 1020

gggacagaga gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttaacttt agttgccatc attcagttgg gcactctaga 1140

gtgactgccg gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc atgccccttа 1200

tgatttgggc gacacacgtg ctacaatgga caggaacaaa gggcagcgaa actgtgaagt 1260

caagcgaatc ccataaaact gttctcagtt cggattggag tctgcaactc gactccatga 1320

agctggaatc gctagtaatc gtggatcaga atgccacggt gaatacgttc ccgggtcttg 1380

tacacaccgc ccgtcacacc acgaaagttg gtaacacctg aagccggtgg cctaaccatt 1440

tggagggagc cgtcgaaggt gggaccgatg attggggtga agtcgtaaca aggtagccgt 1500

atcggaagg 1509

<210> 1757
<211> 1401
<212> DNA
<213> Staphylococcus aureus

<220>
<221> modified_base
<222> (48)..(48)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1392)..(1392)
<223> a, c, t, g, unknown or other

<400> 1757
agcgaacgga cgagaagctt gcttctctga tgttagcggc ggacgggnga gtaacacgtg 60

gataacctac ctataagact gggataactt cgggaaaccg gagctaatac cggataatat 120

tttgaaccgc atggttcaaa agtgaaagac ggtcttgctg tcacttatag atggatccgc 180

gctgcattag ctagttggta aggtaacggc ttaccaaggc aacgatgcat agccgacctg 240

agagggtgat cggccacact ggaactgaga cacggtccag actcctacgg gaggcagcag 300

tagggaatct tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgatgaagg 360

tcttcggatc gtaaaactct gttattaggg aagaacatat gtgtaagtaa ctgtgcacat 420

cttgacggta cctaatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 480

taggtggcaa gcgttatccg gaattattgg gcgtaaagcg cgcgtaggcg gtttttaag 540

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactgga aaacttgagt 600

gcagaagagg aaagtggaat tccatgtgta gcggtgaaat gcgcagagat atggaggaac 660

accagtggcg aaggcgactt tctggtctgt aactgacgct gatgtgcgaa agcgtgggga 720

tcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttagg 780

gggtttccgc cccttagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac 840

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 900

taattcgaag caacgcgaag aaacttacca aatcttgaca tcctttgacc actctagaga 960

tagagccttc cccttcgggg gacaaagtga caggtggtgc atggttgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttaagcttag ttgccatcat 1080

taagttgggc actctaagtt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc 1140

aaatcatcat gccccttatg atttgggcta cacacgtgct acaatggaca atacaaaggg 1200

cagcgaaacc gcgaggtcaa gcaaatccca taaagttgtt ctcagttcgg attgtagtct 1260

gcaactcgac tacatgaagc tggaatcgct agtaatcgta gatcagcatg ctacggtgaa 1320

tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1380

ccggtggagt ancctttag g 1401

<210> 1758
<211> 1410
<212> DNA
<213> Staphylococcus auricularis

<400> 1758
tcgagcgaac agataaggag cttgctcctt tgacgttagc ggcggacggg tgagtaacac 60

gtgggtaacc tacctataag actggaataa ctccgggaaa ccggggctaa tgccggataa 120

catgttgaac cgcatggttc tacagtgaaa ggcggctttg ctgtcactta tagatggacc 180

cgcgccgtat tagctagttg gtgaggtaac ggctcaccaa ggcaacgata cgtagccgac 240

ctgagagggt gatcggccac actggaactg agacacggtc cagactccta cgggaggcag 300

cagtagggaa tcttccgcaa tgggcgaaag cctgacggag caacgccgcg tgagtgatga 360

aggtcttcgg atcgtaaaac tctgttatta gggaagaaca aatgcgtaag taactgtgcg 420

cgtcttgacg gtacctaatc agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttat ccggaattat tgggcgtaaa gcgcgcgtag gcggtttttt 540

aagtctgatg tgaaagccca cggctcaacc gtggagggtc attggaaact gaaaaacttg 600

agtgcagaag aggaaagtgg aattccatgt gtagcggtga aatgcgcaga gatatggagg 660

aacaccagtg gcgaaggcga ctttctggtc tgtaactgac gctgatgtgc gaaagcgtgg 720

ggatcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 780

agggggttt ccgcccctta gtgctgcagc taacgcatta mgcactccgc ctggggagta 840

cggccgcaag gcttaaactc aaaggaattg acggggaccc gcacaagcgg tggagcatgt 900

ggtttaaatt cgaagcaacg cgaagaacct taccaaatct tgacatcctt tgaccgctct 960

agagatagag tcttcccctt cgggggacaa agtgacaggt ggtgcatggt tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttaag cttagttgcc 1080

atcattcagt tgggcactct aagttgactg ccggtgacaa accggaggaa ggtggggatg 1140

acgtcaaatc atcatgcccc ttatgatttg ggctacacac gtgctacaat ggacaataca 1200

aagggcagcg aaaccgcgag gtcaagcaaa tcccataaag ttgttctcag ttcggattgt 1260

agtctgcaac tcgactacat gaagctggaa tcgctagtaa tcgtagatca gcatgctacg 1320

gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc 1380

cgaagtcggt agagtaacct tttggagcta 1410

<210> 1759
<211> 1549
<212> DNA
<213> Staphylococcus capitis

<400> 1759
tggagagttt gatcctggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg 60

agcgaacaga cgaggagctt gctcctctga cgttagcggc ggacgggtga gtaacacgtg 120

gataacctac ctataagact gggataactt cgggaaaccg gagctaatac cggataacat 180

gttgaaccgc atggttcaac agtgaaagac ggtcttgctg tcacttatag atggatccgc 240

gccgcattag ctagttggta aggtaacggc ttaccaaggc aacgatgcgt agccgacctg 300

agagggtgat cggccacact ggaactgaga cacggtccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgaagaagg 420

tcttcggatc gtaaaactct gttattaggg aagaacaaat gtgtaagtaa ctatgcacgt 480

cttgacggta cctaatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttatccg gaattattgg gcgtaaagcg cgcgtaggcg gtttttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactgga aaacttgagt 660

gcagaagagg aaagtggaat tccatgtgta gcggtgaaat gcgcagagat atggaggaac 720

accagtggcg aaggcgactt tctggtctgt aactgacgct gatgtgcgaa agcgtgggga 780

tcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttagg 840

gggtttccgc cccttagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca aatcttgaca tcctctgacc cctctagaga 1020

tagagttttc cccttcgggg gacagagtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttaagcttag ttgccatcat 1140

taagttgggc actctaagtt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gccccttatg atttgggcta cacacgtgct acaatggaca atacaaaggg 1260

tagcgaaacc gcgaggtcaa gcaaatccca taaagttgtt ctcagttcgg attgtagtct 1320

gcaactcgac tacatgaagc tggaatcgct agtaatcgta gatcagcatg ctacggtgaa 1380

tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1440

ccggtggagt aacctttttgg agctagccgt cgaaggtggg acaaatgatt ggggtgaagt 1500

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1549

<210> 1760
<211> 1551

<212> DNA
<213> Staphylococcus caprae

<400> 1760
tggagagttt gatcctggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg 60

agcgaacaga cgaggagctt gctcctttga cgttagcggc ggacgggtga gtaacacgtg 120

gataacctac ctataagact gggataactt cgggaaaccg gagctaatac cggataacat 180

gttgaaccgc atggttcaac agtgaaagac ggtcttgctg tcacttatag atggatccgc 240

gccgcattag ctagttggta aggtaacggc ttaccaaggc aacgatgcgt agccgacctg 300

agagggtgat cggccacact ggaactgaga cacggtccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgaagaagg 420

tcttcggatc gtaaaactct gttattaggg aagaacaaat gtgtaagtaa ctatgcacgt 480

cttgacggta cctaatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttatccg gaattattgg gcgtaaagcg cgcgtaggcg gtttttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactgga aaacttgagt 660

gcagaagagg aaagtggaat tccatgtgta gcggtgaaat gcgcagagat atggaggaac 720

accagtggcg aaggcgactt tctggtctgt aactgacgct gatgtgcgaa agcgtgggga 780

tcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttagg 840

gggtttccgc cccttagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca aatcttgaca tcctctgatc ccctctagag 1020

atagagtttt ccccttcggg ggacagagtg acaggtggtg catggttgtc gtcagctcgt 1080

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttaagctta gttgccatca 1140

ttaagttggg cactctaagt tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt 1200

caaatcatca tgcccccttat gatttgggct acacacgtgc tacaatggac aatacaaagg 1260

gtagcgaaaa ccgcgaggtc aagcaaatcc cataaagttg ttctcagttc ggattgtagt 1320

ctgcaactcg actacatgaa gctggaatcg ctagtaatcg tagatcagca tgctacggtg 1380

aatacgttcc cgggtcttgt acacaccgcc cgtcacacca cgagagtttg taacacccga 1440

agccggtgga gtaacctttt ggagctagcc gtcgaaggtg ggacaaatga ttggggtgaa 1500

gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acctcctttc t 1551

<210> 1761
<211> 1555
<212> DNA
<213> Staphylococcus carnosus

<400> 1761
ttttatggag agtttgatcc tggctcagga tgaacgctgg cggcgtgcct aatacatgca 60

agtcgagcga acagacgagg agcttgctcc tctgacgtta gcggcggacg ggtgagtaac 120

acgtgggtaa cctacctata agactggaat aactccggga aaccggggct aatgccggat 180

aatatgcaga accgcatggt tctgcaatga aagacggttt tgctgtcact tatagatgga 240

cccgcgccgt attagctagt tggtaaggta acggcttacc aaggcaacga tacgtagccg 300

acctgagagg gtgatcggcc acactggaac tgagacacgg tccagactcc tacgggaggc 360

agcagtaggg aatcttccgc aatgggcgaa agcctgacgg agcaacgccg cgtgagtgat 420

gaaggtcttc ggatcgtaaa actctgttat tagggaagaa caagtgcgta ggtaactatg 480

cgcaccttga cggtacctaa tcagaaagcc acggctaact acgtgccagc agccgcggta 540

atacgtaggt ggcaagcgtt atccggaatt attgggcgta aagcgcgcgt aggcggtttt 600

ttaagtctga tgtgaaagcc cacggctcaa ccgtggaggg tcattggaaa ctggaaaact 660

tgagtgcaga agaggaaagt ggaattccat gtgtagcggt gaaatgcgca gagatatgga 720

ggaacaccag tggcgaaggc gactttctgg tctgcaactg acgctgatgt gcgaaagcgt 780

ggggatcaaa caggattaga taccctggta gtccacgccg taaacgatga gtgctaagtg 840

ttaggggtt tccgcccctt agtgctgcag ctaacgcatt aagcactccg cctggggagt 900

acggccgcaa ggctgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaaatct tgacatcctt tgaccgctct 1020

agagatagag tcttcccctt cgggggacaa agtgacaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttaag cttagttgcc 1140

agcattaagt tgggcactct aagttgactg ccggtgacaa accggaggaa ggtggggatg 1200

acgtcaaatc atcatgcccc ttatgatttg ggctacacac gtgctacaat ggacagtaca 1260

aagggcagcg aaaccgcgag gtcaagcaaa tcccataaag ctgttctcag ttcggattgt 1320

agtctgcaac tcgactacat gaagctggaa tcgctagtaa tcgtagatca gcatgctacg 1380

gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccacgagagt tcgtaacacc 1440

cgaagccggt ggagtaacct tttaggagct agccgtcgaa ggtgggacga atgattgggg 1500

tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1555

<210> 1762
<211> 1232
<212> DNA
<213> Staphylococcus cohnii

<400> 1762
gcaagtcgag cgagcggcgg acgggtgagt aacacgtggg taacctacct ataagactgg 60

aataactccg ggaaaccggg gctaatgccg gataacgaaa gttacttata gatggacccg 120

cgccgtatta gctagttggt aaggtaacgg cttaccaagg caacgaaacg tagccgacct 180

gagagggga tcgtccacac tggaactgag acacggtcca gactcctacc ggaggcagca 240

gtagggaatc ttccgcaatg ggcgaaagcc tgacggagca acgccgcgtg agtgatgaag 300

gtcttcggat cgtaaaactc tgttattagg gaagatgacg gtacctaatc agaaagccac 360

ggctaactac gtgccagcag ccgcggtaat acgtaggtgg caagcgttat ccggaattat 420

tgggcgtaaa gcgcgcgtag gcggtttctt aagtctgatg tgaaagccca cggctcaacc 480

gtggagggtc attggaaact gggaaacttg agtgcagaag aggaaagtgg aattccatgt 540

gtagcggtga aatgcgcaga gatatggagg aacaccagtg gcgaaggcga ctttctggtc 600

tgactgacgc tgatgtgcga aagcgtgggg atcaaacagg attagatacc ctggtagtcc 660

acgccgtaaa cgatgagtgc taagtgttag ggccttagtg ctgcagctaa cgcattaagc 720

actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg gggacccgca 780

caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc aaatcttgac 840

atcgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 900

caacgagcgc aacccttaaa cttagttgcc agcatgggca ctctaagttg actgccggtg 960

acaaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga tttgggctac 1020

acacgtgcta caatggacaa caaagggcag ctaaaccgcg aggtcatgca aatcccattt 1080

gttctcagtt cggatgtagt ctgcaactcg actacagaag ctggaatcgc tagtaatcgt 1140

agatcagcat gctacggtga atacgttccc gggtcttgta cacaccgccc gtcacaccac 1200

gagagtttgt aacacccgaa gccggtgagt ag 1232

<210> 1763
<211> 1545
<212> DNA
<213> Staphylococcus condimenti

<220>
<221> modified_base
<222> (11)..(12)
<223> a, c, t, g, unknown or other

<400> 1763
agagtttgat nntggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaacagatga ggagcttgct cctctgacgt tagcggcgga cgggtgagta acacgtgggt 120

aacctaccta taagactgga ataactccgg gaaaccgggg ctaatgccgg ataatatgcg 180

gaaccgcatg gttctgcaat gaaagacggt tttgctgtca cttatagatg gacccgcgcc 240

gtattagcta gttggtaagg taacggctta ccaaggcaac gatacgtagc cgacctgaga 300

gggtgatcgg ccacactgga actgagacac ggtccagact cctacgggag gcagcagtag 360

ggaatcttcc gcaatgggcg aaagcctgac ggagcaacgc cgcgtgagtg atgaaggtct 420

tcggatcgta aaactctgtt attagggaag aacaagtgcg taggtaacta tgcgcacctt 480

gacggtacct aatcagaaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtggcaagcg ttatccggaa ttattgggcg taaagcgcgc gtaggcggtt ttttaagtct 600

gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactggaaaa cttgagtgca 660

gaagaggaaa gtggaattcc atgtgtagcg gtgaaatgcg cagagatatg gaggaacacc 720

agtggcgaag gcgactttct ggtctgcaac tgacgctgat gtgcgaaagc gtggggatca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag tgttaggggg 840

tttccgcccc ttagtgctgc agctaacgca ttaagcactc cgcctgggga gtacggccgc 900

aaggctgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca tgtggtttaa 960

ttcgaagcaa cgcgaagaac cttaccaaat cttgacatcc tttgaccgct ctagagatag 1020

agtcttcccc ttcgggggac aaagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta agcttagttg ccagcattaa 1140

gttgggcact ctaagttgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1200

tcatcatgcc ccttatgatt tgggctacac acgtgctaca atggacagta caaagggcag 1260

cgaaaccgcg aggtcaagca aatcccataa agctgttctc agttcggatt gtagtctgca 1320

actcgactac atgaagctgg aatcgctagt aatcgtagat cagcatgcta cggtgaatac 1380

gttcccgggt cttgtacaca ccgcccgtca caccacgaga gttcgtaaca cccgaagccg 1440

gtggagtaac cttttaggag ctagccgtcg aaggtgggac gaatgattgg ggtgaagtcg 1500

taacaaggta gccgtatcgg aaggtgcggc tggatcacct ccttt 1545

<210> 1764
<211> 1395
<212> DNA
<213> Staphylococcus epidermidis

<400> 1764
tcgagcgaac agacgaggag cttgctcctc tgacgttagc ggcggacggg tgagtaacac 60

gtggataacc tacctataag actgggataa cttcgggaaa ccggagctaa taccggataa 120

tatattgaac cgcatggttc aatagtgaaa gacggttttg ctgtcactta tagatggatc 180

cgcgccgcat tagctagttg gtaaggtaac ggcttaccaa ggcaacgatg cgtagccgac 240

ctgagagggt gatcggccac actggaactg agacacggtc cagactccta cgggaggcag 300

cagtagggaa tcttccgcaa tgggcgaaag cctgacggag caacgccgcg tgagtgatga 360

aggtcttcgg atcgtaaaac tctgttatta gggaagaaca aatgtgtaag taactatgca 420

cgtcttgacg gtacctaatc agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttat ccggaattat tgggcgtaaa gcgcgcgtag gcggtttttt 540

aagtctgatg tgaaagccca cggctcaacc gtggagggtc attggaaact ggaaaacttg 600

agtgcagaag aggaaagtgg aattccatgt gtagcggtga aatgcgcaga gatatggagg 660

aacaccagtg gcgaaggcga ctttctggtc tgtaactgac gctgatgtgc gaaagcgtgg 720

ggatcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 780

agggggtttc cgcccccttag tgctgcagct aacgcattaa gcactccgcc tggggagtac 840

gaccgcaagg ttgaaactca aaggaattga cggggacccg cacaagcggt ggagcatgtg 900

gtttaattcg aagcaacgcg aagaagctta ccaaatcttg acatcctctg acccctctag 960

agatagagtt ttcccccttcg ggggacagag tgacaggtgg tgcatggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttaagct tagttgccat 1080

cattaagttg ggcactctaa gttgactgcc ggtgacaaac cggaggaagg tggggatgac 1140

gtcaaatcat catgcccctt atgatttggg ctacacacgt gctacaatgg acaatacaaa 1200

gggcagcgaa accgcgaggt caagcaaatc ccataaagtt gttctcagtt cggattgtag 1260

tctgcaactc gactatatga agctggaatc gctagtaatc gtagatcagc atgctacggt 1320

gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg 1380

aagccggtgg agtaa 1395

<210> 1765
<211> 1494
<212> DNA
<213> Staphylococcus equorum

<400> 1765
agagtttgat cctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaacggataa ggagcttgct cctttgaagt tagcggcgga cgggtgagta acacgtgggt 120

aacctaccta taagactgga ataacttcgg gaaaccggag ctaatgccgg ataacatttg 180

gaaccgcatg gttctaaagt aaaagatggt tttgctatca cttatagatg gacccgcgcc 240

gtattagcta gttggtaagg taacggctta ccaaggcaac gatacgtagc cgacctgaga 300

gggtgatcgg ccacactgga actgagacac ggtccagact cctacgggag gcagcagtag 360

ggaatcttcc gcaatggacg aaagtctgac ggagcaacgc cgcgtgagtg atgaaggttt 420

tcggatcgta aaactctgtt attagggaag aacaaatgtg taagtaactg tgcacatctt 480

gacggtacct aatcagaaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtggcaagcg ttatccggaa ttattgggcg taaagcgcgc gtaggcggtt tcttaagtct 600

gatgtgaaag cccacggctc aaccgtggag ggtcattgga aactgggaaa cttgagtaca 660

gaagaggaaa gtggaattcc atgtgtagcg gtgaaatgcg cagagatatg gaggaacacc 720

agtggcgaag gcgactttct ggtctgtaac tgacgctgat gtgcgaaagc gtggggatca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctaag tgttaggggg 840

tttccgcccc ttagtgctgc agctaacgca ttaagcactc cgcctgggga gtacgaccgc 900

aaggttgaaa ctcaaaggaa ttgacgggga cccgcacaag cggtggagca tgtggtttaa 960

ttcgaagcaa cgcgaagaac cttaccaaat cttgacatcc tttgaaaact ctagagatag 1020

agccttcccc ttcgggggac aaagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta aacttagttg ccagcattta 1140

gttgggcact ctaggttgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1200

tcatcatgcc ccttatgatt tgggctacac acgtgctaca atggacaata caaagggcag 1260

ctaaaccgcg aggtcatgca aatcccataa agttgttctc agttcggatt gtagtctgca 1320

actcgactac atgaagctgg aatcgctagt aatcgtagat cagcatgcta cggtgaatac 1380

gttcccgggt cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagccg 1440

gtggagtaac catttatgga gctagccgtc gaaggtggga caaatgattg gggt 1494

<210> 1766
<211> 1454
<212> DNA
<213> Staphylococcus fleurettii

<400> 1766
agctggcggc gtgcctaata catgcaagtc gagcgaacag atgagaagct tgcttctctg 60

atgttagcgg cggacgggtg agtaacacgt gggtaaccta cctataagac tgggataact 120

ccgggaaacc ggggctaata cctgataata ttttgaaccg catggttcga tagtgaaagg 180

cggcttcggc tgtcacttat agatggaccc gcgccgtatt agctagttgg taaggtaatg 240

gcttaccaag gcgacgatac gtagccgacc tgagagggtg atcggccaca ctggaactga 300

gacacggtcc agactcctac gggaggcagc agtagggaat cttccgcaat gggcgaaagc 360

ctgacggagc aacgccgcgt gagtgatgaa ggttttcgga tcgtaaaact ctgttgttag 420

ggaagaacaa atttgttagt aactgaacaa gtcttgacgg tacctaacca gaaagccacg 480

gctaactacg tgccagcagc cgcggtaata cgtaggtggc aagcgttatc cggaattatt 540

gggcgtaaag cgcgcgtagg cggtttctta agtctgatgt gaaagcccac ggctcaaccg 600

tggagggtca ttggaaactg gggaacttga gtgcagaaga ggagagtgga attccatgtg 660

tagcggtgaa atgcgcagag atatggagga acaccagtgg cgaaggcggc tctctggtct 720

gtaactgacg ctgatgtgcg aaagcgtggg gatcaaacag gattagatac cctggtagtc 780

cacgccgtaa acgatgagtg ctaagtgtta gggggtttcc gcccccttagt gctgcagcta 840

acgcattaag cactccgcct ggggagtacg accgcaaggt tgaaactcaa aggaattgac 900

ggggacccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac 960

caaatcttga catcctttga tcgctctaga gatagagtct tccccttcgg gggacaaagt 1020

gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1080

cgagcgcaac ccttaagctt agttgccatc attaagttgg gcactctagg ttgactgccg 1140

gtgacaaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgatttgggc 1200

tacacacgtg ctacaatgga taatacaaag ggcagcgaac ccgcgaggtc aagcaaatcc 1260

cataaaatta ttctcagttc ggattgtagt ctgcaactcg actacatgaa gctggaatcg 1320

ctagtaatcg tagatcagca tgctacggtg aatacgttcc cgggtcttgt gaacaccgcc 1380

cgtcacacca cgagagtctg taacacccga aagccggtgg agtaaccttt tattaggagc 1440

tagccgtcga aggt 1454

<210> 1767
<211> 1549
<212> DNA
<213> Staphylococcus haemolyticus

<400> 1767
tggagagttt gatcctggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg 60

agcgaacaga caaggagctt gctcctttga cgttagcggc ggacgggtga gtgacacgtg 120

ggtaacctac ctataagact gggataactt cgggaaaccg gagctaatac cggataatat 180

ttcgaaccgc atggttcgat agtgaaagat ggttttgcta tcacttatag atggacccgc 240

gccgtattag ctagttggta aggtaacggc ttaccaaggc gacgatacgt agccgacctg 300

agagggtgat cggccacact ggaactgaga cacggtccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgatgaagg 420

tcttcggatc gtaaaactct gttattaggg aagaacatac gtgtaagtaa ctatgcacgt 480

cttgacggta cctaatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttatccg gaattattgg gcgtaaagcg cgcgtaggcg gtttttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactgga aaacttgagt 660

gcagaagagg aaagtggaat tccatgtgta gcggtgaaat gcgcagagat atggaggaac 720

accagtggcg aaggcgactt tctggtctgt aactgacgct gatgtgcgaa agcgtgggga 780

tcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttagg 840

gggtttccgc cccttagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca aatcttgaca tcctttgaca actctagaga 1020

tagagccttc cccttcgggg gacaaagtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttaagtttag ttgccatcat 1140

taagttgggc actctaagtt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gccccttatg atttgggcta cacacgtgct acaatggaca atacaaaggg 1260

cagcgaaatc gcgaggtcaa gcaaatccca taaagttgtt ctcagttcgg attgtagtct 1320

gcaactcgac tacatgaagc tggaatcgct agtaatcgta gatcagcatg ctacggtgaa 1380

tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1440

ccggtggagt aaccatttgg agctagccgt cgaaggtggg acaaatgatt ggggtgaagt 1500

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctcctttct 1549

<210> 1768
<211> 1575
<212> DNA
<213> Staphylococcus hominis

<220>
<221> modified_base
<222> (1)..(1)
<223> a, c, t, g, unknown or other

<400> 1768
ncgvtccagc tccggccgcc atggcggccg cgggaaattc gattagagtt tgattatggc 60

tcaggatgga cgctggcggc gtgcctaata catgcaagtc gagcgaacag acgaggagct 120

tgctccttcg acgttagcgg cggacgggtg agtaacacgt aggtaaccta cctataagac 180

tgggataact tcgggaaacc ggagctaata ccggataata tttcgaaccg catggttcga 240

tagtgaaaga tggctttgct atcacttata gatggacctg cgccgtatta gctagttggt 300

aaggtaacgg cttaccaagg caacgatacg tagccgacct gagagggtga tcggccacac 360

tggaactgag acacggtcca gactcctacg ggaggcagca gtagggaatc ttccgcaatg 420

ggcgaaagcc tgacggagca acgccgcgtg agtgatgaag gtcttcggat cgtaaaactc 480

tgttattagg gaagaacaaa cgtgtaagta actgtgcacg tcttgacggt acctaatcag 540

aaagccacgg ctaactacgt gccagcagcc gcggtaatac gtaggtggca agcgttatcc 600

ggaattattg ggcgtaaagc gcgcgtaggc ggtttttaa gtctgatgtg aaagcccacg 660

gctcaaccgt ggagggtcat tggaaactgg aaaacttgag tgcagaagag gaaagtggaa 720

ttccatgtgt agcggtgaaa tgcgcagaga tatggaggaa caccagtggc gaaggcgact 780

ttctggtctg taactgacgc tgatgtgcga aagcgtgggg atcaaacagg attagatacc 840

ctggtagtcc acgccgtaaa cgatgagtgc taagtgttag ggggtttccg ccccttagtg 900

ctgcagctaa cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa 960

ggaattgacg gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa 1020

gaaccttacc aaatcttgac atcctttgac ccttctagag atagaagttt ccccttcggg 1080

ggacaaagtg acaggtggtg catggttgtc gtcagctcgt gtcgtgagat gttgggttaa 1140

gtcccgcaac gagcgcaacc cttaagctta gttgccatca ttaagttggg cactctaagt 1200

tgactgccgg tgacaaaccg gaggaaggtg gggatgacgt caaaccatca tgccccttat 1260

gatttgggct acacacgtgc tacaatggac aatacaaagg gcagcgaaac cgcgaggtca 1320

agcaaatccc ataaagttgt tctcagttcg gattgtagtc tgcaactcga ctacatgaag 1380

ctggaatcgc tagtaatcgt agatcagcat gctacggtga atacgttccc gggtcttgta 1440

cacaccgccc gtcacaccac gagagtttgt aacacccgaa gccggtggag taaccatttg 1500

gagctagccg tcgaaggtgg gacaaatgat tggggtgaag tcgtaacaag gtaaccgtaa 1560

atcactagtg aattc 1575

<210> 1769
<211> 970
<212> DNA
<213> Staphylococcus lugdunensis

<400> 1769
tcgagcgaac agatgaggag cttgctcctt tgacgttagc ggcggacggg tgagtaacac 60

gtgggtaacc tacctataag actgggacaa cttcgggaaa ccggagctaa taccggataa 120

tatgttgaac cgcatggttc aatagtgaaa gatggttttg ctatcactta tagatggatc 180

cgcgccgtat tagctagttg gtgaggtaac ggctcaccaa ggcaacgata cgtagccgac 240

ctgagagggt gatcggccac actggaactg agacacggtc cagactccta cgggaggcag 300

cagtagggaa tcttccgcaa tgggcgaaag cctgacggag caacgccgcg tgagtgatga 360

aggtcttagg atcgtaaaac tctgttatta gggaagaaca aacgtgtaag taactgtgca 420

cgtcttgacg gtacctaatc agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttat ccggaattat tgggcgtaaa gcgcgcgtag gcggtttttt 540

aagtctgatg tgaaagccca cggctcaacc gtggagggtc attggaaact ggaaaacttg 600

agtgcagaag aggaaagtgg aattccatgt gtagcggtga aatgcgcaga gatatggagg 660

aacaccagtg gcgaaggcga ctttctggtc tgtaactgac gctgatgtgc gaaagcgtgg 720

ggatcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt gctaagtgtt 780

aggggtttc cgcccttag tgctgcagct aacgcattaa gcactccgcc tggggagtac 840

gaccgcaagg ttgaaactca aaggaattga cggggacccg cacaagcggt ggagcatgtg 900

gtttaattcg aagcaacgcg aagaacctta ccaatcttga catcctttga ccgctctaga 960

gatagagtct 970

<210> 1770
<211> 1520
<212> DNA
<213> Staphylococcus pasteuri

<400> 1770
ggagagtttg atcctggctc aggatgaacg ctggcggcgt gcctaataca tgcaagtcga 60

gcgaacagat aaggagcttg ctcctttgac gttagcggcg gacgggtgag taacacgtgg 120

ataacctacc tataagactg ggataacttc gggaaaccgg agctaatacc ggataacata 180

ttgaaccgca tggttcaata gtgaaaggcg gctttgctgt cacttataga tggatccgcg 240

ccgtattagc tagttggtaa ggtaacggct taccaaggca acgatacgta gccgacctga 300

gagggtgatc ggccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

agggaatctt ccgcaatggg cgaaagcctg acggagcagc gccgcgtgag tgatgaaggt 420

cttcggatcg taaaactctg ttatcaggga agaacaaatg tgtaagtaac tgtgcacatc 480

ttgacggtac ctgatcagaa agccacggct aacaacgtgc cagcagccgc ggtaatacgt 540

aggtggcaag cgttatccgg aattattggg cgtaaaagcg cgcgtaggcg gtttttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactgga aaacttgagt 660

gcagaagagg aaagtggaat tccatgtgta gcggtgaaat gcgcagagat atggaggaac 720

accagtggcg aaggcgactt tctggtctgt aactgacgct gatgtgcgaa agcgtgggga 780

tcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttagg 840

gggtttccgc cccttagtgc tgcagctaac gcattaagca cgccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca aatcttgaca tcctttgacc gctctagaga 1020

tagagtcttc cccttcgggg gacaaagtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttaagcttag ttgccatcat 1140

taagttgggc actctaagtt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gcccttatg atttgggcta cacacgtgct acaatggaca atacaaaggg 1260

cagctaaacc gcgaggtcaa gcaaatccca taaagttgtt ctcagttcgg attgtagtct 1320

gcaactcgac tacatgaagc tggaatcgct agtaatcgta gaacagcatg ctacggtgaa 1380

tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1440

ccggtggagt aaccatttat ggagctagcc gtcgaaggtg ggacaaatga ttggggtgaa 1500

gtcgtaacaa ggtagccgta 1520

<210> 1771
<211> 1555
<212> DNA
<213> Staphylococcus pseudintermedius

<400> 1771
ttttatggag agtttgatcc tggctcagga tgaacgctgg cggcgtgcct aatacatgca 60

agtcgagcga acagataagg agcttgctcc tttgacgtta gcggcggacg ggtgagtaac 120

acgtgggtaa cctacctata agactggaat aactccggga aaccggggct aatgccggat 180

aacatgttga accgcatggt tctacagtga aagacggtct tgctgtcact tatagatgga 240

cccgcgccgt attagctagt tggtggggta acggcctacc aaggcgacga tacgtagccg 300

acctgagagg gtgatcggcc acactggaac tgagacacgg tccagactcc tacgggaggc 360

agcagtaggg aatcttccgc aatgggcgaa agcctgacgg agcaacgccg cgtgagtgat 420

gaaggtcttc ggatcgtaaa gctctgttgt tagggaagaa caaatgtgta agtaactgtg 480

cacatcttga cggtacctaa ccagaaagcc acggctaact acgtgccagc agccgcggta 540

atacgtaggt ggcaagcgtt atccggaatt attgggcgta aagcgcgcgt aggcggtttt 600

ttaagtctga tgtgaaagcc cacggctcaa ccgtggaggg tcattggaaa ctggaaaact 660

tgagtgcaga agaggaaagt ggaattccat gtgtagcggt gaaatgcgca gagatatgga 720

ggaacaccag tggcgaaggc ggctttctgg tctgcaactg acgctgatgt gcgaaagcgt 780

ggggatcaaa caggattaga taccctggta gtccacgccg taaacgatga gtgctaagtg 840

ttaggggtt tccgcccctt agtgctgcag ctaacgcatt aagcactccg cctggggagt 900

acggtcgcaa gactgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaaatct tgacatcctt tgaccgctct 1020

agagatagag ttttcctctt cggaggacaa agtgacaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttgag cttagttgcc 1140

atcattcagt tgggcactct aagttgactg ccggtgacaa accggaggaa ggtggggatg 1200

acgtcaaatc atcatgcccc ttatgatttg ggctacacac gtgctacaat ggacaataca 1260

aagggcagcg aaaccgcgag gtcaagcaaa tcccataaag ttgttctcag ttcggattgt 1320

agtctgcaac tcgactacat gaagctggaa tcgctagtaa tcgtagatca gcatgctacg 1380

gtgaatacgt tcccgggtct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc 1440

cgaagccggt ggagtaacca ttttggagct agccgtcgaa ggtgggacaa atgattgggg 1500

tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1555

<210> 1772
<211> 1527
<212> DNA
<213> Staphylococcus saccharolyticus

<220>
<221> modified_base
<222> (22)..(22)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1505)..(1505)
<223> a, c, t, g, unknown or other

<400> 1772
ctggctcagg atgtaygctg gnggcgtgcc taatacatgc aagtcgagcg aacagacgag 60

gagcttgctc ctctgacgtt agcggcggac gggtgagtaa cacgtggata acctacctat 120

aagactggga taacttcggg aaaccggagc taataccaga taacatgttg aaccgcatgg 180

ttcaacagtg aaagacggtc ttgctgtcac ttatagatgg atccgcgccg cattagctag 240

ttggtaaggt aacggcttac caaggcaacg atgcgtagcc gacctgagag ggtgatcggc 300

cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtagg gaatcttccg 360

caatgggcga aagcctgacg gagcaacgcc gcgtgagtga tgaaggtctt cggatcgtaa 420

aactctgtta ttagggaaga acaaatgtgt aagtaactat gcacgtcttg acggcaccta 480

atcagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt 540

tatccggaat tattgggcgt aaagcgcgcg taggcggttt tttaagtctg atgtgaaagc 600

ccacggctca accgtggagg gtcattggaa actggaaaac ttgagtgcag aagaggaaag 660

tggaattcca tgtgtagcgg tgaaatgcgc agagatatgg aggaacacca gtggcgaagg 720

cgactttctg gtctgtaact gacgctgatg tgcgaaagcg tggggatcaa acaggattag 780

ataccctggt agtccacgcc gtaaacgatg agtgctaagt gttaggggtt ttccgcccct 840

tagtgctgca gctaacgcat taagcactcc gcctggggag tacgaccgca aggttgaaac 900

tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac 960

gcgaagaacc ttaccaaatc ttgacatcct ctgacccctc tagagataga gttttcccct 1020

tcgggggaca gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccttaa gcttagttgc catcattaag ttgggcactc 1140

taagttgact gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc 1200

cttatgattt gggctacaca cgtgctacaa tggacaatac aaagggcagc gaaaccgcga 1260

ggtcaagcaa accccataaa gttgttctca gttcggattg tagtctgcaa ctcgactata 1320

tgaagctgga atcgctagta atcgtagatc agcatgctac ggtgaatacg ttcccgggtc 1380

ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagccgg tggagtaacc 1440

tkttggagct agccgtcgaa ggtgggacaa atgattgggg tgaagtcgta acaaggtaag 1500

tcgtnacaag gtaagtcgcc acaaggt 1527

<210> 1773
<211> 1551
<212> DNA
<213> Staphylococcus saprophyticus

<400> 1773
tggagagttt gatcctggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg 60

agcgaacaga taaggagctt gctcctttga cgttagcggc ggacgggtga gtaacacgtg 120

ggtaacctac ctataagact gggataactt cgggaaaccg gagctaatac cggataacat 180

ttggaaccgc atggttctaa agtgaaagat ggttttgcta tcacttatag atggacccgc 240

gccgtattag ctagttggta aggtaacggc ttaccaaggc gacgatacgt agccgacctg 300

agagggtgat cggccacact ggaactgaga cacggtccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgatgaagg 420

gtttcggctc gtaaaactct gttattaggg aagaacaaac gtgtaagtaa ctgtgcacgt 480

cttgacggta cctaatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttatccg gaattattgg gcgtaaagcg cgcgtaggcg gtttcttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactggg aaacttgagt 660

gcagaagagg aaagtggaat tccatgtgta gcggtgaaat gcgcagagat atggaggaac 720

accagtggcg aaggcgactt tctggtctgt aactgacgct gatgtgcgaa agcgtgggga 780

tcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttagg 840

gggtttccgc cccttagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca aatcttgaca tcctttgaaa actctagaga 1020

tagagccttc cccttcgggg gacaaagtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttaagcttag ttgccatcat 1140

taagttgggc actctaggtt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gccccttatg atttgggcta cacacgtgct acaatggaca atacaaaggg 1260

cagctaaacc gcgaggtcat gcaaatccca taaagttgtt ctcagttcgg attgtagtct 1320

gcaactcgac tacatgaagc tggaatcgct agtaatcgta gatcagcatg ctacggtgaa 1380

tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1440

ccggtggagt aaccatttat ggagctagcc gtcgaaggtg ggacaaatga ttggggtgaa 1500

gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acctcctttc t 1551

<210> 1774
<211> 1528
<212> DNA

<213> Staphylococcus sciuri

<400> 1774
gatgaacgct ggcggcgtgc ctaatacatg caagtcgagc gaacagatga gaagcttgct 60

tctctgatgt tagcggcgga cgggtgagta acacgtgggt aacctaccta taagactggg 120

ataactccgg gaaaccgggg ctaataccgg ataatatttt gaaccgcatg gttcaatagt 180

gaaagacggt ttcggctgtc acttatagat ggacccgcgc cgtattagct agttggtaag 240

gtaacggctt accaaggcga cgatacgtag ccgacctgag agggtgatcg gccacactgg 300

aactgagaca cggtccagac tcctacggga ggcagcagta gggaatcttc cgcaatgggc 360

gaaagcctga cggagcaacg ccgcgtgagt gatgaaggtc ttcggatcgt aaaactctgt 420

tgttagggaa gaacaaattt gttagtaact gaacaagtct tgacggtacc taaccagaaa 480

gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc gttatccgga 540

attattgggc gtaaagcgcg cgtaggcggt ttcttaagtc tgatgtgaaa gcccacggct 600

caaccgtgga gggtcattgg aaactgggaa acttgagtgc agaagaggag agtggaattc 660

catgtgtagc ggtgaaatgc gcagagatat ggaggaacac cagtggcgaa ggcggctctc 720

tggtctgtaa ctgacgctga tgtgcgaaag cgtggggatc aaacaggatt agataccctg 780

gtagtccacg ccgtaaacga tgagtgctaa gtgttagggg gtttccgccc cttagtgctg 840

cagctaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa actcaaagga 900

attgacgggg acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa 960

ccttaccaaa tcttgacatc ctttgaccgc tctagagata gagtcttccc cttcggggga 1020

caaagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc 1080

ccgcaacgag cgcaaccctt aagcttagtt gccatcatta agttgggcac tctaggttga 1140

ctgccggtga caaaccggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgat 1200

ttgggctaca cacgtgctac aatggataat acaaagggca gcgaatccgc gaggccaagc 1260

aaatcccata aaattattct cagttcggat tgtagtctgc aactcgacta catgaagctg 1320

gaatcgctag taatcgtaga tcagcatgct acggtgaata cgttcccggg tcttgtacac 1380

accgcccgtc acaccacgag agtttgtaac acccgaagcc ggtggagtaa ccttttagga 1440

gctagccgtc gaaggtggga caaatgattg gggtgaagtc gtaacaaggt agccgtatcg 1500

gaaggtgcgg ctggatcacc tcctttct 1528

<210> 1775
<211> 1364
<212> DNA
<213> Staphylococcus sp. H292

<400> 1775
gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc aagtcgagcg 60

agcggcggac gggtgagtaa cacgtaggta acctacctat aagactggga taacttcggg 120

aaaccggagc taataccgga taatgaaagt cacttataga tggacctgcg ccgtattagc 180

tagttggtaa ggtaacggct taccaaggca acgatacgta gccgacctga gagggtgatc 240

ggccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt agggaatctt 300

ccgcaatggg cgaaagcctg acggagcaac gccgcgtgag tgatgaaggt cttcggatcg 360

taaaactctg ttattaggga agatgacggt acctaatcag aaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggaattattg ggcgtaaagc 480

gcgcgtaggc ggtttttaa gtctgatgtg aaagcccacg gctcaaccgt ggagggtcat 540

tggaaactgg aaaacttgag tgcagaagag gaaagtggaa ttccatgtgt agcggtgaaa 600

tgcgcagaga tatggaggaa caccagtggc gaaggcgact ttctggtctg actgacgctg 660

atgtgcgaaa gcgtggggat caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta agtgttaggg ccttagtgct gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccaa atcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttaagct tagttgccat catgggcact ctaagttgac tgccggtgac aaaccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgatt tgggctacac acgtgctaca 1080

atggacaaca aagggcagcg aaaccgcgag gtcaagcaaa tcccatttgt tctcagttcg 1140

gatgtagtct gcaactcgac tacagaagct ggaatcgcta gtaatcgtag atcagcatgc 1200

tacggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagc cggtgagtag ctagccgtcg aaggtgggac aaatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctt 1364

<210> 1776
<211> 1364
<212> DNA
<213> Staphylococcus sp. H780

<400> 1776
gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc aagtcgagcg 60

agcggcggac gggtgagtaa cacgtggata acctacctat aagactggga taacttcggg 120

aaaccggagc taataccgga taatgaaagt cacttataga tggatccgcg ccgcattagc 180

tagttggtaa ggtaacggct taccaaggca acgatgcgta gccgacctga gagggtgatc 240

ggccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt agggaatctt 300

ccgcaatggg cgaaagcctg acggagcaac gccgcgtgag tgatgaaggt cttcggatcg 360

taaaactctg ttattaggga agatgacggt acctaatcag aaagccacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttatcc ggaattattg ggcgtaaagc 480

gcgcgtaggc ggtttttaa gtctgatgtg aaagcccacg gctcaaccgt ggagggtcat 540

tggaaactgg aaaacttgag tgcagaagag gaaagtggaa ttccatgtgt agcggtgaaa 600

tgcgcagaga tatggaggaa caccagtggc gaaggcgact ttctggtctg actgacgctg 660

atgtgcgaaa gcgtggggat caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta agtgttaggg ccttagtgct gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg gacccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccaa atcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccttaagct tagttgccat catgggcact ctaagttgac tgccggtgac aaaccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgatt tgggctacac acgtgctaca 1080

atggacaaca aagggcagcg aaaccgcgag gtcaagcaaa tcccatttgt tctcagttcg 1140

gatgtagtct gcaactcgac tatagaagct ggaatcgcta gtaatcgtag atcagcatgc 1200

tacggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagc cggtgagtag ctagccgtcg aaggtgggac aaatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctt 1364

<210> 1777
<211> 1545
<212> DNA
<213> Staphylococcus sp. clone bottae7

<400> 1777
gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc aagtcgagcg 60

aacagataag gagcttgctc ctttgacgtt agcggcggac gggtgagtaa cacgtgggta 120

acctacctat aagactggga taactccggg aaaccggggc taataccgga taatatttag 180

aaccgcatgg ttctaaagtg aaagatggcc ttgctatcac ttatagatgg acccgcgccg 240

tattagctag ttggtaaggt aacggcttac caaggcaacg atacgtagcc gacctgagag 300

ggtgatcggc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtagg 360

gaatcttccg caatgggcga aagcctgacg gagcaacgcc gcgtgagtga tgaaggtctt 420

cggatcgtaa aactctgtta ctagggaaga acaaatgcgt aagtaactgt gcgcgtcttg 480

acggtaccta atcagaaagc cacggctaac tacgtgccag cagccgcggt aatacgtagg 540

tggcaagcgt tatccggaat tattgggcgt aaagcgcgcg taggcgggtt tttaagtctg 600

atgtgaaagc ccacggctca accgtggagg gtcattggaa actggaaaac ttgagtgcag 660

aagaggaaag tggaattcca tgtgtagcgg tgaaatgcgc agagatatgg aggaacacca 720

gtggcgaagg cgactttctg gtctgtaact gacgctgatg tgcgaaagcg tggggatcaa 780

acaggattag ataccctggt agtccacgct gtaaacgatg agtgctaagt gttaggggt 840

ttccgccccct tagtgctgca gctaacgcat taagcactcc gcctggggag tacgaccgca 900

aggttgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggagcat gtggtttaat 960

tcgaagcaac gcgaagaacc ttaccaaatc ttgacatcct ttgaccacgc tagagatagc 1020

gttttcccct tcgggggaca aagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccttaa gcttagttgc catcattaag 1140

ttgggcactc taggttgact gccggtgaca aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgattt gggctacaca cgtgctacaa tggacaatac aaagggcagc 1260

taaaccgcga ggtcatgcaa atcccataaa gttgttctca gttcggattg tagtctgcaa 1320

ctcgactaca tgaagctgga atcgctagta atcgtagatc agcatgctac ggtgaatacg 1380

ttcccgggtc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagccgg 1440

tggagtaacc ttttggagct agccgtcgaa ggtgggacaa atgattgggg tgaagtcgta 1500

acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1545

<210> 1778
<211> 1548
<212> DNA
<213> Staphylococcus succinus

<400> 1778
tggagagttt gatcctggct caggatgaac gctggcggcg tgcctaatac atgcaagtcg 60

agcgaacgga taaggagctt gctcctttga agttagcggc ggacgggtga gtaacacgtg 120

ggtaacctac ctataagact ggaataactt cgggaaaccg gagctaatgc cggataacat 180

atagaaccgc atggttctat agtgaaagat ggttttgcta tcacttatag atggacccgc 240

gccgtattag ctagttggta aggtaatggc ttaccaaggc gacgatacgt agccgacctg 300

agagggtgat cggccacact ggaactgaga cacggtccag actcctacgg gaggcagcag 360

tagggaatct tccgcaatgg gcgaaagcct gacggagcaa cgccgcgtga gtgatgaagg 420

ttttcggatc gtaaaactct gttattaggg aagaacaaat gcgtaagtaa ctgtgcgcat 480

cttgacggta cctaatcaga aagccacggc taactacgtg ccagcagccg cggtaatacg 540

taggtggcaa gcgttatccg gaattattgg gcgtaaagcg cgcgtaggcg gtttcttaag 600

tctgatgtga aagcccacgg ctcaaccgtg gagggtcatt ggaaactggg aaacttgagt 660

gcagaagagg aaagtggaat tccatgtgta gcggtgaaat gcgcagagat atggaggaac 720

accagtggcg aaggcgactt tctggtctgt aactgacgct gatgtgcgaa agcgtgggga 780

tcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aagtgttagg 840

gggtttccgc cccttagtgc tgcagctaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg ggacccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca aatcttgaca tcctttgaaa actctagaga 1020

tagagccttc cccttcgggg gacaaagtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttaagcttag ttgccatcat 1140

taagttgggc actctaggtt gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gccccttatg atttgggcta cacacgtgct acaatggaca atacaaaggg 1260

cagctaaacc gcgaggtcat gcaaatccca taaagttgtt ctcagttcgg attgtagtct 1320

gcaactcgac tacatgaagc tggaatcgct agtaatcgta gatcagcatg ctacggtgaa 1380

tacgttcccg ggtcttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1440

ccggtggagt aaccatttat ggagctagcc gtcgaaggtg ggacaaatga ttggggtgaa 1500

gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acctcctt 1548

<210> 1779
<211> 1497
<212> DNA
<213> Staphylococcus vitulinus

<400> 1779
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtcgagc 60

gaacagatga gaagcttgct tctctgatgt tagcggcgga cgggtgagta acacgtgggt 120

aacctaccta taagactggg ataactccgg gaaaccgggg ctaatacctg ataatatttt 180

gaaccgcatg gttcaatagt gaaagacggc ttcggctgtc acttatagat ggacccgcgc 240

cgtattagct agttggtaag gtaatggctt accaaggcaa cgatacgtag ccgacctgag 300

agggtgatcg gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagta 360

gggaatcttc cgcaatgggc gaaagcctga cggagcaacg ccgcgtgagt gatgaaggtc 420

ttaggatcgt aaaactctgt tgttagggaa gaacaaattt gttagtaact gaacaagtct 480

tgacggtacc taaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtggcaagc gttatccgga attattgggc gtaaagcgcg cgtaggcggt ttcttaagtc 600

tgatgtgaaa gtccacggct caaccgtgga aggtcattgg aaactgggga acttgagtgc 660

agaagaggag agtggaattc catgtgtagc ggtgaaatgc gcagagatat ggaggaacac 720

cagtggcgaa ggcggctctc tggtctgtaa ctgacgctga tgtgcgaaag cgtggggatc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagggg 840

gtttccgccc cttagtgctg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg acccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccaaa tcttgacatc ctttgatcgc tctagagata 1020

gagttttccc cttcgggggа caaagtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt aagcttagtt gccatcatta 1140

agttgggcac tctaggttga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1200

atcatcatgc cccttatgat ttgggctaca cacgtgctac aatggataat acaaagggca 1260

gcgaaaccgc gaggtcaagc aaatcccata aaattattct cagttcggat tgtagtctgc 1320

aactcgacta catgaagctg gaatcgctag taatcgtaga tcagcatgct acggtgaata 1380

cgttcccggg tcttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagcc 1440

ggtggagtaa ccttttatta ggagctagcc gtcgaaggtg ggacagatga ttggggt 1497

<210> 1780
<211> 1403
<212> DNA

<213> Staphylococcus warneri

<400> 1780
cgaacagata aggagcttgc tcctttgacg ttagcggcgg acgggtgagt aacacgtgga 60

taacctacct ataagactgg gataacttcg ggaaaccgga gctaataccg gataacatat 120

tgaaccgcat ggttcaatag tgaaaggcgg ctttgctgtc acttatagat ggatccgcgc 180

cgtattagct agttggtaag gtaacggctt accaaggcaa cgatacgtag ccgacctgag 240

agggtgatcg gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagta 300

gggaatcttc cgcaatgggc gaaagcctga cggagcaacg ccgcgtgagt gatgaaggtc 360

ttcggatcgt aaaactctgt tatcagggaa gaacaaatgt gtaagtaact gtgcacatct 420

tgacggtacc tgatcagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta 480

ggtggcaagc gttatccgga attattgggc gtaaagcgcg cgtaggcggt tttttaagtc 540

tgatgtgaaa gcccacggct caaccgtgga gggtcattgg aaactggaaa acttgagtgc 600

agaagaggaa agtggaattc catgtgtagc ggtgaaatgc gcagagatat ggaggaacac 660

cagtggcgaa ggcgactttc tggtctgtaa ctgacgctga tgtgcgaaag cgtggggatc 720

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttagggg 780

gtttccgccc cttagtgctg cagctaacgc attaagcact ccgcctgggg agtacgaccg 840

caaggttgaa actcaaagga attgacgggg acccgcacaa gcggggagca tgtggtttaa 900

ttcgaagcaa cgcgaagaac cttacgaaat catgacgtcc tttgacgttt ctagagatag 960

agtcgtctac atcgggggac aaagtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta agcttagttg ccatcattaa 1080

gttgggcact ctaagttgac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1140

tcatcatgcc ccttatgatt tgggctacac acgtgctaca atggacaata caaagggcag 1200

ctaaaccgcg aggtcaagca aatcccataa agttgttctc agttcggatt gtagtctgca 1260

actcgactac atgaagctgg aatcgctagt aatcgtagat cagcatgcta cggtgaatac 1320

gttcccgggt cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagccg 1380

gtggagtaac catttatgga gct 1403

<210> 1781
<211> 1487
<212> DNA
<213> Staphylococcus xylosus

<400> 1781
tggcggggtg cctaatacat gcaagtcgag cgaacagata aggagcttgc tcctttgacg 60

ttagcggcgg acgggtgagt aacacgtggg taacctacct ataagactgg gataacttcg 120

ggaaaccgga gctaataccg gataacattt ggaaccgcat ggttctaaag tgaaagatgg 180

ttttgctatc acttatagat ggacccgcgc cgtattagct agttggtaag gtaacggctt 240

accaaggcaa cgatacgtag ccgacctgag agggtgatcg gccacactgg aactgagaca 300

cggtccagac tcctacggga ggcagcagta gggaatcttc cgcaatgggc gaaagcctga 360

cggagcaacg ccgcgtgagt gatgaagggt ttcggctcgt aaaactctgt tattagggaa 420

gaacaaatgt gtaagtaact gtgcacatct tgacggtacc taatcagaaa gccacggcta 480

actacgtgcc agcagccgcg gtaatacgta ggtggcaagc gttatccgga attattgggc 540

gtaaagcgcg cgtaggcggt ttcttaagtc tgatgtgaaa gcccacggct caaccgtgga 600

gggtcattgg aaactgggaa acttgagtgc agaagaggaa agtggaattc catgtgtagc 660

ggtgaaatgc gcagagatat ggaggaacac cagtggcgaa ggcgactttc tggtctgtaa 720

ctgacgctga tgtgcgaaag cgtggggatc aaacaggatt agataccctg gtagtccacg 780

ccgtaaacga tgagtgctaa gtgttaggtg ggtttccgcc ccttagtgct gcagctaacg 840

cattaagcac tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg 900

gacccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccaa 960

atcttgacat cctttgaaaa ctctagagat agagccttcc ccttcggggg acaaagtgac 1020

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1080

gcgcaaccct taagcttagt tgccatcatt aagttgggca ctctaggttg actgccggtg 1140

acaaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga tttgggctac 1200

acaccgtgct acaatggaca atacaaaggg cagctaaacc gcgaggtcat gcaaatccca 1260

taaagttgtt ctcagttcgg attgtagtct gcaactcgac tacatgaagc tggaatcgct 1320

agtaatcgta gatcagcatg ctacggtgaa tacgttcccg ggtcttgtac acaccgcccg 1380

tcacaccacg agagtttgta acacccgaag ccggtggagt aaccatttat ggagctagcc 1440

gtcgaaggtg ggacaaatga ttggggtgaa gtcgtaacaa gggaacc 1487

<210> 1782
<211> 1547
<212> DNA
<213> Stenotrophomonas maltophilia

<400> 1782
taagtgaaga gtttgatcct ggctcagagt gaacgctggc ggtaggccta acacatgcaa 60

gtcgaacggc agcacagtaa gagcttgctc ttacgggtgg cgagtggcgg acgggtgagg 120

aatacatcgg aatctacttt ttcgtggggg ataacgtagg gaaacttacg ctaataccgc 180

atacgaccta cgggtgaaag caggggatct tcggaccttg cgcgattgaa tgagccgatg 240

tcggattagc tagttggcgg ggtaaaggcc caccaaggcg acgatccgta gctggtctga 300

gaggatgatc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt ggacaatggg cgcaagcctg atccagccat accgcgtggg tgaagaaggc 420

cttcgggttg taaagccctt ttgttgggaa agaaatccag ctggttaata cccggttggg 480

atgacggtac ccaaagaata agcaccggct aacttcgtgc cagcagccgc ggtaatacga 540

agggtgcaag cgttactcgg aattactggg cgtaaagcgt gcgtaggtgg ttgtttaagt 600

ctgttgtgaa agccctgggc tcaacctggg aactgcagtg gaaactggac gactagagtg 660

tggtagaggg tagcggaatt cctggtgtag cagtgaaatg cgtagagatc aggaggaaca 720

tccatggcga aggcagctac ctggaccaac actgacactg aggcacgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccctaaacg atgcgaactg gatgttgggt 840

gcaatttggc acgcagtatc gaagctaacg cgttaagttc gccgcctggg gagtacggtc 900

gcaagactga aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt 960

aattcgatgc aacgcgaaga accttacctg gccttgacat gtcgagaact ttccagagat 1020

ggattggtgc cttcgggaac tcgaacacag gtgctgcatg gctgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tccttagttg ccagcacgta 1140

atggtgggaa ctctaaggag accgccggtg acaaaccgga ggaaggtggg gatgacgtca 1200

agtcatcatg gcccttacgg ccagggctac acacgtacta caatggtagg gacagagggc 1260

tgcaagccgg cgacggtaag ccaatcccag aaaccctatc tcagtccgga ttggagtctg 1320

caactcgact ccatgaagtc ggaatcgcta gtaatcgcag atcagcattg ctgcggtgaa 1380

tacgttcccg ggccttgtac acaccgcccg tcacaccatg ggagtttgtt gcaccagaag 1440

caggtagctt aaccttcggg agggcgcttg ccacggtgtg gccgatgact ggggtgaagt 1500

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac ctccttt 1547

<210> 1783
<211> 1508
<212> DNA
<213> Stenotrophomonas sp. FG-6

<400> 1783
gtttgatcct ggctcagagt gaacgctggc ggtaggccta acacatgcaa gtcgaacggc 60

agcacagtaa gagcttgctc ttacgggtgg cgagtggcgg acgggtgagg aatgcatcgg 120

aatctactct gtcgtggggg ataacgtagg gaagcttacg ctaataccgc atacgaccta 180

cgggtgaaag caggggatct tcggaccttg cgcgattgaa tgagccgatg cccgattagc 240

tagttggcgg ggtaagagcc caccaaggcg acgatcggta gctggtctga gaggatgatc 300

agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 360

ggacaatggg cgcaagcctg atccagccat accgcgtggg tgaagaaggc cttcgggttg 420

taaagccctt ttgttgggaa agaaaagcag ccggttaata cccggttgtt ctgacggtac 480

ccaaagaata agcaccggct aacttcgtgc cagcagccgc ggtaatacga agggtgcaag 540

cgttactcgg aattactggg cgtaaagcgt gcgtaggtgg ttgtttaagt ctgtcgtgaa 600

agccctgggc tcaacctggg aatggcgatg gaaactgggc gactagagtg tggcagaggg 660

tagtggaatt cctggtgtag cagtgaaatg cgtagagatc aggaggaaca tccgtggcga 720

aggcgactgc ctgggccaac actgacactg aggcacgaaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gccctaaacg atgcgaactg gatgttgggt gcaatttggc 840

acgcagtatc gaagctaacg cgttaagttc gccgcctggg gagtacggtc gcaagactga 900

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgatgc 960

aacgcgaaga accttacctg gccttgacat gcacggaact ttccagagat ggattggtgc 1020

cttcgggaac cgtgacacag gtgctgcatg gctgtcgtca gctcgtgtcg tgagatgttg 1080

ggttaagtcc cgcaacgagc gcaacccttg tccttagttg ccagcacgta atggtgggaa 1140

ctctaaggag accgccggtg acaaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacgg ccagggctac acacgtacta caatggtagg gacagagggc tgcaagccgg 1260

cgacggtgag ccaatcccag aaaccctatc tcagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgcag atcagcattg ctgcggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtttgtt gcaccagaag caggtagctt 1440

aaccttcggg agggcgcttg ccacggtgtg gccgatgact ggggtgaagt cgtaacaagg 1500

tagccgta 1508

<210> 1784
<211> 1485
<212> DNA
<213> Streptobacillus moniliformis

<400> 1784
agagtttgat cctggctcag gatgaacgct gacagaatgc ttaacacatg caaatctatg 60

tatgaaatgt aagcttgctt acatagacta catggtggac tggtgagtaa cgtgtaaaga 120

acttacctct tagactggga taaccattag gaaatgatgg ataatactag atattattag 180

tagtaggcat ctactattaa tgaaaggaga gattgctaag agagagcttt gcatcctatt 240

agctagttgg tggggtaaag gcctaccaag gctatgatag gtagccggcc cgagaggtga 300

acggccacaa ggggactgag atacggccct tactcctacg ggaggcagca gtggggaata 360

ttggacaatg gaggaaactc tgatccagca attctgtgtg cacgaagaag gttttcggat 420

tgtaaagtgc tttcagtagg gaagaagaag atgacggtac ctacagaaga agcgacggct 480

aaatacgtgc cagcagccgc ggtaatacgt atgtcgcaag cgttatccgg aattattggg 540

cttaaagggc atctaggcgg tctaacaagt tgaaggtgaa aagctgtggc tcaaccatag 600

tcttgcctac aaaactgtca gactagagta ctggaaaggt gggtggaact acacgagtag 660

aggtgaaatt cgtagatatg tgtaggaatg ccgatgatga agataactca ctggacagaa 720

actgacgctg aagtgcgaaa cgtaggggag caaacaggat tagataccct ggtagtccta 780

gctgtaaacg atgatcactg ggtgtggggg tgtgaagcct ctgtgccgaa gcaaaagcga 840

taagtgatcc gcctggggag tacgtacgca agtatgaaac tcaaaggaat tgacggggac 900

ccgcacaagt ggtggagcat gtggtttaat tcgacgcaac gcgaggaacc ttaccaggtc 960

ttgacatact cggaataaga tggaagcatc ttagtgcctt tgggaaccga gatacaggtg 1020

gtgcatggct gtcgacagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgaa 1080

acccctatca ttagttgcca tcattaagtt ggggactcta atgaaactgc ccgcgacgag 1140

caggaggaag gtggggatga cgtcaagtca ttctgcccct tatgatctgg gctacacacg 1200

tgctacaatg ggtagtacaa agaggagcta agcagtgatg tggagcaaat ctttcaaagc 1260

tactctcagt tcggattgaa gtctgcaact cgacttcatg aagttggaat cactagtaat 1320

cgcaaatcag caatgttgcg gtgaatacgt tctcgggtct tgtacacacc gcccgtcaca 1380

ccacgagagt tagttgcacc tgaagttact ggcctaaccc gtaagggagg gaagtaccta 1440

aggtgtgatt agtgattggg gtgaagtcgt aacaaggtag ccgta 1485

<210> 1785
<211> 1550
<212> DNA
<213> Streptococcus agalactiae

<400> 1785
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca ttgcaagtag 60

aacgctgagg gttttggtgt ttacactaga ctgatgagtt gcgaacgggt gagtaacgcg 120

taggtaacct gcctccatag cgggggataa ctattggaaa cgatagctaa taccgcataa 180

gagtaattaa cacatgttag ttatttaaaa ggagcaattg cttcactgtg agatggacct 240

gcgttgtatt agctagttgg tgaggtaaag gctcaccaag gcgacgatac atagccgacc 300

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 360

agtagggaat cttcggcaat ggacggaagt ctgaccgagc aacgccgcgt gagtgaagaa 420

ggttttcgga tcgtaaagct ctgttgttag agaagaacgt tggtaggagt ggaaaatcta 480

ccaagtgacg gtaactaacc agaaagggac ggctaactac gtgccagcag ccgcggtaat 540

acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggttcttt 600

aagtctgaag ttaaaggcag tggcttaacc attgtacgct ttggaaactg gaggacttga 660

gtgcagaagg ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatgaggga 720

ccaccggtgg cgaaagcggc tctctggtct gtaactgacg ctgaggctcg aaagcgtggg 780

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgtta 840

ggcccctttcc ggggcttagt gccgcagcta acgcattaag cactccgcct ggggagtacg 900

accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 960

tttaattcga agcaacgcga agaaccttac caggtcttga catccttctg accggcctag 1020

agataggctt tctcttcgga gcagaagtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctattgttag ttgccatcat 1140

taagttgggc actctagcga gactgccggt aataaaccgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gccccttatg acctgggcta cacacgtgct acaatggttg gtacaacgag 1260

tcgcaagccg gtgacggcaa gctaatctct taaagccaat ctcagttcgg attgtaggct 1320

gcaactcgcc tacatgaagt cggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa 1380

tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1440

tcggtgaggt aacctttag gagccagccg cctaaggtgg gatagatgat tggggtgaag 1500

tcgtaacaag gtagccgtat cggaaggtgc ggctggatca cctcctttct 1550

<210> 1786
<211> 1437
<212> DNA
<213> Streptococcus alactolyticus

<400> 1786
atggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtagaacg ctgaagaaag 60

gagcttgctt cttttggatg agttgcgaac gggtgagtaa cgcgtaggta acctgccttg 120

tagcggggga taactattgg aaacgatagc taataccgca taacagcttt tgacacatgt 180

tagaagcttg aaagatgcaa ttgcatcact acgagatgga cctgcgttgt attagctagt 240

aggtagggta acggcctacc taggcgacga tacatagccg acctgagagg gtgatcggcc 300

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg aatcttcggc 360

aatggggca accctgaccg agcaacgccg cgtgagtgaa gaaggttttc ggatcgtaaa 420

gctctgttgt aagagaagaa cgtgtgtgag agtggaaagt tcacacagtg acggtaactt 480

accagaaagg gacggctaac tacgtgccag cagccgcggt aatacgtagg tcccgagcgt 540

tgtccggatt tattgggcgt aaagcgagcg caggcggttt aataagtctg aagttaaagg 600

cagtggctta accattgttc gctttggaaa ctgttaaact tgagtgcaga aggggagagt 660

ggaattccat gtgtagcggt gaaatgcgta gatatatgga ggaacaccgg tggcgaaagc 720

ggctctctgg tctgtaactg acgctgaggc tcgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga gtgctaggtg ttaggccctt tccggggctt 840

agtgccgcag ctaacgcatt aagcactccg cctggggagt acgaccgcaa ggttgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaggtct tgacatccca gtgaccgctc tagagataga gtttttcttc 1020

ggaacactgg tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa cccttattgt tagttgccat cattcagttg ggcactctag 1140

cgagactgcc ggtaataaac cggaggaagg tggggatgac gtcaaatcat catgcccctt 1200

atgacctggg ctacacacgt gctacaatgg ttggtacaac gagtcgcaag tcggtgacgg 1260

caagcaaatc tcttaaagcc aatctcagtt cggattgtag gctgcaactc gcctacatga 1320

agtcggaatc gctagtaatc gcggatcagc acgccgcggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcacacc acgagagttt gtaacacccg aagtcggtga ggtaacc 1437

<210> 1787
<211> 1553
<212> DNA
<213> Streptococcus anginosus

<400> 1787
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtagg 60

acgcacagtt tataccgtag cttgctacac catagactgt gagttgcgaa cgggtgagta 120

acgcgtaggt aacctgccta ttagaggggg ataactattg gaaacgatag ctaataccgc 180

ataacagtat gtaacacatg ttagatgctt gaaagatgca attgcatcgc tagtagatgg 240

acctgcgttg tattagctag taggtagggt aatggcctac ctaggcgacg atacatagcc 300

gacctgagag ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg 360

cagcagtagg gaatcttcgg caatgggggg aaccctgacc gagcaacgcc gcgtgagtga 420

agaaggtttt cggatcgtaa agctctgttg ttaaggaaga acgagtgtga aaatggaaag 480

ttcatactgt gacggtactt aaccagaaag ggacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtcccgagcg ttgtccggat ttattgggcg taaagcgagc gcaggcggtt 600

agaaaagtct gaagtgaaag gcagtggctc aaccattgta ggctttggaa actgtttaac 660

ttgagtgcag aaggggagag tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg 720

aggaacaccg gtggcgaaag cggctctctg gtctgtaact gacgctgagg ctcgaaagcg 780

tggggagcga acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaggt 840

gttaggtcct ttccgggact tagtgccgca gctaacgcat taagcactcc gcctggggag 900

tacgaccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc gatgctattt 1020

ctagagatag gaagtttctt cggaacatcg gtgacaggtg gtgcatggtt gtcgtcagct 1080

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccttattg ttagttgcca 1140

tcattgagtt gggcactcta gcgagactgc cggtaataaa ccggaggaag gtggggatga 1200

cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg gctggtacaa 1260

cgagtcgcaa gccggtgacg gcaagctaat ctctgaaagc cagtctcagt tcggattgta 1320

ggctgcaact cgcctacatg aagtcggaat cgctagtaat cgcggatcag cacgccgcgg 1380

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc 1440

gaagtcggtg aggtaaccgt aaggagccag ccgcctaagg tgggatagat gattggggtg 1500

aagtcgtaac aaggtagccg tatcggaagg ggcggctgga tcacctcctt tct 1553

<210> 1788
<211> 938
<212> DNA
<213> Streptococcus australis

<220>
<221> modified_base
<222> (26)..(27)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (35)..(35)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (287)..(287)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (929)..(929)
<223> a, c, t, g, unknown or other

<400> 1788
gccagcagcc gcggtaatac gtaggnncga gcgtnatccg gatttattgg gcgtaaagcg 60

agcgcaggcg gttagataag tctgaagtta aaggctgtgg cttaaccata gtacgctttg 120

gaaactgttt aacttgagtg cagaagggga gagtggaatt ccatgtgtag cggtgaaatg 180

cgtagatata tggaggaaca ccggtggcga aagcggctct ctggtctgta actgacgctg 240

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtncac gccgtaaacg 300

atgagtgcta ggtgttgggt cctttccggg actcagtgcc gcagctaacg cattaagcac 360

tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca 420

agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat 480

ccctctgacc gctctagaga tagagctttc cttcgggaca gaggtgacag gtggtgcatg 540

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta 600

ttgttagttg ccatcattta gttgggcact ctagcgagac tgccggtaat aaaccggagg 660

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 720

atggctggta caacgagtcg cgagtcggtg acggcaagct aatctcttaa agccagtctc 780

agttcggatt gtaggctgca actcgcctac atgaagtcgg aatcgctagt aatcgcggat 840

cagcacgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacgaga 900

gtttgtaaca cccgaagtcg gtgaggtanc cttttagg 938

<210> 1789
<211> 1546
<212> DNA
<213> Streptococcus bovis

<400> 1789
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgacta ctttagcttg ctagagtaga aggagttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tactagcggg ggataactat tggaaacgat agctaatacc gcataacagt 180

gtttaacaca tgttagatgc ttgaaagatg caattgcatc actagtagat ggacctgcgt 240

tgtattagct agttggtggg gtaacggccc accaaggcga cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatgggg gcaaccctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgtaagagaa gaacgtgtgt gagagtggaa agttcacaca 480

gtgacggtaa cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg tttaataagt 600

ctgaagttaa aggcagtggc ttaaccattg ttcgctttgg aaactgttaa acttgagtgc 660

agaaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttaggcc 840

ctttccgggg cttagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccgatgctat ttctagagat 1020

agaaagtttc ttcggaacat cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcatttag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggttggtac aacgagtcgc 1260

aagtcggtga cggcaagcaa atctcttaaa gccaatctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc atttaggagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttct 1546

<210> 1790
<211> 1472
<212> DNA
<213> Streptococcus canis

<400> 1790
tgtttgatcc tggctcagga cgaacgctgg cggcgtgcct aatacatgca agtagaacgc 60

tgaggacagg tgcttgcact agtctaagga gttgcgaacg ggtgagtaac gcgtaggtaa 120

cctacctgat agcgggggat aactattgga aacgatagct aataccgcat aaaagtgctt 180

aacacatgtt aagaacttaa aaggggcaac tgctccacta tgagatggac ctgcgttgta 240

ttagctagtt ggtgaggtaa aggctcacca aggcgacgat acatagccga cctgagaggg 300

tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga 360

atcttcggca atgggggaa ccctgaccga gcaacgccgc gtgagtgaag aaggttttcg 420

gatcgtaaag ctctgttgtt agagaagaac ggtaatggga gtggaaaacc cattatgtga 480

cggtaactaa ccagaaaggg acggctaact acgtgccagc agccgcggta atacgtaggt 540

cccgagcgtt gtccggattt attgggcgta aagcgagcgc aggcggttct ttaagtctga 600

agttaaaggc attggctcaa ccaatgtatg ctttggaaac tggagaactt gagtgcagaa 660

ggggagagtg gaattccatg tgtagcggtg aaatgcgtag atatatggag gaacaccggt 720

ggcgaaagcg gctctctggt ctgtaactga cgctgaggct cgaaagcgtg gggagcaaac 780

aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt tagccccttt 840

ccggggctta gtgccggagc taacgcatta agcactccgc ctggggagta cgaccgcaag 900

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 960

gaagcaacgc gaagaacctt accaggtctt gacatcccga tgcccgctct agagatagag 1020

ttttacttcg gtacatcggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1080

tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt agttgccatc attaagttgg 1140

gcactctagc gagactgccg gtaataaacc ggaggaaggt ggggatgacg tcaaatcatc 1200

atgcccctta tgacctgggc tacacacgtg ctacaatggt tggtacaacg agtcgcaagc 1260

cggtgacggc aagctaatct ctgaaagcca atctcagttc ggattgtagg ctgcaactcg 1320

cctacatgaa gtcggaatcg ctagtaatcg cggatcagca cgccgcggtg aatacgttcc 1380

cgggcctggt acacaccgcc cgtcacacca cgagagtttg taacacccga agtcggtgag 1440

gtaacctatt aggagccagc cgcctaaggt gg 1472

<210> 1791
<211> 1508
<212> DNA
<213> Streptococcus constellatus

<400> 1791
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gcacaggatg caccgtagtt 60

tactacaccg tattctgtga gttgcgaacg ggtgagtaac gcgtaggtaa cctgcctggt 120

agcgggggat aactattgga aacgatagct aataccgcat aagaacattt actgcatggt 180

agatgtttaa aaggtgcaag agcatcacta ccagatggac ctgcgttgta ttagctagtt 240

ggtgaggtaa cggctcacca aggcaacgat acatagccga cctgagaggg tgatcggcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga atcttcggca 360

atgggggaa ccctgaccga gcaacgccgc gtgagtgaag aaggttttcg gatcgtaaag 420

ctctgttgtt aaggaagaac gtgtgtgaga gtggaaagtt cacacagtga cggtacttaa 480

ccagaaaggg acggctaact acgtgccagc agccgcggta atacgtaggt cccgagcgtt 540

gtccggattt attgggcgta aagcgagcgc aggcggttag ataagtctga agtgaaaggc 600

agtggctcaa ccattgtagg ctttggaaac tgtttaactt gagtgcagaa ggggagagtg 660

gaattccatg tgtagcggtg aaatgcgtag atatatggag gaacaccggt ggcgaaagcg 720

gctctctggt ctgtaactga cgctgaggct cgaaagcgtg gggagcgaac aggattagat 780

accctggtag tccacgccgt aaacgatgag tgctaggtgt taggtccttt ccgggactta 840

gtgccgcagc taacgcatta agcactccgc ctggggagta cgaccgcaag gttgaaactc 900

aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 960

gaagaacctt accaggtctt gacatcccga tgcccgctct agagatagag ctttacttcg 1020

gtacatcggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttattgtt agttgccatc attcagttgg gcactctagc 1140

gagactgccg gtaataaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta 1200

tgacctgggc tacacacgtg ctacaatggc tggtacaacg agtcgcaagc cggtgacggc 1260

aagctaatct ctgaaagcca gtctcagttc ggattgtagg ctgcaactcg cctacatgaa 1320

gtcggaatcg ctagtaatcg cggatcagca cgccgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacca cgagagtttg taacacccga agtcggtgag gtaaccgtaa 1440

ggagccagcc gcctaaggtg ggatagatga ttggggtgaa gtcgtaacaa ggtagccgta 1500

tcggaagg 1508

<210> 1792
<211> 1544
<212> DNA
<213> Streptococcus cristatus

<400> 1792
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaagg aggagcttgc tcttctggat gagttgcgaa cgggtgagta acgcgtaggt 120

aacctacctg gtagcggggg ataactattg gaaacgatag ctaataccgc ataatattga 180

ctattgcatg atagtcaatt aaaaggtgca aatgcaccac taccagatgg acctgcgttg 240

tattagctag ttggtggggt aacggctcac caaggcgacg atacatagcc gacctgagag 300

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 360

gaatcttcgg caatggacgg aagtctgacc gagcaacgcc gcgtgagtga agaaggtttt 420

cggatcgtaa agctctgttg taagagaaga acgagtgtga gagtggaaag ttcacactgt 480

gacggtatct taccagaaag ggacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtcccgagcg ttgtccggat ttattgggcg taaagcgagc gcaggcggtt agataagtct 600

gaagttaaag gctgtggctt aaccatagta cgctttggaa actgtttaac ttgagtgcag 660

aaggggagag tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg aggaacaccg 720

gtggcgaaag cggctctctg gtctgtaact gacgctgagg ctcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaggt gttgggtcct 840

ttccgggact cagtgccgca gctaacgcat taagcactcc gcctggggag tacgaccgca 900

aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc ggtgcccgtc ctagagatag 1020

gattttgctt cggcacaccg gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga 1080

gatgttgggt taagtcccgc aacgagcgca acccttattg ttagttgcca tcatttagtt 1140

gggcactcta gcgagactgc cggtaataaa ccggaggaag gtggggatga cgtcaaatca 1200

tcatgcccct tatgacctgg gctacacacg tgctacaatg gctggtacaa cgagtcgcaa 1260

gtcggtgacg gcaagctaat ctcttaaagc cagtctcagt tcggattgta ggctgcaact 1320

cgcctacatg aagtcggaat cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc gaagtcggtg 1440

aggtaacctt ttaggagcca gccgcctaag gtgggataga tgattggggt gaagtcgtaa 1500

caaggtagcc gtatcggaag gtgcggctgg atcacctcct ttct 1544

<210> 1793
<211> 1555
<212> DNA
<213> Streptococcus downei

<400> 1793
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtgga 60

acgcattgat atcaccggag cttgctccac tgatattaat gagtcgcgaa cgggtgagta 120

acgcgtaggt aacctgcctg atagcggggg ataactattg gaaacgatag ctaataccgc 180

atgagagtgt ttaacacatg ttagagactt aaaagatacc attgtatcac tatcagatgg 240

acctgcgttg tattagctag ttggtagggt agcggcctac caaggcaccg atacatagcc 300

gacctgagag ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg 360

cagcagtagg gaatcttcgg caatggacga aagtctgacc gagcaacgcc gcgtgagtga 420

agaaggtttt cggatcgtaa agctctgttg tagcggaaga acgcgtgtaa gagtggaaag 480

tttacacagt gacggtacgc taccagaaag ggacggctaa ctacgtgcca gcagccgcgg 540

taatacgtag gtcccgagcg ttgtccggat ttattgggcg taaagggagc gcaggcggtt 600

tagtaagtct gaagttaaag gcattggctc aaccaatgta tgctttggaa actgttagac 660

ttgagtgcag aaggggagag tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg 720

aggaacaccg gtggcgaaag cggctctctg gtctgtcact gacgctgagg ctcgaaagcg 780

tgggtagcga acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaggt 840

gttaggtcct ttccgggact tagtgccgca gctaacgcaa taagcactcc gcctggggag 900

tacgaccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat 960

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc gatgcccgct 1020

ctagagatag agttttactt tttgtacatc ggagacaggt ggtgcatggt tgtcgtcagc 1080

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccttatt gttagttgcc 1140

atcattgagt tgggcactct agcgagactg ccggtaataa accggaggaa ggtggggatg 1200

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat ggttggtaca 1260

acgagtcgca agccggtgac ggcaagctaa tctctgaaag ccaatctcag ttcggattgt 1320

aggctgcaac tcgcctacat gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg 1380

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc 1440

caaagtcggt gaggtaacct tataggagcc agccgcctaa ggtgggacag atgattgggg 1500

tgaagtcgta acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1555

<210> 1794
<211> 1546
<212> DNA
<213> Streptococcus dysgalactiae

<400> 1794

tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgagga ctggtgcttg caccggtcca aggagttgcg aacgggtgag taacgcgtag 120

gtaacctacc tcatagcggg ggataactat tggaaacgat agctaatacc gcataaaagt 180

gtttaaccca tgttaaccat ttaaaaggtg caattgcatc actatgagat ggacctgcgt 240

tgtattagct agttggtgag gtaacggctc accaaggcga cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatggac ggaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgttagagaa gaatgatggt gggagtggaa aatccaccat 480

gtgacggtaa ctaaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg ttctttaagt 600

ctgaagttaa aggcagtggc tcaaccattg tacgctttgg aaactggaga acttgagtgc 660

agaaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttaggcc 840

ctttccgggg cttagtgccg gagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ctcctgaccg gtctagagat 1020

aggctttccc ttcggggcag gagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcattaag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggttggtac aacgagtcgc 1260

aagccggtga cggcaagcta atctcttaaa gccaatctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc tattaggagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttct 1546

<210> 1795
<211> 1545
<212> DNA
<213> Streptococcus equi

<400> 1795
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtagaa 60

cgcagaggtc aggtgcttgc actagactga tgagttgcga acgggtgagt aacgcgtagg 120

taacctagct tatagcgggg gataactatt ggaaacgata gctaataccg cataaaagtg 180

gttgacccat gttaacgatt taaaaggagc aacagctcca ctatgagatg gacctgcgtt 240

gtattagcta gttggtaggg taaaggccta ccaaggcgac gatacatagc cgacctgaga 300

gggtgaacgg ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag 360

ggaatcttcg gcaatggggg gaaccctgac cgagcaacgc cgcgtgagtg aagaaggttt 420

tcggatcgta aagctctgtt gttagagaag aacagtgatg ggagtggaaa gtccatcatt 480

tgacggtaac taaccagaaa gggacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtcccgagc gttgtccgga tttattgggc gtaaagcgag cgcaggcggt ttgataagtc 600

tgaagttaaa ggcagtggct taaccattgt atgctttgga aactgttaaa cttgagtgca 660

gaaggggaga gtggaattcc atgtgtagcg gtgaaatgcg tagatatatg gaggaacacc 720

ggtggcgaaa gcggctctct ggtctgtaac tgacgctgag gctcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgct gagtgctagg tgttaggccc 840

tttccggggc ttagtgccgt agctaacgca ttaagcactc cgcctgggga gtacgaccgc 900

aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 960

ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc cgatgctatt cttagagata 1020

agaagttact tcggtacatt ggagacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttatt gttagttgcc atcattaagt 1140

tgggcactct agcgagactg ccggtaataa accggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggttggtaca acgagtcgca 1260

agccggtgac ggcaagctaa tctctgaaag ccaatctcag ttcggattgt aggctgcaac 1320

tcgcctacat gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt 1440

gaggtaaccg ttaaggagcc agccgcctaa ggtgggatag atgattgggg tgaagtcgta 1500

acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1545

<210> 1796
<211> 1545
<212> DNA
<213> Streptococcus equinus

<400> 1796
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaaga ctttagcttg ctaaagttgg aagagttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tactagcggg ggataactat tggaaacgat agctaatacc gcataacagc 180

atttaacaca tgttagatgc ttgaaagaag caattgcttc actagtagat ggacctgcgt 240

tgtattagct agttggtgag gtaaaggctc accaaggcga cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatgggg gcaaccctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgtaagagaa gaacgtgtgt gagagtggaa agttcacaca 480

gtgacggtaa cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg tttaataagt 600

ctgaagttaa aggcagtggc ttaaccattg ttcgctttgg aaactgttag acttgagtgc 660

agaaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttaggcc 840

ctttccgggg cttagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccgatgctat ttctagagat 1020

aggaagtttc ttcggaacat cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcattaag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggttggtac aacgagtcgc 1260

gagtcggtga cggcaagcaa atctcttaaa gccaatctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc ttttggagcc agccgcctaa ggtgggatag atgattgggg tgaagtcgta 1500

acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1545

<210> 1797
<211> 1546
<212> DNA
<213> Streptococcus gallolyticus

<400> 1797
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgacta ctttagcttg ctagagtaga aggagttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tactagcggg ggataactat tggaaacgat agctaatacc gcataacagt 180

gtttaacaca tgttagatgc ttgaaagatg caaatgcatc actagtagat ggacctgcgt 240

tgtattagct agttggtggg gtaacggcct accaaggcga cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatgggg gcaaccctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgtaagagaa gaacgtgtgt gagagtggaa agttcacaca 480

gtgacggtaa cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg tttaataagt 600

ctgaagttaa aggcagtggc ttaaccattg ttcgctttgg aaactgttaa acttgagtgc 660

agaaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttaggcc 840

ctttccgggg cttagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccgatgctat ttctagagat 1020

agaaagtttc ttcggaacat cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcattcag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggttggtac aacgagtcgc 1260

aagtcggtga cggcaagcaa atctcttaaa gccaatctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc ttttaggagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttct 1546

<210> 1798
<211> 1293
<212> DNA
<213> Streptococcus genomosp. C1

<400> 1798
gatgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctc ttagcggggg ataactattg gaaacgatag ctaataccgc 120

ataagaaagt cactaagaga tggacctgcg ttgtattagc tagttggtga ggtaacggct 180

caccaaggcg acgatacata gccgacctgg gagggtgatc ggccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt agggaatctt cggcaatggg ggcaaccctg 300

accgagcaac gccgcgtgag tgaagaaggt tttcggatcg taaagctctg ttgtaagaga 360

agatgacggt aacttaccag aaagggacgg ctaactacgt gccagcagcc gcggtaatac 420

gtaggtcccg agcgttatcc ggatttattg ggcgtaaagc gagcgcaggc ggttagatag 480

gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt ggaaactgtt taacttgagt 540

gcagaagggg agagtggaat tccatgtgta gcggtgaaat gcgtagatat atggaggaac 600

accggtggcg aaagcggctc tctggtctga ctgacgctga ggctcgaaag cgtggggagc 660

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctgg gtgttgggta 720

ctcagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa 780

actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 840

acgcgaagaa ccttaccagg tcttgacatc gacaggtggt gcatggttgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt agttgccatc 960

atgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1020

catcatgccc cttatgacct gggctacaca cgtgctacaa tggctggcaa cgagtcgcga 1080

gtcggtgacg gcaagctaat ctcttccagt ctcagttcgg atgtaggctg caactcgcct 1140

acagaagtcg gaatcgctag taatcgcgga tcagcacgcc gcggtgaata cgttcccggg 1200

ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc ggtaggtagc 1260

cagccgccta aggtgggata gatgattggg gtg 1293

<210> 1799
<211> 1294
<212> DNA
<213> Streptococcus genomosp. C2

<400> 1799
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataagaaaag tcactaccag atggacctgc gttgtattag ctagttggtg aggtaacggc 180

tcaccaaggc gacgatacat agccgacctg agagggtgat tggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg acggaagtct 300

gaccgagcaa cgccgcgtgt gtgaagaagg ttttcggatc gtaaagctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc aagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggcttg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 720

gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcga cccctattgt tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgca 1080

agccggtgac ggcaagctaa tctcttccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttccctg 1200

gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aaggtgggat agatgattgg ggtg 1294

<210> 1800
<211> 1327
<212> DNA
<213> Streptococcus genomosp. C3

<400> 1800
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataaagaaag tcactaccag atggacctgc gttgtattag ctagttggtg gggtaacggc 180

tcaccaaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg acggaagtct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggcttg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 720

gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgc tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgca 1080

agccggtgac ggcaagctaa tctcttccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aaggtgggat agatgattgg ggtgaagtcg taacaaggta gccgtatcgg 1320

aaggtgc 1327

<210> 1801
<211> 1327
<212> DNA
<213> Streptococcus genomosp. C4

<400> 1801
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataaaaaaag tcactaccag atggacctgc gttgtattag ctagttggtg gggtaacggc 180

tcaccaaggc aacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg acggaagtct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggcttg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 720

gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgca 1080

agccggtgac ggcaagctaa tctcttccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aaggtgggat agatgattgg ggtgaagtcg taacaaggta gccgtatcgg 1320

aaggtgc 1327

<210> 1802
<211> 1294
<212> DNA
<213> Streptococcus genomosp. C5

<400> 1802
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataacgaaag tcactaccag atggacctgc gttgtattag ctagttggtg gggtaacggc 180

tcaccaaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggagtct tcggcaatgg acggaagtct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttgtc cggatttatt gggtgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggcttg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 720

gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgca 1080

agtcggtgac ggcaagctaa tctcttccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgc cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aaggtgggat agatgattgg ggtg 1294

<210> 1803
<211> 1293
<212> DNA
<213> Streptococcus genomosp. C6

<400> 1803
gatgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctc ttagcggggg ataactattg gaaacgatag ctaataccgc 120

ataagaaagt cactaagaga tggacctgcg ttgtattagc tagttggtga ggtaacggct 180

caccaaggcg acgatacaca gccgacctga gagggtgatc ggccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt agggaatctt cggcaatggg ggcaaccctg 300

accgagcaac gccgcgtgag tgaagaaggt tttcggatcg taaagctctg ttgtaagaga 360

agatgacggt aacttaccag aaagggacgg ctaactacgt gccagcagcc gcggtaatac 420

gtaggtcccg agcgttatcc ggatttattg ggcgtaaagc gagcgcaggc ggttagataa 480

gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt ggaaactgtt taacttgagt 540

gcagaagggg agagtggaat tccatgtgta gcggtgaaat gcgtagatat atggaggaac 600

accggtggcg aaagcggctc tctggtctga ctgacgctga ggctcgaaag cgtggggagc 660

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttgggta 720

ctcagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa 780

actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 840

acgcgaagaa ccttaccagg ccttgacatc gacaggtggt gcatggttgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt agttgccatc 960

atgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1020

catcatgccc cttatgacct gggctacaca cgtgctacaa tggctggcaa cgagtcgcga 1080

gtcggtgacg gcaagctaac ctcttccagt ctcagttcgg atgtaggctg caactcgcct 1140

acagaagtcg gaatcgctag taatcgcaga tcagcacgcc gcggtgaata cgttcccggg 1200

ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc ggtaggttgc 1260

cagccgccta aggtgggata gatgattggg gtg 1293

<210> 1804
<211> 1294
<212> DNA
<213> Streptococcus genomosp. C7

<400> 1804
gatgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctc ttagcggggg ataactattg gaaacgatag ctaataccgc 120

ataaagaaag tcactaagag atggacctgc gttgtattag ctagttggtg aggtaacggc 180

tcaccaaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg gggcaaccct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaggctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttatc cggatttatt gggcgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcagaaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggtctg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttgggt 720

actcagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgcg 1080

agtcggtgac ggcaagctaa tctcttccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aaggtgggat agatgattgg ggtg 1294

<210> 1805
<211> 1327
<212> DNA
<213> Streptococcus genomosp. C8

<400> 1805
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataataaaag tcactaccag atggacctgc gttgtattag ctagttggtg aggtaacggc 180

tcaccaaggc aacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg acggaagtct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggcttg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 720

gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgca 1080

agccggtgac ggcaagctaa tctcttccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aaggtgggat agatgattgg ggtgaagtcg taacaaggta gccgtatcgg 1320

aaggtgc 1327

<210> 1806
<211> 962
<212> DNA
<213> Streptococcus gordonii

<220>
<221> modified_base
<222> (17)..(17)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (953)..(953)
<223> a, c, t, g, unknown or other

<400> 1806
agaaagggac ggctaantac gtgccagcag ccgcggtaat acgtaggtcc cgagcgttgt 60

ccggatttat tgggcgtaaa gcgagcgcag gcggttagat aagtctgaag ttaaaggctg 120

tggcttaacc atagtacgct ttggaaactg tttaacttga gtgcagaagg ggagagtgga 180

attccatgtg tagcggtgaa atgcgtagat atatggagga acaccggtgg cgaaagcggc 240

tctctggtct gtaactgacg ctgaggctcg aaagcgtggg gagcgaacag gattagatac 300

cctggtagtc cacgccgtaa acgatgagtg ctaggtgtta ggccctttcc ggggcttagt 360

gccgcagcta acgcattaag cactccgcct ggggagtacg accgcaaggt tgaaactcaa 420

aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 480

agaaccttac caggtcttga catcccgatg cccgctctag agatagagtt ttacttcggt 540

acatcggtga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 600

tcccgcaacg agcgcaaccc ttattgttag ttgccatcat tcagttgggc actctagcga 660

gactgccggt aataaaccgg aggaaggtgg ggatgacgtc aaatcatcat gcccccttatg 720

acctgggcta cacacgtgct acaatggctg gtacaacgag tcgcaagtcg gtgacggcaa 780

gctaatctct taaagccagt ctcagttcgg attgtaggct gcaactcgcc tacatgaagt 840

cggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa tacgttcccg ggccttgtac 900

acaccgcccg tcacaccacg agagtttgta acacccgcaa gtcggtgagg tanccttta 960

gg 962

<210> 1807
<211> 1546
<212> DNA
<213> Streptococcus infantarius

<400> 1807
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaaaa ctttagcttg ctaaagtttg aagagttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tactagcggg ggataactat tggaaacgat agctaatacc gcataacagc 180

atttaaccca tgttagatgc ttgaaaggag caattgcttc actagtagat ggacctgcgt 240

tgtattagct agttggtgag gtaacggctc accaaggcga cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatgggg gcaaccctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgtaagagaa gaatgtgtgt gagagtggaa agttcacaca 480

gtgacggtaa cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg tttaataagt 600

ctgaagttaa aggcagtggc ttaaccattg ttcgctttgg aaactgttag acttgagtgc 660

agaaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttaggcc 840

ctttccgggg cttagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccgatgctat tcctagagat 1020

aggaagtttc ttcggaacat cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcattaag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggttggtac aacgagtcgc 1260

gagtcggtga cggcaagcaa atctcttaaa gccaatctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc ttttaggagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttct 1546

<210> 1808
<211> 1547
<212> DNA
<213> Streptococcus infantis

<400> 1808
tgagagtttg atcctggctc aggatgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaagc ttggtgcttg caccgagcgg atgagttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tggtagcggg ggataactat tggaaacgat agctaatacc gcatgacaac 180

agttattgca tgataactgt ttaaaagggg caattgctcc actaccagat ggacctgcgt 240

tgtattagct agttggtgag gtaacggctc accaaggcga cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatggac ggaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgtaagagaa gaacgagtgt gagagtggaa agttcacact 480

gtgacggtat cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttatccgg atttattggg cgtaaagcga gcgcaggcgg ttagataagt 600

ctgaagttaa aggctgtggc ttaaccatag tacgctttgg aaactgttta acttgagtgc 660

aagaggggaa gagtggaatt ccatgtgtag cggtgtaaat gcgtagatat atggaggaac 720

accggtggcg aaagcggctc tctggcttgt aactgacgct gaggctcgaa agcgtgggga 780

gcaaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgttaga 840

ccctttccgg ggtttagtgc cgtagctaac gcattaagca ctccgcctgg ggagtacgat 900

cgcaaggttg aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca ggtcttgaca tccctctgac cgctctggag 1020

atagagtttt ccttcgggac agaggtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaacccct attgttagtt gccatcattc 1140

agttgggcac tctagcgaga ctgccggtaa taaaccggag gaaggtgggg atgacgtcaa 1200

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggctggt acaacgagtc 1260

gcaagtcggt gacggcaagc taatctctta aagccagtct cagttcggat tgtaggctgc 1320

aactcgccta catgaagtcg gaatcgctag taatcgcgga tcagcacgcc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc 1440

ggtgaggtaa ccatttggag ccagccgcct aaggtgggat agatgattgg ggtgaagtcg 1500

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctttct 1547

<210> 1809
<211> 1544

<212> DNA
<213> Streptococcus intermedius

<400> 1809
tttgatcctg gttcaggacg aacgctggcg gcgtgcctaa tacatgcaag tagaacgcac 60

aggatgcacc gtagtttact acaccgtatt ctgtgagttg cgaacgggtg agtaacgcgt 120

aggtaacctg cctggtagcg ggggataact attggaaacg atagctaata ccgcataaga 180

acatttactg catggtagat gtttaaaagg tgcaaatgca tcactaccag atggacctgc 240

gttgtattag ctagtaggtg aggtaacggc tcacctaggc gacgatacat agccgacctg 300

agagggtgat cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 360

tagggaatct tcggcaatgg ggggaaccct gaccgagcaa cgccgcgtga gtgaagaagg 420

ttttcggatc gtaaagctct gttgttaagg aagaacgagt gtgagaatgg aaagttcata 480

ctgtgacggt acttaaccag aaagggacgg ctaactacgt gccagcagcc gcggtaatac 540

gtaggtcccg agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc ggttagataa 600

gtctgaagtt aaaggcagtg gctcaaccat tgtaggcttt ggaaactgtt taacttgagt 660

gcagaagggg agagtggaat tccatgtgta gcggtgaaat gcgtagatat atggaggaac 720

accggtggcg aaagcggctc tctggtctgt aactgacgct gaggctcgaa agcgtgggga 780

gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgttagg 840

tcctttccgg gacttagtgc cgcagctaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca ggtcttgaca tcccgatgcc cgctctagag 1020

atagagcttt acttcggtac atcggtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgagatgtt gggttaagtc ccgcaacgag cgcaaccctt attgttagtt gccatcattc 1140

agttgggcac tctagcgaga ctgccggtaa taaaccggag gaaggtgggg atgacgtcaa 1200

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggctggt acaacgagtc 1260

gcaagccggt gacggcaagc taatctctga aagccagtct cagttcggat tgtaggctgc 1320

aactcgccta catgaagtcg gaatcgctag taatcgcgga tcagcacgcc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc 1440

ggtgaggtaa ccgtaaggag ccagccgcct aaggtgggat agatgattgg ggtgaagtcg 1500

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctt 1544

<210> 1810
<211> 1395
<212> DNA
<213> Streptococcus lutetiensis

<220>
<221> modified_base
<222> (1383)..(1383)
<223> a, c, t, g, unknown or other

<400> 1810
gaagacttta gcttgctaaa gttggaagag ttgcgaacgg gtgagtaacg cgtaggtaac 60

ctgcctacta gcgggggata actattggaa acgatagcta ataccgcata acagcattta 120

acccatgtta gatgcttgaa aggagcaatt gcttcactag tagatggacc tgcgttgtat 180

tagctagttg gtgaggtaac ggctcaccaa ggcgacgata catagccgac ctgagagggt 240

gatcggccac actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa 300

tcttcggcaa tgggggcaac cctgaccgag caacgccgcg tgagtgaaga aggttttcgg 360

atcgtaaagc tctgttgtaa gagaagaacg tgtgtgagag tggaaagttc acacagtgac 420

ggtaacttac cagaaaggga cggctaacta cgtgccagca gccgcggtaa tacgtaggtc 480

ccgagcgttg tccggattta ttgggcgtaa agcgagcgca ggcggtttaa taagtctgaa 540

gttaaaggca gtggcttaac cattgttcgc tttggaaact gttagacttg agtgcagaag 600

gggagagtgg aattccatgt gtagcggtga aatgcgtaga tatatggagg aacaccggtg 660

gcgaaagcgg ctctctggtc tgtaactgac gctgaggctc gaaagcgtgg ggagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgagt gctaggtgtt aggccctttc 780

cggggcttag tgccgcagct aacgcattaa gcactccgcc tggggagtac gaccgcaagg 840

ttgaaactca aaggaattga cgggggcccg cacaagcggt ggagcatgtg gtttaattcg 900

aagcaacgcg aagaacctta ccaggtcttg acatcccgat gctattccta gagataggaa 960

gtttcttcgg aactgtgaga cttgagggca gaagggtaga gtgcacttgt atggggagct 1020

gtggaatgcg ttcccgcaac gagcgcaacc cctattgtta gttgccatca ttaagttggg 1080

cactctagcg agactgccgg taataaaccg gaggaaggtg gggatgacgt caaatcatca 1140

tgccccttat gacctgggct acacacgtgc tacaatggtt ggtacaacga gtcgcgagtc 1200

ggtgacggca agcaaatctc ttaaagccaa tctcagttcg gattgtaggc tgcaactcgc 1260

ctacatgaag tcggaatcgc tagtaatcgc ggatcagcac gccgcggtga atacgttccc 1320

gggccttgta cacaccgccc gtcacaccac gagagtttgt aacacccgaa gtcggtgagg 1380

tanccttta ggagc 1395

<210> 1811
<211> 1470
<212> DNA
<213> Streptococcus massiliensis

<400> 1811
gatgaacgct ggcggcgtgc ctaatacatg caagtagaac gcagaggatt ggtgcttgca 60

ctaatctaat gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg 120

ataactattg gaaacgatag ctaataccgc ataatagttt atgactcatg ttataaactt 180

gaaagataca actgtatcac taccagatgg acctgcgttg tattagctag taggtagggt 240

aacggcctac ctaggcgacg atacatagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttcgg caatgggggg 360

aaccctgacc gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg 420

ttaaggaaga acgggagtag gagtggaaag cctactttgt gacggtactt aaccagaaag 480

ggacggctaa ctacgtgcca gcagccgcgg taatacgtag gtcccgagcg ttatccggat 540

ttattgggcg taaagcgagc gcaggcggtt agataagtct ggagtaaaag gctatggctc 600

aaccatagtg tgctctggaa actgtttaac ttgagtgcag aaggggagag tggaattcca 660

tgtgtagcgg tgaaatgcgt agatatatgg aggaacaccg gtggcgaaag cggctctctg 720

gtctgtaact gacgctgagg ctcgaaagcg tggggagcga acaggattag ataccctggt 780

agtccacgcc gtaaacgatg agtgctaggt gttaggccct ttccggggct tagtgccgta 840

gctaacgcaa taagcactcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttaccaggtc ttgacatccc gatgcccgtc ctagagatag gattttactt cggtacatcg 1020

gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccttattg ttagttgcca tcattgagtt gggcactcta gcgagactgc 1140

cggtaataaa ccggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg 1200

gctacacacg tgctacaatg gctggtacaa cgagtcgcaa gtcggtgacg acaagctaat 1260

ctctgaaagc cagtctcagt tcggattgta ggctgcaact cgcctacatg aagtcggaat 1320

cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacac cacgagagtt tgtaacaccc gaagtcggtg aggtaaccgt aaggagccag 1440

ccgcctaagg tgggatagat gattggggtg 1470

<210> 1812
<211> 945
<212> DNA
<213> Streptococcus milleri

<220>
<221> modified_base
<222> (934)..(934)
<223> a, c, t, g, unknown or other

<400> 1812
gtctataccg tagcttgcta caccataggc tgtgagttgc gaacgggtga gtaacgcgta 60

ggtaacctgc ctattagagg gggataacta ttggaaacga tagctaatac cgcataacag 120

tatgtaacac atgttagatg cttgaaagat gcaattgcat cgctagtaga tggacctgcg 180

ttgtattagc tagtaggtag ggtaatggcc tacctaggca acgatacata gccgacctga 240

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

agggaatctt cggcaatggg gggaaccctg accgagcaac gccgcgtgag tgaagaaggt 360

tttcggatcg taaagctctg ttgttaagga agaacgagtg tgagaatgga aagttcatac 420

tgtgacggta cttaaccaga aagggacggc taactacgtg ccagcagccg cggtaatacg 480

taggtcccga gcgttgtccg gatttattgg gcgtaaagcg agcgcaggcg gttagaaaag 540

tctgaagtga aaggcagtgg ctcaaccatt gtaggctttg gaaactgttt aacttgagtg 600

cagaagggga gagtggaatt ccatgtgtag cggtgaaatg cgtagatata tggaggaaca 660

ccggtggcga aagcggctct ctggtctgta actgacgctg aggctcgaaa gcgtggggag 720

cgaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttaggt 780

cctttccggg acttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc 840

gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 900

aattcgaagc aacgcgaaga accttaccag gtcntgacat cccag 945

<210> 1813
<211> 976
<212> DNA
<213> Streptococcus mitis

<220>
<221> modified_base
<222> (47)..(47)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (135)..(136)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (143)..(143)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (154)..(154)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (244)..(244)
<223> a, c, t, g, unknown or other

<400> 1813
ggaaagttca cactgtgacg gtatcttacc agaaagggac ggctaantac gtgccagcag 60

ccgcggtaat acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag 120

gcggttagat aagtnngaag ttnaaggctg tggnttaacc atagtacgct ttggaaactg 180

tttaacttga gtgcaagagg ggagagtgga attccatgtg tagcggtgaa atgcgtagat 240

atanggagga acaccggtgg cgaaagcggc tctctggctt gtaactgacg ctgaggctcg 300

aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg 360

ctaggtgtta gacccttcc ggggtttagt gccgcagcta acgcattaag cactccgcct 420

ggggagtacg accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg 480

gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga catccctctg 540

accgctctag agatagagtt ttccttcggg acagaggtga caggtggtgc atggttgtcg 600

tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctattgttag 660

ttgccatcat ttagttgggc actctagcga gactgccggt aataaaccgg aggaaggtgg 720

ggatgacgtc aaatcatcat gcccccttatg acctgggcta cacacgtgct acaatggctg 780

gtacaacgag tcgcaagccg gtgacggcaa gctaatctct taaagccagt ctcagttcgg 840

attgtaggct gcaactcgcc tacatgaagt cggaatcgct agtaatcgcg gatcagcacg 900

ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta 960

acacccgaag tcggtg 976

<210> 1814
<211> 971
<212> DNA
<213> Streptococcus mutans

<220>
<221> modified_base
<222> (950)..(950)
<223> a, c, t, g, unknown or other

<400> 1814
agaacacact gtgcttgcac accgtgtttt cttgagtcgc gaacgggtga gtaacgcgta 60

ggtaacctgc ctattagcgg gggataacta ttggaaacga tagctaatac cgcataatat 120

taattattgc atgataattg attgaaagat gcaagcgcat cactagtaga tggacctgcg 180

ttgtattagc tagttggtaa ggtaagagct taccaaggcg acgatacata gccgacctga 240

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

agggaatctt cggcaatgga cgaaagtctg accgagcaac gccgcgtgag tgaagaaggt 360

tttcggatcg taaagctctg ttgtaagtca agaacgtgtg tgagagtgga aagttcacac 420

agtgacggta gcttaccaga aagggacggc taactacgtg ccagcagccg cggtaatacg 480

taggtcccga gcgttgtccg gatttattgg gcgtaaaggg agcgcaggcg gtcaggaaag 540

tctggagtaa aaggctatgg ctcaaccata gtgtgctctg gaaactgtct gacttgagtg 600

cagaagggga gagtggaatt ccatgtgtag cggtgaaatg cgtagatata tggaggaaca 660

ccagtggcga aagcggctct ctggtctgtc actgacgctg aggctcgaaa gcgtgggtag 720

cgaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttaggc 780

cctttccggg gcttagtgcc ggagctaacg caataagcac tccgcctggg gagtacgacc 840

gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 900

aattcgaagc aacgcgaaga accttaccag gtcttgacat cccgatgctn ttcttagaga 960

taggaagtta c 971

<210> 1815
<211> 1510
<212> DNA
<213> Streptococcus oligofermentans

<400> 1815

cggcgtgcct aatacatgca agtagaacgc tgaaggaagg agcttgctct ttccggaaga 60

gttgcgaacg ggtgagtaac gcgtaggtaa cctacctttt agcgggggat aactattgga 120

aacgatagct aataccgcat aagacatttt actgcatggt aagatgttaa aagatgcaaa 180

tgcatcacta agagatggac ctgcgttgta ttagctagta ggtgaggtaa cggctcacct 240

aggcgacgat acatagccga cctgagaggg tgatcggcca cactgggact gagacacggc 300

ccagactcct acgggaggca gcagtaggga atcttcggca atggacggaa gtctgaccga 360

gcaacgccgc gtgagtgaag aaggttttcg gatcgtaaag ctctgttgta agagaagaac 420

gagtgtgaga gtggaaagtt cacactgtga cggtaactta ccagaaaggg acggctaact 480

acgtgccagc agccgcggta atacgtaggt cccgagcgtt gtccggattt attgggcgta 540

aagcgagcgc aggcggttag ataagtctga agttaaaggc tgtggcttaa ccatagtacg 600

ctttggaaac tgtttaactt gagtgcagaa ggggagagtg gaattccatg tgtagcggtg 660

aaatgcgtag atatatggag gaacaccggt ggcgaaagcg gctctctggt ctgtaactga 720

cgctgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 780

aaacgatgag tgctaggtgt tgggtccttt ccgggactca gtgccgtagc taacgcatta 840

agcactccgc ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc 900

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt 960

gacatcccgg tgcccgtcct agagatagga ttttgcttcg gcacaccggt gacaggtggt 1020

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

ccttattgtt agttgccatc attcagttgg gcactctagc gagactgccg gtaataaacc 1140

ggaggaaggt ggggatgacg tcaaatcatc atgccccttа tgacctgggc tacacacgtg 1200

ctacaatggc tggtacaacg agtcgcaagt cggtgacggc aagctaatct cttaaagcca 1260

gtctcagttc ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg 1320

cggatcagca cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1380

cgagagtttg taacacccga agtcggtgag gtaacctttt aggagccagc cgcctaaggt 1440

gggatagatg attggggtga agtcgtaaca aggtagccgt atcggaaggt gcggctggat 1500

caccttctta 1510

<210> 1816
<211> 801
<212> DNA
<213> Streptococcus oralis

<220>
<221> modified_base
<222> (507)..(507)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (520)..(520)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (551)..(551)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (591)..(591)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (625)..(625)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (682)..(682)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (696)..(697)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (713)..(713)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (737)..(737)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (751)..(751)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (784)..(784)
<223> a, c, t, g, unknown or other

<400> 1816
tgcttctctg gatgagttgc gaacgggtga gtaacgcgta ggtaacctgc ctggtagcgg 60

gggataacta ttggaaacga tagctaatac cgcataagat tgattattgc atgatagtca 120

attaaaaggt gcaattgcat cactaccaga tggacctgcg ttgtattagc tagttggtga 180

ggtaacggct caccaaggca acgatacata accgacctga gagggtgatc ggccacactg 240

ggactgagac acggcccaaa ctcctacggg aggcagcagt agggaatctt cggcaatgga 300

cggaagtctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg taaagctctg 360

ttgtaagaga agaacgagtg tgagagtgga aagttcacac tgtgacggta tcttaccata 420

aagggacggc taactacgtg ccagcagccg cggtaatacg taggtcccga gcgttgtccg 480

gatttattgg gcgtaaagcg agcgcangcg gttagataan tctgaagtta aaggctgtgg 540

cttaaccata ntacgctttg gaaactgttt aacttgagtg caagagggga nagtggaatt 600

ccatgtgtag cggtgaaatg cgtanatata tggaggaaca ccggtggcga aagcggctct 660

ctggcttgta actgacgctg angctcgaaa gcgtgnngag caaacaggat tanataccct 720

ggtagtccac gccgtanacg atgagtgcta ngtgttagac cctttccggg gtttagtgcc 780

gcanctaacg cattaagcac t 801

<210> 1817
<211> 1393
<212> DNA
<213> Streptococcus parasanguinis

<220>
<221> modified_base
<222> (1384)..(1384)
<223> a, c, t, g, unknown or other

<400> 1817
gctgaagctt ggtgcttgca ccgagcggaa gagttgcgaa cgggtgagta acgcgtaggt 60

aacctgcctc ttagcggggg ataactattg gaaacgatag ctaataccgc ataaaagtcg 120

acattgcatg atgttgactt gaaaggtgca actgcaccac taagagatgg acctgcgttg 180

tattagctag ttggtgaggt aacggctcac caaggcgacg atacatagcc gacctgagag 240

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 300

gaatcttcgg caatggacgg aagtctgacc gagcaacgcc gcgtgagtga agaaggtttt 360

cggatcgtaa agctctgttg taagagaaga acgagtgtga gagtggaaag ttcacactgt 420

gacggtaact taccagaaag ggacggctaa ctacgtgcca gcagccgcgg taatacgtag 480

gtccgagcgt tatccggatt tattgggcgt aaagcgagcg caggcggtta gataagtctg 540

aagttaaagg ctgtggctta accatagtac gctttggaaa ctgtttaact tgagtgcaga 600

aggggagagt ggaattccat gtgtagcggt gaaatgcgta gatatatgga ggaacaccgg 660

tggcgaaagc ggctctctgg tctgtaactg acgctgaggc tcgaaagcgt ggggagcaaa 720

caggattaga taccctggta gtcacgccgt aaacgatgag tgctaggtgt tgggtccttt 780

ccgggactca gtgccgcagc taacgcatta agcactccgc ctggggagta cgaccgcaag 840

gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc 900

gaagcaacgc gaagaacctt acccggtctt gacatccctc tgaccgctct agagatagag 960

ctttccttcg ggacagaggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga 1020

tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt agttgccatc atttagttgg 1080

gcactctagc gagactgccg gtaataaacc ggaggaaggt ggggatgacg tcaaatcatc 1140

atgcccctta tgacctgggc tacacacgtg ctacaatggc tggtacaacg agtcgcgagt 1200

cggtgacggc aagctaatct cttaaagcca gtctcagttc ggattgtagg ctgcaactcg 1260

cctacatgaa gtcggaatcg ctagtaatcg cggatcagca cgccgcggtg aatacgttcc 1320

cgggccttgt acacaccgcc cgtcacacca cgagagtttg taacacccga agtcggtgag 1380

gtanccttt agg 1393

<210> 1818
<211> 1372
<212> DNA
<213> Streptococcus pasteurianus

<400> 1818
gaaatggagt ttgatcctgg ctcaggacga acgctggcgg cgtgcctaat acatgcaagt 60

agaacgagtt gcgaacgggt gagtaacgcg taggtaacct gcctactagc gggggataac 120

tattggaaac gatagctaat accgcataac gaaagtcact agtagatgga cctgcgttgt 180

attagctagt tggtggggta acggcccacc aaggcgacga tacatagccg acctgagagg 240

gtgatcggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg 300

aatcttcggc aatggggggca accctgaccg agcaacgccg cgtgagtgaa gaaggttttc 360

ggatcgtaaa gctctgttgt aagagaagat gacggtaact taccagaaag ggacggctaa 420

ctacgtgcca gcagccgcgg taatacgtag gtcccgagcg ttgtccggat ttattgggcg 480

taaagcgagc gcaggcggtt taataagtct gaagttaaag gcagtggctt aaccattgtt 540

cgctttggaa actgttaaac ttgagtgcag aaggggagag tggaattcca tgtgtagcgg 600

tgaaatgcgt agatatatgg aggaacaccg gtggcgaaag cggctctctg gtctgactga 660

cgctgaggct cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt 720

aaacgatgag tgctaggtgt taggcgctta gtgccgcagc taacgcatta agcactccgc 780

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 840

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcgaca 900

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 960

cgcaacccct attgttagtt gccatcatgg gcactctagc gagactgccg gtaataaacc 1020

ggaggaaggt ggggatgacg tcaaatcatc atgccccttа tgacctgggc tacacacgtg 1080

ctacaatggt tggcaacgag tcgcaagtcg gtgacggcaa gcaaatctct tccaatctca 1140

gttcggatgt aggctgcaac tcgcctacag aagtcggaat cgctagtaat cgcggatcag 1200

cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgagagtt 1260

tgtaacaccc gaagtcggta ggtagccagc cgcctaaggt gggatagatg attggggtga 1320

agtcgtaaca aggtagccgt atcggaaggt gcggctggat cacctccttt ct 1372

<210> 1819
<211> 1543
<212> DNA
<213> Streptococcus peroris

<400> 1819
tgagagtttg atcctggctc aggatgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaagg aggagcttgc ttctctggat gagttgcgaa cgggtgagta acgcgtaggt 120

aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc ataagagcag 180

ttgttgcatg acagctgttt aaaaggtgca attgcaccac taccagatgg acctgcgttg 240

tattagctag ttggtgaggt aacggctcac caaggcgacg atacatagcc gacctgagag 300

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 360

gaatcttcgg caatgggggc aaccctgacc gagcaacgcc gcgtgagtga agaaggtttt 420

cggatcgtaa agctctgttg taagagaaga acgagtgtga gagtggaaag ttcacgctgt 480

gacggtatct taccagaaag ggacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtcccgagcg ttatccggat ttattgggcg taaagcgagc gcaggcggtt agataagtct 600

gaagttaaag gctgtggctt aaccatagta cgctttggaa actgtttaac ttgagtgcaa 660

gaggggagag tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg aggaacaccg 720

gtggcgaaag cggctctctg gcttgtaact gacgctgagg ctcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaggt gttagaccct 840

ttccggggtt tagtgccgca gctaacgcat taagcactcc gcctggggag tacgaccgca 900

aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc gatgccattt ctagagatag 1020

gaagttactt cggtacatcg gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga 1080

gatgttgggt taagtcccgc aacgagcgca acccctattg ttagttgcca tcattcagtt 1140

gggcactcta gcgagactgc cggtaataaa ccggaggaag gtggggatga cgtcaaatca 1200

tcatgcccct tatgacctgg gctacacacg tgctacaatg gctggtacaa cgagtcgcga 1260

gtcggtgacg gcaagctaat ctcttaaagc cagtctcagt tcggattgta ggctgcaact 1320

cgcctacatg aagtcggaat cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc gaagtcggtg 1440

aggtaaccat ttggagccag ccgcctaagg tgggatagat gattggggtg aagtcgtaac 1500

aaggtagccg tatcggaagg tgcggctgga tcacctcctt tct 1543

<210> 1820
<211> 1365
<212> DNA
<213> Streptococcus pneumoniae

<400> 1820
agcttgcttc tccggatgag ttgcgaacgg gtgagtaacg cgtaggtaac ctgcctggta 60

gcgggggata actattggaa acgatagcta ataccgcata agagtagatg ttgcatgaca 120

tttgcttaaa aggtgcaatt gcatcactac cagatggacc tgcgttgtat tagctagttg 180

gtggggtaac ggctcaccaa ggcgacgata catagccgac ctgagagggt gatcggccac 240

actgggactg agacacggcc cagactccta cgggaggcag cagtagggaa tcttcggcaa 300

tggacggaag tctgaccgag caacgccgcg tgagtgaaga aggttttcgg atcgtaaagc 360

tctgttgtaa gagaagaacg agtgtgagag tggaaagttc acactgtgac ggtatcttac 420

cagaaaggga cggctaacta cgtgccagca gccgcggtaa tacgtaggtc ccgagcgttg 480

tccggattta ttgggcgtaa agcgagcgca ggcggttaga taagtctgaa gttaaggctg 540

tggcttaacc atagtacgct ttggaaactg tttaacttga gtgcaagagg ggagagtgga 600

attccatgtg tagcggtgaa atgcgtagat ataggaggaa caccggtggc gaaagcggct 660

ctctggcttg taactgacgc tgaggctcga aagcgtgggg agcaaacagg attagatacc 720

ctggtagtcc acgccgtaaa cgatgagtgc taggtgttag acccttttccg gggtttagtg 780

ccgcagctaa cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa 840

ggaattgacg ggggcccgca caagcggtgg agcatgtggt ttaattcgaa gcgacgcgaa 900

gaaccttacc aggtcttgac ttccctctga ccgctctaga gatagagttt tccttcggga 960

cagaggtgac aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaacccc tattgttagt tgccatcatt tagttgggca ctctagcgag 1080

actgccggta ataaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga 1140

cctgggctac acacgtgcta caatggctgg tacaacgagt cgcaagccgg tgacggcaag 1200

ctaatctctt aaagccagtc tcagttcgga ttgtaggctg caactcgcct acatgaagtc 1260

ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg gccttgtaca 1320

caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtg 1365

<210> 1821
<211> 1445
<212> DNA
<213> Streptococcus porcinus

<400> 1821
cgctggcggc gtgcctaata catgcaagta gaacgcagag gacaggtgct tgcaccagtc 60

taatgagttg cgaacgggtg agtaacgcgt aggtaaccta ccttatagcg ggggataact 120

attggaaacg atagctaata ccgcatgaaa gtagaagaca catgtcatct acttaaaagg 180

ggcaaatgct ctactatgag atggacctgc gttgtattag ctagttggtg aggtaaaggc 240

tcaccaaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg ggggaaccct 360

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgttagag 420

aagaacggta atgggagtgg aaaatccatt acgtgacggt aactaaccag aaagggacgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggtcccg agcgttgtcc ggatttattg 540

ggcgtaaagc gagcgcaggc ggtttgataa gtctgaagtt aaaggctgtg gcttaaccat 600

agttcgcttt ggaaactgtc aaacttgagt gcagaagggg agagtggaat tccatgtgta 660

gcggtgaaat gcgtagatat atggaggaac accggtggcg aaagcggctc tctggtctgt 720

aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgccgtaaac gatgagtgct aggtgttagg ccctttccgg ggcttagtgc cggagctaac 840

gcattaagca ctccgcctgg ggagtacgac cgcaaggttg aaactcaaag gaattgacgg 900

gggcccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag aaccttacca 960

ggtcttgaca tccttctgac cgtcctagag ataggatttc ccttcggggc aggagtgaca 1020

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaacccct attgttagtt gccatcatta agttgggcac tctagcgaga ctgccggtaa 1140

taaaccggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgac ctgggctaca 1200

cacgtgctac aatggttggt acaacgagtc gcaagccggt gacggcaagc taatctctta 1260

aagccaatct cagttcggat tgtaggctgc aactcgccta catgaagtcg gaatcgctag 1320

taatcgcgga tcagcacgcc gcggtgaata cgttcccggg ccttgtacac accgcccgtc 1380

acaccacgag agtttgtaac acccgaagtc ggtgaggtaa ccatttagga gccagccgcc 1440

taagg 1445

<210> 1822
<211> 1376
<212> DNA
<213> Streptococcus pseudopneumoniae

<400> 1822
tgcaagtaga acgctgaagg aggagcttgc ttctctggat gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataagagtag atgttgcatg acatttrctt aaaaggtgca attgcatcac taccagatgg 180

acctgcgttg tattagctag ttggtggggt aacggctcac caaggcgacg atacatagcc 240

gacctgagag ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg 300

cagcagtagg gaatcttcgg caatggacgg aagtctgacc gagcaacgcc gcgtgagtga 360

agaaggtttt cggatcgtaa agctctgttg taagagaaga acgagtgtga gagtggaaag 420

ttcacactgt gacggtatct taccagaaag ggacggctaa ctacgtgcca gcagccgcgg 480

taatacgtag gtcccgagcg ttgtscggaw ttattgggcg taaagcgagc gcaggcggtt 540

agataagtct gaagttaaag gctgtggctt aaccatagta ggctttggaa actgtttaac 600

ttgagtgcaa gaggggagag tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg 660

aggaacaccg gtggcgaaag cggctctctg gcttgtaact gacgctgagg ctcgaaagcg 720

tggggagcaa acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaggt 780

gttagaccct ttccggggtt tagtgccgta gctaacgcat taagcactcc gcctggggag 840

tacgaccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat 900

gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc tctgaccgct 960

ctagagatag agctttcctt cgggacagag gtgacaggtg gtgcatggtt gtcgtcagct 1020

cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctattg ttagttgcca 1080

tcattcagtt gggcactcta gcgagactgc cggtaataaa ccggaggaag gtggggatga 1140

cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg gctggtacaa 1200

cgagtcgcaa gccggtgacg gcaagctaat ctcttaaagc cagtctcagt tcggattgta 1260

ggctgcaact cgcctacatg aagtcggaat cgctagtaat cgcggatcag cacgccgcgg 1320

tgaatacgtt cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaac 1376

<210> 1823
<211> 1545
<212> DNA
<213> Streptococcus pseudoporcinus

<400> 1823
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtagaa 60

cgctgaggtc tggtgcttgc actagaccaa ggagttgcga acgggtgagt aacgcgtagg 120

taacctacct catagcgggg gataactatt ggaaacgata gctaataccg catgagactg 180

gggttcacat gaacccgagt taaaaggagc aaaagcttca ctatgagatg gacctgcgtt 240

gtattagcta gttggtgagg taaaggctca ccaaggcgac gatacatagc cgacctgaga 300

gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag 360

ggaatcttcg gcaatggggg gaaccctgac cgagcaacgc cgcgtgagtg aagaaggttt 420

tcggatcgta aagctctgtt gttagagaag aacggtaatg ggagtggaaa atccattatg 480

tgacggtaac taaccagaaa gggacggcta actacgtgcc agcagccgcg gtaatacgta 540

ggtcccgagc gttgtccgga tttattgggc gtaaagcgag cgcaggcggt ttgataagtc 600

tgaagttaaa ggctgtggct taaccatagt atgctttgga aactgtcaaa cttgagtgca 660

gaaggggaga gtggaattcc atgtgtagcg gtgaaatgcg tagatatatg gaggaacacc 720

ggtggcgaaa gcggctctct ggtctgtaac tgacgctgag gctcgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgttaggccc 840

tttccggggc ttagtgccgg agctaacgca ttaagcactc cgcctgggga gtacgaccgc 900

aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 960

ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc ttctgaccgg cctagagata 1020

ggctttctct taggagcaga agagacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccctatt gttagttgcc atcattaagt 1140

tgggcactct agcgagactg ccggtaataa accggaggaa ggtggggatg acgtcaaatc 1200

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggttggtaca acgagtcgca 1260

agccggtgac ggcaagctaa tctcttaaag ccaatctcag ttcggattgt aggctgcaac 1320

tcgcctacat gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt 1440

gaggtaacct tttaggagcc agccgcctaa ggtgggatag atgattgggg tgaagtcgta 1500

acaaggtagc cgtatcggaa ggtgcggctg gatcacctcc tttct 1545

<210> 1824
<211> 1547
<212> DNA
<213> Streptococcus pyogenes

<400> 1824
gagagtttga tcctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtagaa 60

cgctgagaac tggtgcttgc accggttcaa ggagttgcga acgggtgagt aacgcgtagg 120

taacctacct catagcgggg gataactatt ggaaacgata gctaataccg cataagagag 180

actaacgcat gttagtaatt taaaaggggc aattgctcca ctatgagatg gacctgcgtt 240

gtattagcta gttggtgagg taaaggctca ccaaggcgac gatacatagc cgacctgaga 300

gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag 360

ggaatcttcg gcaatggggg caaccctgac cgagcaacgc cgcgtgagtg aaagaaggtt 420

ttcggatcgt aaagctctgt tgttagagaa gaatgatggt gggagtggaa aatccaccaa 480

gtgacggtaa ctaaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg ttttttaagt 600

ctgaagttaa aggcattggc tcaaccaatg tacgctttgg aaactggaga acttgagtgc 660

agaaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttaggcc 840

ctttccgggg cttagtgccg gagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccgatgcccg ctctagagat 1020

agagttttac ttcggtacat cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcattaag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggttggtac aacgagtcgc 1260

aagccggtga cggcaagcta atctcttaaa gccaatctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc tattaggagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttcta 1547

<210> 1825
<211> 1334
<212> DNA
<213> Streptococcus ratti

<220>
<221> modified_base
<222> (66)..(66)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (85)..(85)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (138)..(138)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (142)..(142)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (207)..(207)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (240)..(240)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (260)..(261)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (282)..(284)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (449)..(449)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (475)..(475)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (493)..(493)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (523)..(523)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (842)..(843)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (855)..(855)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (926)..(926)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (954)..(954)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (956)..(956)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1018)..(1018)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1070)..(1070)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1121)..(1121)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1295)..(1295)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1304)..(1304)
<223> a, c, t, g, unknown or other

<400> 1825
gaacgggtga gtaacgcgta ggtaacctgc ctattagcgg gggataacta ttggaaacga 60

tagctnatac cgcataagag agttnaacac atgttagacg cttgaaagat gcaagagcat 120

cactagtaga tggacctncg tngtattagc tagtaggtag ggtaaaggcc tacctaggcg 180

acgatacata gccgacctga gagggtnacc ggccacactg ggactgagac acggcccagn 240

ctcctacggg aggcagcagn ngggaatctt cggcaatggg gnnnaccctg accgagcaac 300

gccgcgtgag tgaagaaggt tttcggatcg taaagctctg ttgtcagaga cgaacgtgtg 360

tgagagtgga aagttcacac agtgacggta actgaccaga aagggacggc taactacgtg 420

ccagcagccg cggtaatacg taggtcccna gcgttgtccg gatttattgg gcgtnaagcg 480

agcgcaggcg gtnttgtaag tctgaagtca aaggcagtgg ctnaaccatt gtgtgctttg 540

gaaactgcag gacttgagtg cagaagggga gagtggaatt ccatgtgtag cggtgaaatg 600

cgtagatata tggaggaaca ccggtggcga aagcggctct ctggtctgta actgacgctg 660

aggctcgaaa gcgtgggtag cgaacaggat tagataccct ggtagtccac gccgtaaacg 720

ctgagtgcta ggtgttaggc cctttccggg gcttagtgcc ggagctaacg cattaagcac 780

tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg ggccgcacaa 840

gnngtggagc atgtngttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc 900

ccgatgcccg ctctagagat agagtnttac tttcgtacat cggtgacagg tggngnatgg 960

ttgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caaccctnat 1020

tgttagttgc catcattgag ttgggcactc tagcgagact gccggtaatn aaccggagga 1080

aggtggggat gacgtcaaat catcatgccc cttatgacct nggctacaca cgtgctacaa 1140

tggtcggtac aacgagtcgc gagccggtga cggcaagcta atctctgaaa gccgatctca 1200

gttcggattg gaggctgcaa ctcgcctcca tgaagtcgga atcgctagta atcgcggatc 1260

agcacgccgc ggtgaatacg ttcccgggcc ttgtncacac cgcncgtcac accacgagag 1320

tttgtaacac ccga 1334

<210> 1826
<211> 1012
<212> DNA
<213> Streptococcus salvarius

<220>
<221> modified_base
<222> (998)..(998)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1005)..(1006)
<223> a, c, t, g, unknown or other

<400> 1826
tagaacgctg aagagaggag cttgctcttc ttggatgagt tgcgaacggg tgagtaacgc 60

gtaggtaacc tgccttgtag cgggggataa ctattggaaa cgatagctaa taccgcataa 120

caatggatga cacatgtcat ttatttgaaa ggggcaattg ctccactaca agatggacct 180

gcgttgtatt agctagtagg tgaggtaacg gctcacctag gcgacgatac atagccgacc 240

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttcggcaat gggggcaacc ctgaccgagc aacgccgcgt gagtgaagaa 360

ggttttcgga tcgtaaagct ctgttgtaag tcaagaacga gtgtgagagt ggaaagttca 420

cactgtgacg gtagcttacc agaaagggac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggtttgat 540

aagtctgaag ttaaaggctg tggctcaacc atagttcgct ttggaaactg tcaaacttga 600

gtgcagaagg ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga 660

acaccggtgg cgaaagcggc tctctggtct gtaactgacg ctgaggctcg aaagcgtggg 720

gagcgaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgttg 780

gatcctttcc gggattcagt gccgcagcta acgcattaag cactccgcct ggggagtacg 840

accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac caggtcttga catcccgatg ctatttctag 960

agatagaaag ttacttcggt acatcggtga caggtggngc atggnngtcg tc 1012

<210> 1827
<211> 966

<212> DNA
<213> Streptococcus sanguinis

<220>
<221> modified_base
<222> (47)..(48)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (700)..(700)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (714)..(714)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (721)..(721)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (799)..(799)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (855)..(855)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (917)..(917)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (920)..(920)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (930)..(930)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (955)..(955)
<223> a, c, t, g, unknown or other

<400> 1827
cgctgaagag aggagcttgc tcttcttgga tgagttgcga acgggtnngt aacgcgtagg 60

taacctgcct ggtagcgggg gataactatt ggaaacgata gctaataccg catgaaattg 120

cttatcgcat gataattaat tgaaagatgc aactgcatca ctaccagatg gacctgcgtt 180

gtattagcta gttggtgagg taacggctca ccaaggcgac gatacatagc cgacctgaga 240

gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag 300

ggaatcttcg gcaatggggg gaaccctgac cgagcaacgc cgcgtgagtg aagaaggttt 360

tcggatcgta aagctctgtt gtaagagaag aacgggtgtg agagtggaaa gttcacactg 420

tgacggtatc ttaccagaaa gggacggcta actacgtgcc agcagccgcg gtaatacgta 480

ggtcccgagc gttgtccgga tttattgggc gtaaagcgag cgcaggcggt tagataagtc 540

tgaagttaaa ggctgtggct taaccatagt atgctttgga aactgtttaa cttgagtgca 600

gaaggggaga gtggaattcc atgtgtagcg gtgaaatgcg tagatatatg gaggaacacc 660

ggtggcgaaa gcggctctct ggtctgtaac tgacgctgan gctcgaaagc gtgnggagca 720

nacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgttaggccc 780

tttccggggc ttagtgccnc agctaacgca ttaagcactc cgcctgggga gtacgaccgc 840

gaggttgaaa ctcanaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 900

ttcgaagcaa cgcgaanaan cttaccaggn cttgacatcc ctctgaccgc tctanagata 960

gagttt 966

<210> 1828
<211> 1510
<212> DNA
<213> Streptococcus sinensis

<400> 1828
agtttgatcc tggctcagga cgaacgctgg cggcgtgcct aatacatgca agtggaacgc 60

acaaggtgca ccgtagttta ctacaccgta ctttgtgagt cgcgaacggg tgagtaacgc 120

gtaggtaacc tacctttag cgggggataa ctattggaaa cgatagctaa taccgcataa 180

gatatcttac tgcatggtaa gatattaaaa gatgcaattg catcactaag agatggacct 240

gcgttgtatt agctagtagg tgaggtaacg gctcacctag gcaacgatac atagccgacc 300

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 360

agtagggaat cttcggcaat gggggggaacc ctgaccgagc aacgccgcgt gagtgaagaa 420

ggttttcgga tcgtaaagct ctgttgtaag agaagaacga gtgtgagagt ggaaagttca 480

cactgtgacg gtaacttacc agaaagggac ggctaactac gtgccagcag ccgcggtaat 540

acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggttagat 600

aagtctgaag ttaaaggctg tggcttaacc atagtacgct ttggaaactg tttaacttga 660

gtgcagaagg ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga 720

acaccggtgg cgaaagcggc tctctggtct gtaactgacg ctgaggctcg aaagcgtggg 780

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgttg 840

ggtcctttcc gggactcagt gccgcagcta acgcattaag cactccgcct ggggagtacg 900

accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 960

tttaattcga agcaacgcga agaaccttac caggtcttga catcccggtg cccgtcctag 1020

agataggatt ttgcttcggc acaccggtga caggtggtgc atggttgtcg tcagctcgtg 1080

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ttattgttag ttgccatcat 1140

tcagttgggc actctagcga gactgccggt aataaaccgg aggaaggtgg ggatgacgtc 1200

aaatcatcat gcccttatg acctgggcta cacacgtgct acaatggctg gtacaacgag 1260

tcgcaagtcg gtgacggcaa gctaatctct taaagccagt ctcagttcgg attgtaggct 1320

gcaactcgcc tacatgaagt cggaatcgct agtaatcgcg gatcagcacg ccgcggtgaa 1380

tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta acacccgaag 1440

tcggtgaggt aacctttag gagccagccg cctaaggtgg gatagatgat tggggtgaag 1500

tcgtaacaag 1510

<210> 1829
<211> 1478
<212> DNA
<213> Streptococcus sp. 16362

<400> 1829
gacgaacgct ggcggcgtgc ctaatacatg caagtaggac gcacagtcta taccgtagct 60

tgctacacca taggctgtga gttgcgaacg ggtgagtaac gcgtaggtaa cctgcctatt 120

agaggggat aactattgga aacgatagct aataccgcat aatagtatgt aacacatgtt 180

agatgcttga aagatgcaat tgcatcgcta gtagatggac ctgcgttgta ttagctagta 240

ggtagggtaa aggcctacct aggcaacgat acatagccga cctgagaggg tgatcggcca 300

cactgggact gagacacggc ccagactcct acgggaggca gcagtaggga atcttcggca 360

atgggggaa ccctgaccga gcaacgccgc gtgagtgaag aaggttttcg gatcgtaaag 420

ctctgttgtt aaggaagaat gagtgtgaga atggaaagtt catactgtga cggtacttaa 480

ccagaaaggg acggctaact acgtgccagc agccgcggta atacgtaggt cccgagcgtt 540

gtccggattt attgggcgta aagcgagcgc aggcggttag aaaagtctga agtgaaaggc 600

agtggctcaa ccattgtagg ctttggaaac tgtttaactt gagtgcagaa ggggagagtg 660

gaattccatg tgtagcggtg aaatgcgtag atatatggag gaacaccggt ggcgaaagcg 720

gctctctggt ctgtaactga cgctgaggct cgaaagcgtg gggagcgaac aggattagat 780

accctggtag tccacgccgt aaacgatgag tgctaggtgt taggtccttt ccgggactta 840

gtgccgcagc taacgcatta agcactccgc ctggggagta cgaccgcaag gttgaaactc 900

aaaggaattg acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc 960

gaagaacctt accaggtctt gacatcccga tgctatttct agagatagga agtttcttcg 1020

gaacatcggt gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta 1080

agtcccgcaa cgagcgcaac ccttattgtt agttgccatc attgagttgg gcactctagc 1140

gagactgccg gtaataaacc ggaggaaggt ggggatgacg tcaaatcatc atgccccttа 1200

tgacctgggc tacacacgtg ctacaatggc tggtacaacg agtcgcaagc cggtgacggc 1260

aagctaatct ctgaaagcca gtctcagttc ggattgtagg ctgcaactcg cctacatgaa 1320

gtcggaatcg ctagtaatcg cggatcagca cgccgcggtg aatacgttcc cgggccttgt 1380

acacaccgcc cgtcacacca cgagagtttg taacacccga agtcggtgag gtaaccgtaa 1440

ggagccagcc gcctaaggtg ggatagatga ttggggtg 1478

<210> 1830
<211> 1501
<212> DNA
<213> Streptococcus sp. 2285-97

<400> 1830
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gctgaggtca tgtgcttgca 60

caagaccaag gagttgcgaa cgggtgagta acgcgtaggt aacctgcctc atagcggggg 120

ataactattg gaaacgatag ctaataccgc atgagagttt ttaacacatg ttaggaactt 180

aaaaggagca actgcttcac tatgagatgg acctgcgttg tattagctag ttggtgaggt 240

aacggctcac caaggcgacg atacatagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttcgg caatgggggc 360

aaccctgacc gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg 420

ttagagaaga atggaagtag gagtggaaag tctacttcgt gacggtaact aaccagaaag 480

ggacggctaa ctacgtgcca gcagccgcgg taatacgtag gtcccgagcg ttgtccggat 540

ttattgggcg taaagcgagc gcaggcggtt ctataagtct gaagttaaag gcagtggctc 600

aaccattgtt cgctttggaa actgtagaac ttgagtgcag aaggggagag tggaattcca 660

tgtgtagcgg tgaaatgcgt agatatatgg aggaacaccg gtggcgaaag cggctctctg 720

gtctgtaact gacgctgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt 780

agtccacgcc gtaaacgatg agtgctaggt gttaggccct ttccggggct tagtgccgca 840

gctaacgcat taagcactcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

ttaccaggtc ttgacatccc gatgcccgct ctagagatag agttttactt cggtacatcg 1020

gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca acccctattg ttagttgcca tcattcagtt gggcactcta gcaagactgc 1140

cggtaataaa ccggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg 1200

gctacacacg tgctacaatg gttggtacaa cgagtcgcaa gtcggtgacg acaagctaat 1260

ctcttaaagc caatctcagt tcggattgta ggctgcaact cgcctacatg aagtcggaat 1320

cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacac cacgagagtt tgtaacaccc gaagtcggtg aggtaacctt ttaggagcca 1440

gccgcctaag gtgggataga tgattggggt gaagtcgtaa caaggtagcc gtatcggaag 1500

g 1501

<210> 1831
<211> 1401
<212> DNA
<213> Streptococcus sp. 2_1_36FAA

<220>

<221> modified_base
<222> (1392)..(1392)
<223> a, c, t, g, unknown or other

<400> 1831
acagtttata tcgtagcttg ctacaccata gactgtgagt tgcgaacggg tgagtaacgc 60

gtaggtaacc tgcctggtag cgggggataa ctattggaaa cgatagctaa taccgcataa 120

tattaattat tgcatgataa ttaattgaaa ggtgcaattg caccactacc agatggacct 180

gcgttgtatt agctagtagg tgaggtaacg gctcacctag gcgacgatac atagccgacc 240

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttcggcaat ggacgaaagt ctgaccgagc aacgccgcgt gagtgaagaa 360

ggttttcgga tcgtaaagct ctgttgtaag agaagaacgg gtgtgagagt ggaaagttca 420

cactgtgacg gtatcttacc agaaagggac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggttagat 540

aagtctgaag ttaaaggctg tggcttaacc atagtacgct ttggaaactg tttaacttga 600

gtgcagaagg ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga 660

acaccggtgg cgaaagcggc tctctggtct gtaactgacg ctgaggctcg aaagcgtggg 720

agcgaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtgc taggtgttag 780

gcccttccg gggcttagtg ccgcagctaa cgcattaagc actccgcctg gggagtacga 840

ccgcaaggtt gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt 900

ttaattcgaa gcaacgcgaa gaaccttacc aggtcttgac ctcccgatgc ccgctctaga 960

gatagagttt tacttcggta catcggtgac aggtggtgca tggttgtcgt cagctcgtgt 1020

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tattgttagt tgccatcatt 1080

cagttgggca ctctagcgag actgccggta ataaaccgga ggaaggtggg gatgacgtca 1140

aatcatcatg ccccttatga cctgggctac acacgtgcta caatggctgg tacaacgagt 1200

cgcaagtcgg tgacggcaag ctaatctctt aaagccagtc tcagttcgga ttgtaggctg 1260

caactcgcct acatgaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat 1320

acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgcaag 1380

tcggtgaggt anccttttag g 1401

<210> 1832
<211> 1395
<212> DNA
<213> Streptococcus sp. 69130

<220>
<221> modified_base
<222> (39)..(40)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (44)..(44)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (89)..(89)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (831)..(831)
<223> a, c, t, g, unknown or other

<400> 1832
agttgcgaac gggtgagtaa cgcgtaggta acctacctnn tagnggggga taactattgg 60

aaacgatagc taataccgca taacagtang taacacatgt tagatgcttg aaagatgcaa 120

ttgcatcgct agtagatgga cctgcgttgt attagctagt aggtagggta atggcctacc 180

taggcgacga tacatagccg acctgagagg gtgatcggcc acactgggac tgagacacgg 240

cccagactcc tacgggaggc agcagtaggg aatcttcggc aatgggggga accctgaccg 300

agcaacgccg cgtgagtgaa gaaggttttc ggatcgtaaa gctctgttgt taaggaagaa 360

cgagtgtgag aatggaaagt tcatgctgtg acggtactta accagaaagg gacggctaac 420

tacgtgccag cagccgcggt aatacgtagg tcccgagcgt tgtccggatt tattgggcgt 480

aaagcgagcg caggcggtta gaaaagtctg aagtgaaagg cagtggctca accattgtag 540

gctttggaaa ctgtttaact tgagtgcaga aggggagagt ggaattccat gtgtagcggt 600

gaaatgcgta gatatatgga ggaacaccgg tggcgaaagc ggctctctgg tctgtaactg 660

acgctgaggc tcgaaagcgt ggggagcgaa caggattaga taccctggta gtccacgccg 720

taaacgatga gtgctaggtg ttaggtcctt tccgggactt agtgccgcag ctaacgcatt 780

aagcactccg cctggggagt acgaccgcaa ggttgaaact caaaggaatt nacgggggcc 840

gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt 900

gacatcccag tgactgccct agagataggg ttttccttcg gggcactggt gacaggtggt 960

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1020

ccttattgtt agttgccatc attgagttgg gcactctagc gagactgccg gtaataaacc 1080

ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgacctgggc tacacacgtg 1140

ctacaatggc tggtacaacg agtcgcaagc cggtgacggc aagctaatct ctgaaagcca 1200

gtctcagttc ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg 1260

cggatcagca cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca 1320

cgagagtttg taacacccga agtcggtgag gtaaccgtaa gagccagccg cctaaggtgg 1380

gatagatgat tgggg 1395

<210> 1833
<211> 1272
<212> DNA
<213> Streptococcus sp. AC15

<400> 1833

gacgaacgct ggcggcgtgc ctaatacatg caagtaggac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgccta ttagaggggg ataactattg gaaacgatag ctaataccgc 120

ataacgaaag tcgctagtag atggacctgc gttgtattag ctagtaggta gggtaatggc 180

ctacctaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg ggggaaccct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgttaagg 360

aagatgacgg tacttaacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttagaaa 480

agtctgaagt gaaaggcagt ggctcaacca ttgtaggctt tggaaactgt ttaacttgag 540

tgcagaaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggtctg actgacgctg aggctcgaaa gcgtggggag 660

cgaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttaggt 720

acttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttattgt tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgca 1080

agccggtgac ggcaagctaa tctctgccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aa 1272

<210> 1834
<211> 1262
<212> DNA
<213> Streptococcus sp. ACS2

<400> 1834
ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta acgcgtaggt 60

aacctgcctt gtagcggggg ataactattg gaaacgatag ctaataccgc ataacgaaag 120

ccactacaag atggacctgc gttgtattag ctagtaggtg aggtaacggc tcacctaggc 180

gacgatacat agccgacctg agagggtgat cggccacact gggactgaga cacggcccag 240

actcctacgg gaggcagcag tagggaatct tcggcaatgg gggcaaccct gaccgagcaa 300

cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgtaagtc aagatgacgg 360

tagcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata cgtaggtccc 420

gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggtttgata agtctgaagt 480

taaaggctgt ggctcaacca tagttcgctt tggaaactgt caaacttgag tgcagaaggg 540

gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa caccggtggc 600

gaaagcggct ctctggtctg actgacgctg aggctcgaaa gcgtggggag cgaacaggat 660

tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttggat attcagtgcc 720

gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga aactcaaagg 780

aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 840

accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 900

atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat catgggcact 960

ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc 1020

ccttatgacc tgggctacac acgtgctaca atggttggca acgagttgcg agtcggtgac 1080

ggcaagctaa tctcttccaa tctcagttcg gatgtaggct gcaactcgcc tacagaagtc 1140

ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg gccttgtaca 1200

caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag ccagccgcct 1260

aa 1262

<210> 1835
<211> 1449
<212> DNA
<213> Streptococcus sp. AS20

<220>
<221> modified_base
<222> (1361)..(1361)
<223> a, c, t, g, unknown or other

<400> 1835
acgctggcgg cgtgcctaat acatgcaagt agaacgcaca ggatgcaccg tagtttacta 60

caccgtattc tgtgagttgc gaacgggtga gtaacgcgta ggtaacctgc ctggtagcgg 120

gggataacta ttggaaacga tagctaatac cgcataagaa catttactgc atggtagatg 180

tttaaaaggt gcaagagcat cactaccaga tggacctgcg ttgtattagc tagttggtga 240

ggtaacggct caccaaggca acgatacata gccgacctga gagggtgatc ggccacactg 300

ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt cggcaatggg 360

gggaaccctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg taaagctctg 420

ttgttaagga agaacgtgtg tgagagtgga aagttcacac agtgacggta cttaaccaga 480

aagggacggc taactacgtg ccagcagccg cggtaatacg taggtcccga gcgttgtccg 540

gatttattgg gcgtaaagcg agcgcaggcg gttagataag tctgaagtga aaggcagtgg 600

ctcaaccatt gtaggctttg gaaactgttt aacttgagtg cagaagggga gagtggaatt 660

ccatgtgtag cggtgaaatg cgtagatata tggaggaaca ccggtggcga aagcggctct 720

ctggtctgta actgacgctg aggctcgaaa gcgtggggag cgaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgagtgcta ggtgttaggt cctttccggg acttagtgcc 840

gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga aactcaaagg 900

aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccag gtcttgacat cccgatgccc gctctagaga tagagcttta cttcggtaca 1020

tcggtgacag gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc 1080

cgcaacgagc gcaaccctta ttgttagttg ccatcattca gttgggcact ctagcgagac 1140

tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc 1200

tgggctacac acgtgctaca atggctggta caacgagtcg caagccggtg acggcaagct 1260

aatctctgaa agccagtctc agttcggatt gtaggctgca actcgcctac atgaagtcgg 1320

aatcgctagt aatcgcggat cagcacgccg cgggtggaat ncgttcccgg gccttgtaca 1380

caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtgaggta accgtaagga 1440

gccagccgc 1449

<210> 1836
<211> 1360
<212> DNA
<213> Streptococcus sp. BS35a

<400> 1836
atacatgcaa gtagaacgct gaagagagga gcttgctctt cttggatgag ttgcgaacgg 60

gtgagtaacg cgtaggtaac ctgcctggta gcgggggata actattggaa acgatagcta 120

ataccgcata aaatggatta tcgcatgata attcattgaa aggtgcaaat gcatcactac 180

cagatggacc tgcgttgtat tagctagttg gtggggtaac ggctcaccaa ggcgacgata 240

catagccgac ctgagagggt gatcggccac actgggactg agacacggcc cagactccta 300

cgggaggcag cagtagggaa tcttcggcaa tggacggaag tctgaccgag caacgccgcg 360

tgagtgaaga aggttttcgg atcgtaaagc tctgttgtaa gagaagaacg agtgtgagag 420

tggaaagttc acactgtgac ggtatcttac cagaaaggga cggctaacta cgtgccagca 480

gccgcggtaa tacgtaggtc ccgagcgttg tccggattta ttgggcgtaa agcgagcgca 540

ggcggttaga taagtctgaa gttaaaggct gtggcttaac catagtacgc tttggaaact 600

gtttaacttg agtgcaagag gggagagtgg aattccatgt gtagcggtga aatgcgtaga 660

tatatggagg aacaccggtg gcgaaagcgg ctctctggct tgtaactgac gctgaggctc 720

gaaagcgtgg ggagcaaaca ggattagata ccctggtagt ccacgccgta aacgatgagt 780

gctaggtgtt agacccttc cggggtttag tgccgcagct aacgcattaa gcactccgcc 840

tggggagtac gaccgcaagg ttgaaactca aaggaattga cgggggcccg caccagcggt 900

ggagcatgtg gtttaatttg aagcaacgcg aagaacctta ccaggtcttg acatcccttt 960

gaccgctcta gagaaagagt tttccttcgg gacagaggtg acaggtggtg catggttgtt 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctattgtta 1080

gttgccatca ttcagttggg cactctagcg agactgccgg taataaaccg gaggaaggtg 1140

gggatgacgt caaatcatca tgccccttat gacctgggct acacacgtgc tacaatggct 1200

ggtacaacga gtcgcaagcc ggtgacggca agctaatttt ttaaagccag tctcagttcg 1260

gattgtaggc tgcaacttgc ctacatgaag ttggaatcgc tagtaatcgc ggatcagcac 1320

gccgcggtga atacgttccc gggccttgta cacaccgccc 1360

<210> 1837
<211> 1037
<212> DNA
<213> Streptococcus sp. C150

<220>
<221> modified_base
<222> (995)..(995)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1002)..(1003)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1016)..(1016)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1018)..(1018)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1020)..(1021)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1028)..(1028)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1030)..(1030)
<223> a, c, t, g, unknown or other

<400> 1837
aacgctgaag agaggagctt gctcttcttg gatgagttgc gaacgggtga gtaacgcgta 60

ggtaacctgc cttgtagcgg gggataacta ttggaaacga tagctaatac cgcataacaa 120

tggatgaccc atgtcattta tttgaaaggg gcaaatgctc cactacaaga tggacctgcg 180

ttgtattagc tagtaggtga ggtaacggct cacctaggcg acgatacata gccgacctga 240

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 300

agggaatctt cggcaatggg ggcaaccctg accgagcaac gccgcgtgag tgaagaaggt 360

tttcggatcg taaagctctg ttgtaagtca agaacgagtg tgagagtgga aagttcacac 420

tgtgacggta gcttaccaga aagggacggc taactacgtg ccagcagccg cggtaatacg 480

taggtcccga gcgttgtccg gatttattgg gcgtaaagcg agcgcaggcg gtttgataag 540

tctgaagtta aaggctgtgg ctcaaccata gttcgctttg gaaactgtca aacttgagtg 600

cagaagggga gagtggaatt ccatgtgtag cggtgaaatg cgtagatata tggaggaaca 660

ccggtggcga aagcggctct ctggtctgta actgacgctg aggctcgaaa gcgtggggag 720

cgaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttggat 780

cctttccggg attcagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc 840

gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 900

aattcgaagc aacgcgaaga accttaccag gtcttgacat cccgatgcta tttctagaga 960

tagaaagtta cttcggtaca tcggtgacag gtggngcatg gnngtcgtca gctcgngncn 1020

ngagatgntn gggttaa 1037

<210> 1838
<211> 974
<212> DNA
<213> Streptococcus sp. CM6

<400> 1838
tagaacgctg aagagaggag cttgctcttc ttggatgagt tgcgaacggg tgagtaacgc 60

gtaggtaacc tgcctggtag cgggggataa ctattggaaa cgatagctaa taccgcataa 120

aattgattat cgcatgataa tcaattgaaa ggtgcaaatg catcactacc agatggacct 180

gcgttgtatt agctagttgg tggggtaacg gctcaccaag gcgacgatac atagccgacc 240

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttcggcaat ggacggaagt ctgaccgagc aacgccgcgt gagtgaagaa 360

ggttttcgga tcgtaaagct ctgttgtaag agaagaacga gtgtgagagt ggaaagttca 420

cactgtgacg gtatcttacc agaaagggac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggttagat 540

aagtctgaag ttaaaggctg tggcttaacc atagtacgct ttggaaactg tttaacttga 600

gtgcaagagg ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga 660

acaccggtgg cgaaagcggc tctctggctt gtaactgacg ctgaggctcg aaagcgtggg 720

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgtta 780

gacccttttcc ggggtttagt gccgcagcta acgcattaag cactccgcct ggggagtacg 840

accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac caggtcttga catccctctg accgctctag 960

agatagagtt ttcc 974

<210> 1839
<211> 1432
<212> DNA
<213> Streptococcus sp. CM7

<400> 1839
caggacgaac gctggcggcg tgcctaatac atgcaagtag gacgcacagt ttataccgta 60

gcttgctaca ccatagactg tgagttgcga acgggtgagt aacgcgtagg taacctgcct 120

attagagggg gataactatt ggaaacgata gctaataccg cataacagta tgtaacacat 180

gttagatgct tgaaagatgc aattgcatcg ctagtagatg gacctgcgtt gtattagcta 240

gtaggtaggg taatggccta cctaggcgac gatacatagc cgacctgaga gggtgatcgg 300

ccacactggg actgagacac ggcccagact cctacgggag gcagcagtag ggaatcttcg 360

gcaatggggg gaaccctgac cgagcaacgc cgcgtgagtg aagaaggttt tcggatcgta 420

aagctctgtt gttaaggaag aacgagtgtg aaaatggaaa gttcatactg tgacggtact 480

taaccagaaa gggacggcta actacgtgcc agcagccgcg gtaatacgta ggtcccgagc 540

gttgtccgga tttattgggc gtaaagcgag cgcaggcggt tagaaaagtc tgaagtgaaa 600

ggcagtggct caaccattgt aggctttgga aactgtttaa cttgagtgca gaaggggaga 660

gtggaattcc atgtgtagcg gtgaaatgcg tagatatatg gaggaacacc ggtggcgaaa 720

gcggctctct ggtctgtaac tgacgctgag gctcgaaagc gtggggagcg aacaggatta 780

gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgttaggtcc tttccgggac 840

ttagtgccgc agctaacgca ttaagcactc cgcctgggga gtacgaccgc aaggttgaaa 900

ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 960

cgcgaagaac cttaccaggt cttgacatcc cgatgctatt tctagagata ggaagtttct 1020

tcggaacatc ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg 1080

ttaagtcccg caacgagcgc aacccttatt gttagttgcc atcattgagt tgggcactct 1140

agcgagactg ccggtaataa accggaggaa ggtggggatg acgtcaaatc atcatgcccc 1200

ttatgacctg ggctacacac gtgctacaat ggctggtaca acgagtcgca agccggtgac 1260

ggcaagctaa tctctgaaag ccagtctcag ttcggattgt aggctgcaac tcgcctacat 1320

gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg gtgaatacgt tcccgggcct 1380

tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc cgaagtcggt ga 1432

<210> 1840
<211> 1387
<212> DNA
<213> Streptococcus sp. ICM10

<220>
<221> modified_base
<222> (1346)..(1352)
<223> a, c, t, g, unknown or other

<400> 1840
tagaacgctg aaggaggagc ttgctcttct ggatgagttg cgaacgggtg agtaacgcgt 60

aggtaacctg cctggtagcg ggggataact attggaaacg atagctaata ccgcataaga 120

gtagatgttg catgacattt gcttaaaagg tgcaattgca tcactaccag atggacctgc 180

gttgtattag ctagttggtg aggtaacggc tcaccaaggc aacgatacat agccgacctg 240

agagggtgat cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag 300

tagggaatct tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg 360

ttttcggatc gtaaagctct gttgtaagag aagaacgagt gtgagagtgg aaagttcaca 420

ctgtgacggt atcttaccag aaagggacgg ctaactacgt gccagcagcc gcggtaatac 480

gtaggtcccg agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc ggttagataa 540

gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt ggaaactgtt taacttgagt 600

gcaagagggg agagtggaat tccatgtgta gcggtgaaat gcgtagatat atggaggaac 660

accggtggcg aaagcggctc tctggcttgt aactgacgct gagctcgaaa gcgtggggag 720

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 780

cctttccggg gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc 840

gcaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgaagca acgcgaagaa ccttaccagg tcttgacatc cctctgaccg ctctagagat 960

agagttttcc ttcgggacag aggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcatttag 1080

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1140

catcatgccc cttatgacct gggctacaca cgtgctacaa tggctggtac aacgagtcgc 1200

aagccggtga cggcaagcta atctcttaaa gccagtctca gttcggattg taggctgcaa 1260

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccnnnnn nncacgagag tttgtaacac ccgaagtcgg 1380

tgaggta 1387

<210> 1841
<211> 1439
<212> DNA
<213> Streptococcus sp. ICM12

<400> 1841
ggcggcgtgc ctaatacatg caagtagaac gctgaagaga ggagcttgct cttcttggat 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataaaatgga ttatcgcatg ataatccatt gaaaggtgca 180

aatgcatcac taccagatgg acctgcgttg tattagctag ttggtggggt aacggctcac 240

caaggcgacg atacatagcc gacctgagag ggtgatcggc cacactggga ctgagacacg 300

gcccagactc ctacgggagg cagcagtagg gaatcttcgg caatggacgg aagtctgacc 360

gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg taagagaaga 420

acgagtgtga gagtggaaag ttcacactgt gacggtatct taccagaaag ggacggctaa 480

ctacgtgcca gcagccgcgg taatacgtag gtcccgagcg ttgtccggat ttattgggcg 540

taaagcgagc gcaggcggtt agataagtct gaagttaaag gctgtggctt aaccatagta 600

cgctttggaa actgtttaac ttgagtgcaa gaggggagag tggaattcca tgtgtagcgg 660

tgaaatgcgt agatatatgg aggaacaccg gtggcgaaag cggctctctg gcttgtaact 720

gacgctgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 780

gtaaacgatg agtgctaggt gttagaccct ttccggggtt tagtgccgca gctaacgcat 840

taagcactcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat tgacgggggc 900

ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc 960

ttgacatccc tctgatcgct ctagagatag agttttcctt cgggacagag gtgacaggtg 1020

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccctattg ttagttgcca tcatttagtt gggcactcta gcgagactgc cggtaataaa 1140

ccggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg gctacacacg 1200

tgctacaatg gctggtacaa cgagtcgcaa gccggtgacg gcaagctaat ctcttaaagc 1260

cagtctcagt tcggattgta ggctgcaact cgcctacatg aagtcggaat cgctagtaat 1320

cgcggatcag cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac 1380

cacgagagtt tgtaacaccc gaagtcggtg aggtaacctt ttaggagcca gccgcctaa 1439

<210> 1842
<211> 1432
<212> DNA
<213> Streptococcus sp. ICM2

<220>
<221> modified_base
<222> (203)..(203)
<223> a, c, t, g, unknown or other

<400> 1842
ggcggcgtgc ctaatacatg caagtagaac gctgaagctt ggtgcttgca ccgagcggat 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataaaatgga ttatcgcatg ataattcatt gaaaggtgca 180

aatgcatcac taccagatgg acntgcgttg tattagctag ttggtggggt aacggctcac 240

caaggcgacg atacatagcc gacctgagag ggtgatcggc cacactggga ctgagacacg 300

gcccagactc ctacgggagg cagcagtagg gaatcttcgg caatggacgg aagtctgacc 360

gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg taagagaaga 420

acgagtgtga gagtggaaag ttcacactgt gacggtatct taccagaaag ggacggctaa 480

ctacgtgcca gcagccgcgg taatacgtag gtcccgagcg ttgtccggat ttattgggcg 540

taaagcgagc gcaggcggtt agataagtct gaagttaaag gctgtggctt aaccatagta 600

cgctttggaa actgtttaac ttgagtgcaa gaggggagag tggaattcca tgtgtagcgg 660

tgaaatgcgt agatatatgg aggaacaccg gtggcgaaag cggctctctg gcttgtaact 720

gacgctgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt agtccacgcc 780

gtaaacgatg agtgctaggt gttagaccct ttccggggtt tagtgccgca gctaacgcat 840

taagcactcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat tgacgggggc 900

ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc ttaccaggtc 960

ttgacatccc tctgaccgct ctagagatag agttttcctt cgggacagag gtgacaggtg 1020

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1080

acccctattg ttagttgcca tcatttagtt gggcactcta gcgagactgc cggtaataaa 1140

ccggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg gctacacacg 1200

tgctacaatg gctggtacaa cgagtcgcaa gccggtgacg gtaagctaat ctcttaaagc 1260

cagtctcagt tcggattgta ggctgcaact cgcctacatg aagtcggaat cgctagtaat 1320

cgcggatcag cacgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacac 1380

cacgagagtt tgtaacaccc gaagtcggtg aggtaacctt ttaggagcca gc 1432

<210> 1843
<211> 1261
<212> DNA
<213> Streptococcus sp. ICM45

<400> 1843
cgaacgctgg cggcgtgcct aatacatgca agtagaacga gttgcgaacg ggtgagtaac 60

gcgtaggtaa cctgcctggt agcgggggat aactattgga aacgatagct aataccgcat 120

aacaaaagtc actaccagat ggacctgcgt tgtattagct agttggtggg gtaacggctc 180

accaaggcga cgatacatag ccgacctgag agggtgatcg gccacactgg gactgagaca 240

cggcccagac tcctacggga ggcagcagta gggaatcttc ggcaatggac ggaagtctga 300

ccgagcaacg ccgcgtgagt gaagaaggtt ttcggatcgt aaagctctgt tgtaagagaa 360

gatgacggta tcttaccaga aagggacggc taactacgtg ccagcagccg cggtaatacg 420

taggtcccga gcgttgtccg gatttattgg gcgtaaagcg agcgcaggcg gttagataag 480

tctgaagtta aaggctgtgg cttaaccata gtacgctttg gaaactgttt aacttgagtg 540

caagagggga gagtggaatt ccatgtgtag cggtgaaatg cgtagatata tggaggaaca 600

ccggtggcga aagcggctct ctggcttgac tgacgctgag gctcgaaagc gtggggagca 660

aacaggatta gataccctgg tagtccacgc cgtaaacgat gagtgctagg tgttagacgt 720

ttagtgccgt agctaacgca ttaagcactc cgcctgggga gtacgaccgc aaggttgaaa 780

ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 840

cgcgaagaac cttaccaggt cttgacatcg acaggtggtg catggttgtc gtcagctcgt 900

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctattgtta gttgccatca 960

tgggcactct agcgagactg ccggtaataa accggaggaa ggtggggatg acgtcaaatc 1020

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggctggcaac gagtcgcaag 1080

ccggtgacgg caagctaatc tcttccagtc tcagttcgga tgtaggctgc aactcgccta 1140

cagaagtcgg aatcgctagt aatcgcggat cagcacgccg cggtgaatac gttcccgggc 1200

cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg gtaggtagcc 1260

a 1261

<210> 1844
<211> 1421
<212> DNA
<213> Streptococcus sp. ICM4

<400> 1844
taatacatgc aagtagaacg ctgaagagag gagcttgctc ttcttggatg agttgcgaac 60

gggtgagtaa cgcgtaggta acctgccttg tagcggggga taactattgg aaacgatagc 120

taataccgca taacaatgga tgacacatgt catttatttg aaaggggcaa ttgctccact 180

acaagatgga cctgcgttgt attagctagt aggtgaggta acggctcacc taggcgacga 240

tacatagccg acctgagagg gtgatcggcc acactgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtaggg aatcttcggc aatggggga accctgaccg agcaacgccg 360

cgtgagtgaa gaaggttttc ggatcgtaaa gctctgttgt aagtcaagaa cgagtgtgag 420

agtggaaagt tcacactgtg acggtagctt accagaaagg gacggctaac tacgtgccag 480

cagccgcggt aatacgtagg tcccgagcgt tgtccggatt tattgggcgt aaagcgagcg 540

caggcggttt gataagtctg aagttaaagg ctgtggctca accatagttc gctttggaaa 600

ctgtcaaact tgagtgcaga aggggagagt ggaattccat gtgtagcggt gaaatgcgta 660

gatatatgga ggaacaccgg tggcgaaagc ggctctctgg tctgtaactg acgctgaggc 720

tcgaaagcgt ggggagcgaa caggattaga taccctggta gtccacgccg taaacgatga 780

gtgctaggtg ttggatcctt tccgggattc agtgccgcag ctaacgcatt aagcactccg 840

cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg 900

gtggagcatg tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcccg 960

atgctatttc tagagataga aagttacttc ggtacatcgg tgacaggtgg tgcatggttg 1020

tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgt 1080

tagttgccat cattcagttg ggcactctag cgagactgcc ggtaataaac cggaggaagg 1140

tggggatgac gtcaaatcat catgcccctt atgacctggg ctacacacgt gctacaatgg 1200

ttggtacaac gagttgcgag tcggtgacgg caagctaatc tcttaaagcc aatctcagtt 1260

cggattgtag gctgcaactc gcctacatga agtcggaatc gctagtaatc gcggatcagc 1320

acgccgcggt gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acgagagttt 1380

gtaacacccg aagtcggtga ggtaaccttt tggagccagc c 1421

<210> 1845
<211> 923
<212> DNA
<213> Streptococcus sp. M143

<220>
<221> modified_base
<222> (882)..(888)
<223> a, c, t, g, unknown or other

<400> 1845
gccgcggtaa tacgtaggtc ccgagcgttg tccgggattt attgggcgta aagcgagcgc 60

aggcggttag ataagtctga agttaaaggc tgtggcttaa ccatagtacg ctttggaaac 120

tgtttaactt gagtgcaaga ggggagagtg gaattccatg tgtagcggtg aaatgcgtag 180

atatatggag gaacaccggt ggcgaaagcg gctctctggc ttgtaactga cgctgaggct 240

cgaaagcgtg gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag 300

tgctaggtgt tagacccttt ccggggttta gtgccgcagc taacgcatta agcactccgc 360

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 420

tggagcatgt ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatccctc 480

tgaccgctct agagatagag ttttccttcg ggacagaggt gacaggtggt gcatggttgt 540

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt 600

agttgccatc atttagttgg gcactctagc gagactgccg gtaataaacc ggaggaaggt 660

ggggatgacg tcaaatcatc atgccccttа tgacctgggc tacacacgtg ctacaatggc 720

tggtacaacg agtcgcaagc cggtgacggc aagctaatct cttaaagcca gtctcagttc 780

ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg cggatcagca 840

cgccgcggtg aatacgttcc cgggccttgt acacaccgcc cnnnnnnnca cgagagtttg 900

taacacccga agtcggtgag gta 923

<210> 1846
<211> 1543
<212> DNA
<213> Streptococcus sp. M334

<400> 1846
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaagg aggagcttgc ttctctggat gagttgcgaa cgggtgagta acgcgtaggt 120

aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc ataagagtag 180

atgttgcatg acatttgctt aaaaggtgca attgcatcac taccagatgg acctgcgttg 240

tattagctag ttggtggggt aacggcttac caaggcgacg atacatagcc gacctgagag 300

ggtgatcggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtagg 360

gaatcttcgg caatggacgg aagtctgacc gagcaacgcc gcgtgagtga agaaggtttt 420

cggatcgtaa agctctgttg taagagaaga acgagtgtga gagtggaaag ttcacactgt 480

gacggtatct taccagaaag ggacggctaa ctacgtgcca gcagccgcgg taatacgtag 540

gtcccgagcg ttgtccggat ttattgggcg taaagcgagc gcaggcggtt agataagtct 600

gaagttaaag gctgtggctt aaccatagta cgctttggaa actgtttaac ttgagtgcaa 660

gaggggagag tggaattcca tgtgtagcgg tgaaatgcgt agatatatgg aggaacaccg 720

gtggcgaaag cggctctctg gcttgtaact gacgctgagg ctcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgcc gtaaacgatg agtgctaggt gttagaccct 840

ttccggggtt tagtgccgta gctaacgcat taagcactcc gcctggggag tacgaccgca 900

aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgaagcaac gcgaagaacc ttaccaggtc ttgacatccc tctgaccgct ctagagatag 1020

agttttcctt cgggacagag gtgacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga 1080

gatgttgggt taagtcccgc aacgagcgca acccctattg ttagttgcca tcattcagtt 1140

gggcactcta gcgagactgc cggtaataaa ccggaggaag gtggggatga cgtcaaatca 1200

tcatgcccct tatgacctgg gctacacacg tgctacaatg gctggtacaa cgagtcgcaa 1260

gccggtgacg gtaagctaat ctcttaaagc cagtctcagt tcggattgta ggctgcaact 1320

cgcctacatg aagtcggaat cgctagtaat cgcggatcag cacgccgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcacac cacgagagtt tgtaacaccc gaagtcggtg 1440

aggtaaccgt aaggagccag ccgcctaagg tgggatagat gattggggtg aagtcgtaac 1500

aaggtagccg tatcggaagg tgcggctgga tcacctcctt tct 1543

<210> 1847
<211> 1258
<212> DNA
<213> Streptococcus sp. OBRC6

<400> 1847
acgaacgctg gcggcgtgcc taatacatgc aagtaggacg agttgcgaac gggtgagtaa 60

cgcgtaggta acctgcctat tagaggggga taactattgg aaacgatagc taataccgca 120

taacgaaagt cgctagtaga tggacctgcg ttgtattagc tagtaggtag ggtaatggcc 180

tacctaggcg acgatacata gccgacctga gagggtgatc ggccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt agggaatctt cggcaatggg gggaaccctg 300

accgagcaac gccgcgtgag tgaagaaggt tttcggatcg taaagctctg ttgttaagga 360

agatgacggt acttaaccag aaagggacgg ctaactacgt gccagcagcc gcggtaatac 420

gtaggtcccg agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc ggttagaaaa 480

gtctgaagtg aaaggcagtg gctcaaccat tgtaggcttt ggaaactgtt taacttgagt 540

gcagaagggg agagtggaat tccatgtgta gcggtgaaat gcgtagatat atggaggaac 600

accggtggcg aaagcggctc tctggtctga ctgacgctga ggctcgaaag cgtggggagc 660

gaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttaggta 720

cttagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa 780

actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 840

acgcgaagaa ccttaccagg tcttgacatc gacaggtggt gcatggttgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttattgtt agttgccatc 960

atgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1020

catcatgccc cttatgacct gggctacaca cgtgctacaa tggctggcaa cgagtcgcaa 1080

gccggtgacg gcaagctaat ctctgccagt ctcagttcgg atgtaggctg caactcgcct 1140

acagaagtcg gaatcgctag taatcgcgga tcagcacgcc gcggtgaata cgttcccggg 1200

ccttgtacac accgcccgtc acaccacgag agtttgtaac acccgaagtc ggtaggta 1258

<210> 1848
<211> 1447
<212> DNA
<213> Streptococcus sp. SHV515

<220>
<221> modified_base
<222> (84)..(84)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (126)..(126)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (311)..(311)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1444)..(1444)
<223> a, c, t, g, unknown or other

<400> 1848
ttaatcatga gtcgcgaacg ggtgagtaac gcgtaggtaa cctgcctgat agcgggggat 60

aactattgga aacgatagct aatnccgcat aagagtcgtt aacacatgtt aatgatttaa 120

aaggancaat tgcttcacta tcagatggac ctgcgttgta ttagctagtt ggtgaggtaa 180

cggctcacca aggcttcgat acatagccga cctgagaggg tgatcggcca cactgggact 240

gagacacggc ccagactcct acgggaggca gcagtaggga atcttcggca atggacgaaa 300

gtctgaccga ncaacgccgc gtgagtgaag aaggttttcg gatcgtaaag ctctgttata 360

agcgaagaac gggagtaaga gtggaaagtt tactctgtga cggtagctta tcagaaaggg 420

acggctaact acgtgccagc agccgcggta atacgtaggt cccgagcgtt gtccggattt 480

attgggcgta aagcgagcgc aggtggttta ataagtctga agttaaaggc attggctcaa 540

ccaatgtacg ctttggaaac tgttgaactt gagtgcagaa ggggagagtg gaattccatg 600

tgtagcggtg aaatgcgtag atatatggag gaacaccggt ggcgaaagcg gctctctggt 660

ctgtaactga cactgaggct cgaaagcgtg ggtagcgaac aggattagat accctggtag 720

tccacgccgt aaacgatgag tgctaggtgt tgggtccttt ccgggactca gtgccgcagc 780

taacgcatta agcactccgc ctggggagta cgaccgcaag gttgaaactc aaaggaattg 840

acgggggccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt 900

accaggtctt gacatcccag tgaccatcct agagatagga tttcccttcg gggcactggt 960

gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1020

cgagcgcaac ccctattgtt agttgccatc attgagttgg gcactctagc gagactgccg 1080

gtaataaacc ggaggaaggt ggggatgacg tcaaatcatc atgcccctta tgacctgggc 1140

tacacacgtg ctacaatggt cggtacaacg agttgcgagc tggtgacagt aagctaatct 1200

cttaaagccg atctcagttc ggattgtagg ctgcaactcg cctacatgaa gtcggaatcg 1260

ctagtaatcg cggatcagca cgccgcggtg aatacgttcc cgggccttgt acacaccgcc 1320

cgtcacacca cgagagtttg taacacccga agtcggtgag gtaaccattt ggagccagcc 1380

gcctaaggtg ggatagatga ttggggtgaa gtcgtaacaa ggtagccgta tcggaaggtg 1440

cggntgg 1447

<210> 1849
<211> 1365
<212> DNA
<213> Streptococcus sp. oral clone ASB02

<220>
<221> modified_base
<222> (336)..(336)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (373)..(373)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (697)..(697)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1014)..(1014)
<223> a, c, t, g, unknown or other

<400> 1849
ggagtttgat tatggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacgaaag ccactaccag atggacctgc gttgtattag 180

ctagttggtg aggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgngtga gtgaagaagg ttttcggatc 360

gtaaagctct gtngtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttatc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagatg tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag catacaggat tagatancct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttgggt actcagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacagg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgatga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaancggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggctggca acgagtcgca agttggtgac ggcaagctaa tctcttccag tctcagttcg 1140

gatgtagtct gcaactcgcc tccagaagtt ggattcgcta gtaatcgcgg atcagccatg 1200

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta 1260

acacccgaag tcggtaggta gccggccgcc taaggtggga tagatgattg gggtgaagtc 1320

gtaacaaggt agccgtatcg gaaggtgcgg ctggaacacc tcctt 1365

<210> 1850
<211> 1363
<212> DNA
<213> Streptococcus sp. oral clone ASCA03

<220>
<221> modified_base
<222> (1014)..(1014)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1059)..(1059)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1084)..(1084)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1123)..(1123)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1136)..(1136)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1148)..(1148)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1160)..(1160)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1285)..(1286)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1348)..(1348)
<223> a, c, t, g, unknown or other

<400> 1850
ggagtttgat tctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataataaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg aggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagaa aaaatgacgg tatcttacca gaaagggacg gctaactact 420

cgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaancggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatganc gggctacaca cgtggtacga 1080

tggntggcaa cgagtcgcaa gccggtgacg gcaagctaat ctnttccagt ctcagntcgg 1140

atgtaggntg caaatcgccn acagaagtcg gaatcgctag taatcgcgga tcagcacgcc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac 1260

acccgaagtc ggtaggtagc cagcnnccta aggtgggata gatgattggg gtgaagtcgt 1320

aacaaggtag ccgtatcgga aggtacgnct gggacacctc ctt 1363

<210> 1851
<211> 1366
<212> DNA
<213> Streptococcus sp. oral clone ASCA04

<220>
<221> modified_base
<222> (1016)..(1016)
<223> a, c, t, g, unknown or other

<400> 1851
ggagtttgat tatggctcag gactaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataatgaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaagggc tcaccaaggc gacgatatat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcca cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt accggtgaaa 600

tgggtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gtagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaagg accttaccag gtcttgccat cgacaggtga 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat cagttgggca ctctagcgag actgccggta ataaancgga 1020

ggaaggtggg gatgacgtca aatcatcatg ccccttatga cctgggctac acacgtgcta 1080

caatggctgg caacgagtcg caagccggtg acggcaagct aatctcttcc agtctcagtt 1140

cggatgtagg ctgcaactcg cctacagaag tcggaatcgc tagtaatcgc ggatcagcac 1200

gccgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac gagagtttgt 1260

aacacccgaa gtcggtaggt agccagccgc ctaaggtggg atagatgatt ggggtgaagt 1320

cgtaacaagg tagccgtatc ggaaggtgcg gctggaacac ctcctt 1366

<210> 1852
<211> 1364
<212> DNA
<213> Streptococcus sp. oral clone ASCA09

<220>
<221> modified_base
<222> (1014)..(1014)
<223> a, c, t, g, unknown or other

<400> 1852
ggagtttgat catggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccacgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt aaaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa cacccgtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaancggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggctggca acgagtcgca agccggtgac ggcaagctaa tctcttccag tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagt cggtaggtag ccagccgcct aaggtgggat agatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctt 1364

<210> 1853
<211> 1361
<212> DNA
<213> Streptococcus sp. oral clone ASCB04

<400> 1853
ggagtttgat catggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataatgaaag tcactaccag atgaacctgc gttgtattag 180

ctagttggtg aggtaacggc tcaccaaggc gacgatacat agccgaactg agagggtgaa 240

cccccacact gggactgaga cacggaccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagatacccg gtagtccacc ccgtaaacga 720

tgagtgctag gtgttagacg tttagtaccg tagctaacgc attaagcact ccgcctgggg 780

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc gacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

cctattgtta gttgccatca tgggcactct agcgagactg ccggtaataa accggaggaa 1020

ggtgggatga cgtcaaatca tcatgcccct tatgacctgg gctacacacg tgctacaatg 1080

gctggcaacg agtcgcaagc cggtgacggc aagctaatct cttccagtct cagttcggat 1140

gtaggctgca actcgcctac agaagtcgga atcgctagta atcgcggatc agcacgccgc 1200

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac 1260

ccgaagtcgg taggtagcca gccgcctaag gtgggataga tgattggggt gaagtcgtaa 1320

caaggtagcc gtatcggaag gtgcggctgg aacacctcct t 1361

<210> 1854
<211> 1358
<212> DNA
<213> Streptococcus sp. oral clone ASCB06

<220>
<221> modified_base
<222> (59)..(59)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (457)..(457)
<223> a, c, t, g, unknown or other

<400> 1854
ggagtttgat tatggctcag atgaacgctg gcggcgtgcc taatacatgc aagtagaant 60

agttgcgaac gggtgagtaa cgcgtaggta acctgcctct tagcggggga taactattgg 120

aaacgatagc taataccgca taagaaagtc actaagagat ggacctgcgt tgtattagct 180

agttggtgag gtaacggctc accaaggcga cgataaatag ccgacctgag aggatgatcc 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta gggaatcttc 300

gacaatggac gcaactgacc cagcaacgcc gcgtgactga agaaggcctt cggatcgtaa 360

agcactgttg taagagaaga tgacggtaac ttaccagaaa gggacggcta actacgtgcc 420

agcagccgcg gtaatacgta ggtcccgagc gttatcngga tttattgggc gtaaagcgag 480

cgcaggcggt tagataagtc tgaagttaaa ggctgtggct taaccatagt acgctttgga 540

aactgtttaa cttgagtgca gaaggggaga gtggaattcc atgtgtagcg gtgaaatgcg 600

tagatatatg gaggaacacc ggtggcgaaa gcggctctct ggtctgactg acgctgaggc 660

tcgaaagcgt ggggagcaaa caggattaga taccctggta gtccaccccg taaacgatga 720

gtgctaggtg ttgggtactc agtgccgcag ctaacgcatt aagcactccg cctggggagt 780

accaccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg 840

tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcgac aggtggtgca 900

tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 960

attgttagtt gccatcatgg gcactctagc gagactgccg gtaataaacc ggaggaaggt 1020

gggatgacgt caaatcatca tgccccttat gacctgggct acacacgtgc tacaatggct 1080

ggcaacgagt cgcgagtcgg tgacggcaag ctaatctctt ccagtctcag ttcggatgta 1140

ggctgcaact cgcctacaga agtcggaatc gttagtaatc gcggatcagc acgccgcggt 1200

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg 1260

aagtcggtag gtagtcagcc gcctaaggtg ggatagatga ttggggtgaa gtcgtaacaa 1320

ggtagccgta tcggaaggtg cggctggatc acctcctt 1358

<210> 1855
<211> 1359
<212> DNA
<213> Streptococcus sp. oral clone ASCC04

<220>
<221> modified_base
<222> (1012)..(1012)
<223> a, c, t, g, unknown or other

<400> 1855
agtttgatta tggctcagga tgaacgctgg cggcgtgcct aatacatgca agtagaacga 60

gttgcgaacg ggtgagtaac gcgtaggtaa cctgcctggt agcgggggat aactattgga 120

aacgatagct aataccgcat aacgaaagtc actaccagat ggacctgcgt tgtattagct 180

agttggtgag gtaacggctc accaaggcga cgatacatag ccgacctgag agggtgatcg 240

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta gggaatcttc 300

ggcaatggac ggaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt ttcggatcgt 360

aaagctctgt tgtaagagaa gaggacggta tcttaccaga aagggacggc taactacgtg 420

ccagcagctg cggtaatacg taggtcccga gcgttatccg gatttattgg gcgtaaagcg 480

agcgcaggcg gttagataag tctgaagtta aaggctgtgg cttaaccata gtacgctttg 540

gaaactgttt aacttgagtg caagagggga gagtggaatt ccatgtgtag cggtgaaatg 600

cgtagatata tggaggaaca tcggtggcga aagcggctct ctggcttgac tgacgctgag 660

gctcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 720

gagtgctagg tgttgggtac tcagtgccgc agctaacgca ttaagcactc cgcctgggga 780

gtacgaccgc aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 840

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcg acaggtggtg 900

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cctatagtta gttgccatca tgggcactct agcgagactg ccggtaataa ancggaggaa 1020

ggtggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat 1080

ggctggcaac gagtcgcaag tcggtgacgg caagctaatc tcttccagtc tcagttcgga 1140

tgtaggctgc aactcgccca cagaagtcgg aatcgctagt aatcgcggat cagcacgccg 1200

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacgaga gtttgtaaca 1260

cccgaagtcg gtaggtagcc agccgcctaa ggtgggatag atgattgggg tgaagtcgta 1320

acaaggtagc cgtatcggaa ggtgcggctg gaacacctc 1359

<210> 1856
<211> 1364
<212> DNA
<213> Streptococcus sp. oral clone ASCC05

<220>
<221> modified_base
<222> (594)..(595)
<223> a, c, t, g, unknown or other

<400> 1856
ggagtttgat catggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag ccactaccag atggacctgc gttgtattag 180

ctagttggtg aggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttatc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt accnncgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccc ggtagtccac gccgtaaatg 720

atgagtgcta ggtgttgggt actcagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttagcag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atattgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaaccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggctggca acgagtcgca agccggtgac ggcaagctaa tctcttccag tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagt cggtaggtag ccagccgcct aaggtgggat agatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggc tggatcacct cctt 1364

<210> 1857

<211> 1564
<212> DNA
<213> Streptococcus sp. oral clone ASCC12

<220>
<221> modified_base
<222> (445)..(445)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (936)..(936)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (939)..(939)
<223> a, c, t, g, unknown or other

<400> 1857
gacgttttga ttcttggctc agtgaccaac gctggcggcg tgcctaatac atgcaagtag 60

aacgctgaag gaggagcttg cttctccgga tgacgttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tggtagcggg ggataactat tggaaacgat agctaatacc gcataacagt 180

agatatcgca tgatagctgc ttgaaaggtg caattgcacc actaccagat ggacctgcgt 240

tgtattagct agttggtgag gtaacggctc accaaggcaa cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcattgtga cggaagtctt gaccgagcca acgcctcggt gagtgaagaa 420

ggttttccgg atcgtaaagc tctgnttgta agagacagaa cgagttgtga gacgtggaaa 480

gttcacactg gtgacggtat cttaccagaa agggacggct aactacgtgc cagcagccgc 540

ggtaatacgt aggtcccaag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg 600

ttagataagt ctgaagttaa aggctgtggc ttaaccatag tacgctttgg aaactgttta 660

acttgagtgc aagaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat 720

ggaggaacac cggtggcgaa aagcggctct ctgggcttgt aactgacgct gaggctcgaa 780

agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac tgatgagtgc 840

taggtgttag acccttttccg gggtttagtg ccgtagctaa cgcattaagc actccgcctg 900

gggagtacga ccgcaaggtt gaaactcaaa ggaatnganc gggggcccgc acaagcggtg 960

gagcatgtgg tttaattcga tgcaacgcga agaaccttac ctggtcttga catccctgtg 1020

accgttctag agatggattg tttccttcgg gagcagaggt gacaggtggt gcatggttgt 1080

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctattgct 1140

taggtaaaac tccccgggga gttgggcact ctagcgagac tgccggtgat aaaccggagg 1200

aaggtgggga tgacgtcaag tcatcatggc ccttatgacc tgggctacac acgtgctaca 1260

atggcgtata cagagggaag cgatagtgcg agctggagcg aatctcacaa agtacgtcta 1320

agtccggatt ggagtctgca actcgactcc atgaagtcgg aatcgctagt aatcgcaaat 1380

cagaatgttg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga 1440

gtgggttgta ccagaagtag atagcttaac cttttggagg gcgtttacca cggtatgatt 1500

catgactggg gtgaagtcgt aacaaggtaa ccgtagggga acctgcggct ggaacacctc 1560

cttc 1564

<210> 1858
<211> 1366
<212> DNA
<213> Streptococcus sp. oral clone ASCD01

<400> 1858
ggagtttgat tctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgatgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat cagttgggcg ctctagcgag actgccggta ataaaccgga 1020

ggaaggtggg gatgacgtca aatcatcatg ccccttatga cctgggctac acacgtgcta 1080

caatggctgg caacgtgtcg caagccggtg acggcaagct aatctcttcc agtctcagtt 1140

cggatgtagg ctgcaactcg cctacagaag tcggaatcgc tagtaatcgc ggatcagcac 1200

gccgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac gagagtttgt 1260

aacacccgaa gtcggtaggt agccagccgc ctaaggtggg atagatgatt ggggtgaagt 1320

cgtaacaagg tagccgtatc ggaaggtgcg gctggaacac ctcctt 1366

<210> 1859
<211> 1364
<212> DNA
<213> Streptococcus sp. oral clone ASCD09

<220>

<221> modified_base
<222> (1076)..(1076)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1078)..(1078)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1298)..(1298)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1318)..(1318)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1357)..(1357)
<223> a, c, t, g, unknown or other

<400> 1859
ggagtttgat tatggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttctcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gacagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat cagataccct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gtagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaaccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgntnca 1080

atggctggca acgagtcgca agccggtgac ggcaagctaa tctcttccag tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagt cggtaggtag ccagccgcct aaggtggnat agatgattgg ggggaaancg 1320

taacaaggta gccgtatcgg aaggtgcggc tggatcnctt cctt 1364

<210> 1860
<211> 1342
<212> DNA
<213> Streptococcus sp. oral clone ASCD10

<220>
<221> modified_base
<222> (244)..(244)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (250)..(250)
<223> a, c, t, g, unknown or other

<400> 1860
gacgaacgct ggcggcgtgc ctaatacatg taagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataacaaaag tcactaccag atggacctgc gttgtattag ctagttggtg gggtaacggc 180

tcaccaaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacngcccan actcctacgg gaggcagcag tagggaatct tcggcagtgg acggaagtct 300

gaccgagcac gccgcgtgag tgaagaaggt ttccggatcg taaagctctg ttgtaagaga 360

agatgacggt atcttaccag aaagggacgg ctaactacgt gccagcagcc gcggtaatac 420

gtaggtcccg agcgttgtcc ggatttattg ggcgtaaagc gagcgcaggc ggttagataa 480

gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt ggaaactgtt taacttgagt 540

gcaagagggg agagtggaat tccatgtgta gcggtgaaat gcgtagatat atggaggaac 600

accggtggcg aaagcggctc tctggcttga ctgacgctga ggctcgaaag cgtggggagc 660

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttagacg 720

tttagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa 780

atcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa ttcgaagcaa 840

cgcgaagaac cttaccaggt cttgacatcg acaggtggtg catggttgtc gtcagctcgt 900

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctattgtta gttgccatca 960

tgggcactct agcgagactg ccggtaataa accggaggaa ggtggggatg acgtcaaatc 1020

atcatgcccc ttatgacctg ggctacacac gtgctacaat ggctggcaac gagtcgcaag 1080

ccggtgacgg caagctaatc tctgccagtc tcagttcgga tgtaggctgc aactcgccta 1140

cagaagtcgg aatcgctagt aatcgcggat cagcacgccg cggtgaatac gttcccgggc 1200

cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccgaagtcg gtaggtagcc 1260

agccgcctaa ggtgggatag atgattgggg tgaagtcgta acaaggtagc cgtatcggaa 1320

ggtgcggctg gaacacctcc tt 1342

<210> 1861
<211> 1356
<212> DNA
<213> Streptococcus sp. oral clone ASCE03

<220>
<221> modified_base
<222> (1143)..(1143)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1343)..(1343)
<223> a, c, t, g, unknown or other

<400> 1861
ggagtttgat cctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttacgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataaaaaagt cactaccaga tggacctgcg ttgtattagc 180

tagttggtgg ggtaaaggct taccaaggcg acgatacata gccgacctga gagggtgaac 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

cggcaatgga cggaagtctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg 360

taaagctctg ttgtaagaga agatgccggt atcttaccag aaagggacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtcccg agcgttgtcc ggatttattg ggcgtaaagg 480

gagcgcaggc ggttagaaaa gtctgaagtt aaaggctgtg gcttaaccat agtaggcttt 540

ggaaactgtt taacttgagt gcaagagggg agagtggaat tccatgtgta gcggtgaaat 600

gcgtagatat atggaggaac accggtggcg aaagcggctc tctggcttga ctgacgctga 660

ggctcgaaag cgtggggatc aaacaggatt agataccctg gtagtccacg ccgtaaacgc 720

tgagggctag gtgttagacg tttagtgccg cagctaacgc attaagcact ccgcctgggg 780

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc tacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctattgtt agttgccatc atgggcactc tagcgagact gccggtaata aaccggagga 1020

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1080

tggctggcaa cgagtcgcaa gccggtgacg gcaagctaat ctctgccagt ctcagttcgg 1140

atntaggctg caactcgcct acagaagtcg gaatcgctag taatcgcgga tcagcacgcc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac 1260

acccgaagtc ggtaggtagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1320

aacaaggtag ccgtatcgaa agntgcggct ggaaca 1356

<210> 1862
<211> 1360
<212> DNA
<213> Streptococcus sp. oral clone ASCE04

<220>
<221> modified_base
<222> (31)..(31)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (334)..(334)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (680)..(680)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (684)..(684)
<223> a, c, t, g, unknown or other

<400> 1862
ggagtttgat tttggctcag gacgaacgct ncggcgtgcc taatacatgc aagtagaacg 60

agttgcgaac tggtgagtaa cgcgtaggta acctgcctgg tagcggggga taactattgg 120

aaacgatagc taataccgca taacaaaagt cactaccaga tggacctgcg ttgtattagc 180

tagttggtgg ggtaacggct caccaaggcg acgatacata gccgacctga gagggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

cggcaatgga cggaagtctg accgagcaac gccngtgagt gaagaaggtt ttcggatcgt 360

aaagctctgt tgtaagagaa gatgacggta tcttaccaga aagggacggc taactacgtg 420

ccagcagccg cggtaatacg taggtcccga gcgttgtccg gatttattgg gcgtaaagcg 480

agcgcaggcg gttagataag tctgaagttt aaggctgtgg cttaaccata gtacgctttg 540

gaaactgttt aacttgagtg caagagggga gagtggaatt ccatgtgtag cggtgaaatg 600

cgtagatata tggaggaaca ccggtggcga aagcggctct ccgcttgact gacgctgagg 660

ctcgaaagcg tggggagcan acangattag ataccctggt agtcacgccg taaacgatga 720

gtgctaggtg ttagacgttt agtgccgcag ctaacgcatt aagcactccg cctggggagt 780

acgaccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg 840

tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatcgac aggtggtgca 900

tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaacccc 960

tattgttagt tgccatcatg ggcactctag cgagactgcc ggtaataaac cggaggaagg 1020

tggggatgac gtcaaatcat catgcccctt atgacctggg ctacacacgt gctacaatgg 1080

ctggcaacga gtcgcaagcc ggtgacggca agctaatctc ttccagtctc agttcggatg 1140

taggctgcaa ctcgcctaca gaagtcggaa tcgctagtaa tcgcggatca gcacgccgcg 1200

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacgagagt ttgtaacacc 1260

cgaagtcggt aggtagccag ccgcctaagg tgggatagat gattggggtg aagtcgtaac 1320

aaggtagccg tatcggaagg tgcggctgga tcacctcctt 1360

<210> 1863
<211> 1363
<212> DNA
<213> Streptococcus sp. oral clone ASCE05

<220>
<221> modified_base
<222> (544)..(544)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (634)..(634)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (697)..(697)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (727)..(727)
<223> a, c, t, g, unknown or other

<400> 1863
ggagtttgat tatggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctc ttagcggggg ataactattg 120

gaaacgatag ctaataccgc ataagaaaga cactaagaga tggacctgcg ttgtattagc 180

tagttggtga ggtaacggct caccaaggcg acgatacata gccgacctga gagggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

cggcaatggg ggcaaccctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg 360

taaagctctg ttgtaagaga agatgacggt aacttaccag aaagggacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtcccg agcgttatcc ggatttattg ggcgtaaagc 480

gagcgcaggc ggttagataa gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt 540

gganactgtt taacttgagt gcagaagggg agagtggaat tccatgtgta gcggtgaaat 600

gcgtagatat atggaggaac accggtggcg aaancggctc tctggtctga ctgacgctga 660

ggctcgaaag cgtggggagc aaacaggatt agatagnctg gtagtccacg ccgtaaacga 720

tgagtgntag gtgttgggta ctcagtgccg cagctaacgc attaagcact ccgcctgagg 780

agtacgacag caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc tacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctattgtt agttgccatc atgggcactc tagcgagact gccggtaata aaccggagga 1020

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1080

tggctggcaa cgagtcgcga gtcggtgacg gcaagctaat ctcttccagt ctcagttcgg 1140

atgtaggctg caactcgcct acagaagtcg gaatcgctag taatcgcgga tcagcacgcc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac 1260

acccgaagtc ggtaggtagc cagcagccta aggtgggata gatgattggg gtgaagtcgt 1320

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctt 1363

<210> 1864
<211> 1364
<212> DNA
<213> Streptococcus sp. oral clone ASCE06

<220>
<221> modified_base
<222> (398)..(398)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (401)..(401)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1014)..(1014)
<223> a, c, t, g, unknown or other

<400> 1864
ggagtttgat tatggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag acgatgacgg tatcttanca naaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccca gcaagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaancggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggctggca acgagtcgca agccggtgac ggcaagctaa tctcttccag tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagt cggtaggtag ccagccgcct aaggtgggat agatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggt tggaacacct cctt 1364

<210> 1865
<211> 1365
<212> DNA
<213> Streptococcus sp. oral clone ASCE09

<400> 1865
ggagtttgat tatggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtaccgct 540

ttggaaactg tttaacttga gtgcaagagg ggagagtgga attccatgtg tagcggtgaa 600

atgcgtagat atatggagga acaccggtgg cgaaagcggc tctctggctt gactgacgct 660

gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac 720

gatgagtgct aggtgttaga cgtttagtgc cgcagctaac gcattaagca ctccgcctgg 780

ggagtacgac cgcaaggttg aaactcaaag gaattgacgg gggcccgcac aagcggtgga 840

gcatgtggtt taattcgaag caacgcgaag aaccttacca ggtcttgaca tcgacaggtg 900

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 960

acccctattg ttagttgcca tcatgggcac tctagcgaga ctgccggtaa taaaccggag 1020

gaaggtgggg atgacgtcaa atcatcatgc cccttatgac ctgggctaca cacgtgctac 1080

aatggctggc aacgagtcgc aagccggtga cggcaagcta atctcttcca gtctcagttc 1140

ggatgtaggc tgcaactcgc ctacagaagt cggaatcgct agtaatcgcg gatcagcacg 1200

ccgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg agagtttgta 1260

acacccgaag tcggtaggta gccagccgcc taaggtggga tagatgattg gggtgaagtc 1320

gtaacaaggt agccgtatcg gaaggtgcgg ctggaacacc tcctt 1365

<210> 1866
<211> 1262
<212> DNA
<213> Streptococcus sp. oral clone ASCE10

<220>
<221> modified_base
<222> (1065)..(1065)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1067)..(1067)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1137)..(1137)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1223)..(1223)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1250)..(1250)
<223> a, c, t, g, unknown or other

<400> 1866
ggagtttgat tctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagctgc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttatcca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataacct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggtgga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttatcca gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttcccat catgggcact ctagcgagac tgccggtaat aaaccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgact ggaancncac acgtgctaca 1080

atggctggca acgagtcgcc aaccggtgac ggcaagctaa tctcttccag tctcagntcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gcnttgtaca cgccgcccgt cacccccccn gagtttgtaa 1260

ca 1262

<210> 1867
<211> 1362
<212> DNA
<213> Streptococcus sp. oral clone ASCE12

<220>
<221> modified_base
<222> (587)..(587)
<223> a, c, t, g, unknown or other

<400> 1867
ggagtttgat tctggctcag gacgaacgcc ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataaaaaagt cactaccaga tggacctgcg ttgtattagc 180

tagttggtgg ggtaacggct caccaaggcg acgatacata gccgacttga gagggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

cggcaatgga cggaagtctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg 360

taaagctctg ttgtaagaga agatgacggt atcttaccag aaagggacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtcccg agcgttgtcc ggatttattg ggcgtaaagc 480

gagcgcaggc ggttagataa gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt 540

ggaaactgtt taacttgagt gcaagagggg agagtggaat tccatgngta gcggtgaaat 600

gcgtaatata tggaggaaca ccggtggcga aagcggctct ctggcttgac tgacgctgag 660

gctcgaaagc gtggggagca aacaggatta gataccctgg tagtccacgc cgtaaacgat 720

gagtgctagg tgttagacgt ttagtgccgc agctaacgca ttaagcactc cgcctgggga 780

gtacgaccgc aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca 840

tgtggtttaa ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcg acaggtggtg 900

catggttgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 960

cctattgtta gttgccatca tgggcactct agcgagactg ccggtaataa accggaggaa 1020

ggtggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtgctacaat 1080

ggctggcaac gagtcgcaag ccggtgacgg caagctaatc tcttccagtc tcagttcgga 1140

tgtaggctgc aactcgccta cagaagtcgg aatcgctagt aatcgcggat cagcacgccg 1200

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacgaga gtttgtaaca 1260

cccgaagtcg gtaggtagcc agccgcctaa ggtgggatag atgattgggg tgaagtcgta 1320

acaaggtagc cgtatcggaa ggtgcggctg gaacacctcc tt 1362

<210> 1868
<211> 1364
<212> DNA
<213> Streptococcus sp. oral clone ASCF05

<220>
<221> modified_base
<222> (1014)..(1014)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1206)..(1206)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1336)..(1336)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1338)..(1338)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1355)..(1355)
<223> a, c, t, g, unknown or other

<400> 1868
ggagtttgat catggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggagg ataactattg 120

gaaacgatag ctaataccgc ataacaaaag tcactaccag atggacctgc gttgtattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acggaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag 480

cgagcgcagg cggttagata agtctgaagt taaaggctgt ggcttaacca tagtacgctt 540

tggaaactgt ttaacttgag tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggcttg actgacgctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttagac gtttagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaggg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaancggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggctggca acgagtcgca agtcggtgac ggcaagctaa tctcttccag tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggnaaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagt cggtaggtag ccagccgcct aaggtgggat agatgattgg ggtgaagtcg 1320

taacaaggta gccggntngg aaggtgcggc taaancacct cctt 1364

<210> 1869
<211> 1364
<212> DNA
<213> Streptococcus sp. oral clone ASCF07

<220>
<221> modified_base
<222> (232)..(232)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (657)..(657)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1122)..(1122)
<223> a, c, t, g, unknown or other

<400> 1869
ggagtttgat tctggctcag gatgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctc ttagcggggg ataactattg 120

gaaacgatag ctaataccgc ataagaaagt cactaagaga tggacctgcg ttgtattagc 180

tagttggtga ggtaacggct caccaaggcg acgatacata gccgacctga gngggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

cggcaatggg ggcaaccctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg 360

taaagctctg ttgtaagaga agatgacggt aacttaccag aaagggacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtcccg agcgttatcc ggatttattg ggcgtaaagc 480

gagcgcaggc ggttagataa gtctgaagtt aaaggctgtg gcttaaccat agctacgctt 540

tggaaactgt ttaacttgag tgcagaaggg gagagtggaa ttccatgtgt agcggtgaaa 600

tgcgtagata tatggaggaa caccggtggc gaaagcggct ctctggtctg actgacnctg 660

aggctcgaaa gcgtggggag caaacaggat tagataccct ggtagtccac gccgtaaacg 720

atgagtgcta ggtgttgggt actcagtgcc gcagctaacg cattaagcac tccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 900

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctattgt tagttgccat catgggcact ctagcgagac tgccggtaat aaaccggagg 1020

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1080

atggctggca acgagtcgcg agtcggtgac ggcaagctaa tntcttccag tctcagttcg 1140

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1200

cgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga gagtttgtaa 1260

cacccgaagt cggtaggtag ccagccgcct aagatgggat agatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgg aaggtgcggt tggaacacct cctt 1364

<210> 1870
<211> 1357
<212> DNA
<213> Streptococcus sp. oral clone ASCF09

<220>
<221> modified_base
<222> (787)..(787)
<223> a, c, t, g, unknown or other

<400> 1870
ggagtttgat tctggctcag gacgaacgct ggcggcgtgc ctaatacatg caagtagaac 60

gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg ataactattg 120

gaaacgatag ctaataccgc ataataaaag ccactaccag atggacctgc gttgaattag 180

ctagttggtg gggtaacggc tcaccaaggc gacgatacat agccgacctg agagggtgat 240

cggccacact gggactgaga cacggcccag actcctacgg gaggcagcag tagggaatct 300

tcggcaatgg acgaaagtct gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc 360

gtaaagctct gttgtaagag aagatgacgg tatcttacca gaaagggacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtccc gagcgtgtcc ggatttattg ggcgtaaagc 480

gagcgcaggc ggttagataa gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt 540

ggaaactgtt taacttgagt gcaagagggg agagtggaat tccatgtgta gcggtgaaat 600

gcgtagatat atggaggaac accggtggcg aaagcgactc tctggcttga ctgacgctga 660

ggctcgaaag cgtggggagc aaacaggatt agataccccg gtaatccacg ccgtaaacaa 720

tgagtgctag gtgttagacg tttagtgccg tagctaacgc attaagcact ccgcctgggg 780

agtacgnccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc gacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctatagtt agttgccatc atgggcactc tagcgagact gccggtaata aaccggagga 1020

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1080

tggctggcaa cgagtcgcaa gtcggtgacg gcaagctaat ctcttccagt ctcagttcgg 1140

atgtaggctg caactcgcct acagaagtcg gaatcgctag taatcgcgga tcagcacgcc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac 1260

acccgaagtc ggtaggtagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1320

aacaaggtag ccgtatcgga aggtgcggct ggaacac 1357

<210> 1871
<211> 1549
<212> DNA

<213> Streptococcus sp. oral clone ASCG04

<220>
<221> modified_base
<222> (630)..(630)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (782)..(782)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (901)..(901)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1305)..(1305)
<223> a, c, t, g, unknown or other

<400> 1871
tgctcatggc tcaggacgaa cgctggcggc gtgcctaata catgcaagta gaacgctgaa 60

ggaggagctt gctcttctgg atgagttgcg aacgggtgag taacgcgtag gtaacctgcc 120

tggtagcggg ggataactat tggaaacgat agctaatacc gcataatatt gactattgca 180

tgatagtcaa ttgaaaggtg caaatgcacc actaccagat ggacctgcgt tgtattagct 240

agttggtggg gtaacggctc accaaggcga cgatacatag ccgacctgag agggtgatcg 300

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta gggaatcttc 360

ggcaatggac ggaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt ttcggatcgt 420

aaagctctgt tgtaagagaa gaacgagtgt gagagtggaa agttcacact gtgacggtat 480

cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt aggtcccgag 540

cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg ttagataagt ctgaagttaa 600

aggctgtggc ttaaccatag tacgctttgn gaaactgtta aacttggagt gcagaagggg 660

agagtggaat tcccatatgt agcggtaaaa tgcgtagata tatgggagga accaccgctg 720

ggcgaaagcg gctatctggt ctgtgaactg acgctgaggg ctcgaaagcg tggggagcaa 780

ancaggatta gataccacgg gtagtccacg ccgtaaacga tgagtgctag gtgttgggtc 840

ctttccggga ctcagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

ncaaggttga aactcaaagg aattgaccgc gggcccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca ggtcttgaca tcccggtgcc cgtcctagag 1020

ataggatttt gcttcggcac acccggtgac aggtgggtgc atggttgtcg tcagctcgtg 1080

tcgtgagaat gttgggttaa gtcccgcaac gagcgcaacc cttattacta gttgccagca 1140

ttgagttggg cactctagtg agactgccgg tgacaaaccg gaggaaggtg gggatgacgt 1200

caaatcatca tgccccttat gacttgggct acacacgtgc tacaatggat ggtacaacga 1260

gcagcgaact cgcgagggta agcgaatctc ttaaagccat tctcngttcg gattgtaggc 1320

tgcaactcgc ctacatgaag ccggaatcgc tagtaatcgt ggatcagcac gccgcggtga 1380

atacgttccc gggtcttgta cacaccgccc gtcacaccac gagagtttgt aacacccaaa 1440

gtcggtgagg taacctttat ggagccagcc gcctaaggtg ggatagatga ttggggtgaa 1500

gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acctccttc 1549

<210> 1872
<211> 1540
<212> DNA
<213> Streptococcus sp. oral clone BW009

<400> 1872
gagagtttga tyctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtagaa 60

cgctgaagga ggagcttgct tctctggatg agttgcgaac gggtgagtaa cgcgtaggta 120

acctgcctgg tagcggggga taactattgg aaacgatagc taataccgca taatattgat 180

tattgcatga tagtcaatta aaaggtgcaa ttgcatcact accagatgga cctgcgttgt 240

attagctagt tggtggggta acggctcacc aaggcgacga tacatagccg acctgagagg 300

gtgatcggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg 360

aatcttcggc aatggacgga agtctgaccg agcaacgccg cgtgagtgaa gaaggttttc 420

ggatcgtaaa gctctgttgt aagagaagaa cgagtgtgag agtggaaagt tcacactgtg 480

acggtatctt accagaaagg gacggctaac tacgtgccag cagccgcggt aatacgtagg 540

tcccgagcgt tgtccggatt tattgggcgt aaagcgagcg caggcggtta gataagtctg 600

aagttaaagg ctgtggctta accatagtac gctttggaaa ctgtttaact tgagtgcaag 660

aggggagagt ggaattccat gtgtagcggt gaaatgcgta gatatatgga ggaacaccgg 720

tggcgaaagc ggctctctgg cttgtaactg acgctgaggc tcgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgccg taaacgatga gtgctaggtg ttagaccctt 840

tccggggttt agtgccgtag ctaacgcatt aagcactccg cctggggagt acgaccgcaa 900

ggttgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgaagcaacg cgaagaacct taccaggtct tgacatccct ctgaccgctc tagagataga 1020

gttttccttc gggacagagg tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat cattcagttg 1140

ggcactctag cgagactgcc ggtaataaac cggaggaagg tggggatgac gtcaaatcat 1200

catgcccctt atggcctggg ctacacacgt gctacaatgg ctggtacaac gagtcgcaag 1260

ccggtgacgg caagctaatc tcttaaagcc agtctcagtt cggattgtag gctgcaactc 1320

gcctacatga agtcggaatc gctagtaatc gcggatcagc acgccgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg aagtcggtga 1440

ggtaaccatt tggagccagc cgcctaaggt gggatagatg attggggtga agtcgtaaca 1500

aggtagccgt atcggaaggt gcggctggat cacctccttc 1540

<210> 1873
<211> 1541
<212> DNA
<213> Streptococcus sp. oral clone CH016

<400> 1873
gagagtttga ttctggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtagaa 60

cgctgaagga ggagcttgct tctctggatg agttgcgaac gggtgagtaa cgcgtaggta 120

acctgcctgg tagcggggga taactattgg aaacgatagc taataccgcg taaaattgat 180

tattgcatga tagtcaatta aaaggtgcaa ttgcatcact accagatgga cctgcgttgt 240

attagctagt tggtgaggta acggctcacc aaggcaacga tacatagccg acctgagagg 300

gtgatcggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg 360

aatcttcggc aatggacgga agtctgaccg agcaacgccg cgtgagtgaa gaaggttttc 420

ggatcgtaaa gctctgttgc aagagaagaa cgagtgtgag agtggaaagt tcacactgtg 480

acggtatctt accagaaagg gacggctaac tacgtgccag cagccgcggt aatacgtagg 540

tcccgagcgt tgtccggatt tattgggcgt aaagcgagcg caggcggtta gataagtctg 600

aagttaaagg ctgtggctta accatagtac gctttggaaa ctgtttaact tgagtgcaag 660

aggggagagt ggaattccat gtgtagcggt gaaatgcgta gatatatgga ggaacaccgg 720

tggcgaaagc ggctctctgg cttgtaactg acgctgaggc tcgaaagcgt ggggagcaaa 780

caggattaga taccctggta gtccacgccg taaacgatga gtgctaggtg ttagaccctt 840

tccggggttt agtgccgcag ctaacgcatt aagcactccg cctggggagt acgaccgcaa 900

ggttgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgaagcaacg cgaagaacct taccaggtct tgacatccct ccgaccgctc tagagataga 1020

gttttccttc gggacagagg tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag 1080

atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat catttagttg 1140

ggcactctag cgagactgcc ggtaataaac cggaggaagg tggggatgac gtcaaatcat 1200

catgcccctt atgacctggg ctacacacgt gctacaatgg ctggtacaac gagtcgcaag 1260

ccggtgacgg caagctaatc tcttaaagcc agtctcagtt cggattgtag gctgcaactc 1320

gcctacatga agtcggaatc gctagtaatc gcggatcagc acgccgcggt gaatacgttc 1380

ccgggccttg tacacaccgc ccgtcacacc acgagagttt gtaacacccg aagtcggtga 1440

ggtaaccttt taggagccag ccgcctaagg tgggatagat gattggggtg aagtcgtaac 1500

aaggtagccg tatcggaagg tgcggctgga tcacctcctt c 1541

<210> 1874
<211> 1363
<212> DNA
<213> Streptococcus sp. oral clone GK051

<400> 1874
gagtttgatt ctggctcagg atgaacgcag gcggcgtgcc taatacatgc aagtagaacg 60

agttgcgaac gggtgagtaa cgcgtaggta acctgcctgg tagtgggga taactattgg 120

aaacgatagc taataccgca taatgaaagt cactaccaga tggacctgcg ttgtattagc 180

tagttggtgg ggtaacggct caccaaggcg acgatacata gccgacctga gagggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

cggcaatgga cgaaagtctg accgagcaac gccgcgtgag tgaagaaggt tttcggatcg 360

taaagctctg ttgtaagaga agatgacggt atcttaccag aaagggacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtcccg agcgttgtcc ggatttattg ggcgtaaagc 480

gagcgcagac ggttagataa gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt 540

ggaaactgtt taacttgagt gcaagagggg agagtggaat tccatgtgta gcggtgaaat 600

gcgtagatat atggaggaac accggtggcg aaagcggctc tctggcttga ctgacgctga 660

ggctcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 720

tgagtgctag gtgttagacg tttagtgccg tagctaacgc attaagcact ccgcctgggg 780

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc gacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctactgtt agttgccatc atgggcactc tagcgagact gccggtaata aaccggagga 1020

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1080

tggctggcaa cgagtcgcaa gtcggtgacg acaagctaat ctcttccagt ctcagttcgg 1140

atgtaggctg caactcgcct acagaagtcg gaatcgctag taatcgcgga tcagcacgcc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac 1260

acccgaagtc ggtaggtagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1320

aacaaggtag ccgtatcgga aggtgcggct ggaacacctc ctt 1363

<210> 1875
<211> 1363
<212> DNA
<213> Streptococcus sp. oral clone GM006

<400> 1875
gagtttgatt ctggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtagaacg 60

agttgcgaac gggtgagtaa cgcgtaggta acctgcctgg tagcggggga taactattgg 120

aaacgatagc taataccgca taacaaaagc cactaccaga tggacctgcg ttgtattagc 180

tagttggtga ggtaacggct caccaaggcg acgatacata gccgacctga gagggtgatc 240

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt agggaatctt 300

cggcaatgga cggaagtctg accgagcaac cccgcgtgag tgaagaaggt tttcggatcg 360

taaaactctg ttgttagaga agatgacggt atctaaccag aaagacacgg ctaactacgt 420

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggatttattg ggcgtaaagc 480

gagcgcaggc ggttagataa gtctgaagtt aaaggctgtg gcttaaccat agtacgcttt 540

ggaaactgtt taacttgagt gcagaagggg agagtggaat tccatgtgta gcggtgaaat 600

gcgtagatat atggaggaac accggtggcg aaagcggctc tctggtctga ctgacgctga 660

agctcgaaag cgggggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 720

tgagtgctag gtgttgggta ctcagtgccg cagctaacgc attaagcact ccgcctgggg 780

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc 840

atgtggttta attcgaagca acgcgaagaa ccttaccagg tcttgacatc gacaggtggt 900

gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctattgtt agttgccatc atgggcactc tagcgagact gccggtaata aaccggagga 1020

aggtggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtgctacaa 1080

tggctggcaa cgagtcgcaa gccggtgacg gcaagctaat ctcttccagt ctcagttcgg 1140

atgtaggctg caactcgcct acagaagtcg gaatcgctag taatcgcgga tcagcacgcc 1200

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacgag agtttgtaac 1260

acccgaagtc ggtaggtagc cagccgccta aggtgggata gatgattggg gtgaagccgt 1320

aacaaggtag ccgtatcgga aggtgcggct ggaacacctc ctt 1363

<210> 1876
<211> 1324
<212> DNA
<213> Streptococcus sp. oral clone P2PA_41 P2

<400> 1876
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataatgaaag tcactaccag atggacctgc gttgtattag ctagttggtg aggtaacggc 180

tcaccaaggc aacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg acggaagtct 300

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggcttg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 720

gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgaagc 840

aacgcgaaga accttaccag gtcttgacat cgacaggtgg tgcatggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctattgt tagttgccat 960

catgggcact ctagcgagac tgccggtaat aaaccggagg aaggtgggga tgacgtcaaa 1020

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggctggca acgagtcgca 1080

agccggtgac ggcaagctaa tctcttccag tctcagttcg gatgtaggct gcaactcgcc 1140

tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg 1200

gccttgtaca caccgcccgt cacaccacga gagtttgtaa cacccgaagt cggtaggtag 1260

ccagccgcct aaggtgggat agatgattgg ggtgaagtcg taacaaggta gccgtatcgg 1320

aagg 1324

<210> 1877
<211> 1324
<212> DNA
<213> Streptococcus sp. oral clone P4PA_30 P4

<400> 1877
gacgaacgtt ggtggcgtgc ctaatacatg caagtagaac gagttgcgaa cgggtgagta 60

acgcgtaggt aacctgcctg gtagcggggg ataactattg gaaacgatag ctaataccgc 120

ataaagaaag tcactaccag atggacctgc gttgtattag ctagttggtg gggtaacggc 180

tcaccaaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 240

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg acggaagtct 300

gaccgagcaa cgccgcgtga gcgaagaagg ttttcggatc gtaaagctct gttgtaagag 360

aagatgacgg tatcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggttagata 480

agtctgaagt taaaggctgt ggcttaacca tagtacgctt tggaaactgt ttaacttgag 540

tgcaagaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 600

caccggtggc gaaagcggct ctctggcttg actgacgctg aggctcgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta ggtgttagac 720

gtttagtgcc gcagctaacg cattaagcac tccgcctggg gagtacgacg caggtgaaac 780

tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac 840

gcgaagaacc ttaccaggtc ttgacatcga ctggtggtgc atggttgtcg tcagcttgtg 900

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctattgttag ttgccatcat 960

gggcactcta gcgagactgc cggtaataaa ccggaggaag gtggggatga cgtcaaatca 1020

tcatgcccct tatgacctgg gctacacacg tgctacaatg gctggcaacg agtcgcaagc 1080

cggtgacggc aagctaatct cttccagtct cagttcggat gtaggctgca actcgcctac 1140

agaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg ttcccgggcc 1200

ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg taggtagcca 1260

gccgcctaag gtgggataga tgattggggt gaagtcgtaa caaggtagcc gtatcggaag 1320

gtgc 1324

<210> 1878

<211> 1546
<212> DNA
<213> Streptococcus sp. oral taxon 071

<400> 1878
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaaga gaggagcttg ctcttcttgg atgagttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tggtagcggg ggataactat tggaaacgat agctaatacc gcataaaatg 180

gattatcgca tgatgattca ttgaaaggtg caaatgcatc actaccagat ggacctgcgt 240

tgtattagct agttggtggg gtaacggctc accaaggcaa cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatggac ggaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgtaagagaa gaacgagtgt gagagtggaa agttcacact 480

gtgacggtat cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg ttagataagt 600

ctgaagttaa aggctgtggc ttaaccatag tacgctttgg aaactgttta acttgagtgc 660

aagaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggcttgtaa ctgacgctga ggctcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttagacc 840

ctttccgggg tttagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc cctctgatcg ctctagagat 1020

agagctttcc ttcgggacag aggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcattcag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggctggtac aacgagtcgc 1260

aagccggtga cggcaagcta atctcttaaa gccagtctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc ttttaggagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgtggct ggatcacctc ctttct 1546

<210> 1879
<211> 1203
<212> DNA
<213> Streptococcus sp. oral taxon G59

<400> 1879
gatgtacgct ggcggcgtgc ctgatacatg caagtagcac gctgaagctt aggtgcttgc 60

accgagcgga tgagttgcga accggggtga ggtcaaacgg cggtagggta aaccttgccc 120

ttcttagcgg gggatatact aatgtgtgaa aacgaatagc ttaatacccg catcataaga 180

gactgatatc gcatgatatt gatttgaaag atgcaattgc atcagctaag agatggacct 240

gtgttgtatt agctagttgg tgaggtaacg gctgcaccaa ggcaacgata catagccgac 300

ctgagagggt gatcggccac actgggactg agacacggcc cagactcgta cgggaggcag 360

cagtagggta tcttcggcaa tgggggcaac cctgaaccga gcaacgccgc gtgagtgaag 420

aaggttttcg gatcgtaaag ctctgttgta agagaagaac gagtgtgaga gtggaaagtt 480

cacactgtga cggtaactta ccagaaaggg acggctaact acgtgccagc agccgcggta 540

atacgtaggt cccgagcgtt atccggattt attgggcgta aagcgagcgc aggcggttag 600

ataagtctga agttaaaggc tgtggcttaa ccatagtacg ctttggaaac tgtttaactt 660

gagtgcagaa ggggagagtg gaattccatg tgtagcggtg aaatgcgtag atatatggag 720

gaacaccggt ggcgaaagcg gctctctggt ctgtaactga cgctgaggct cgaaagcgtg 780

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt 840

tgggtccttt ccgggactca gtgccgcagc taacgcatta agcactccgc ctggggagta 900

cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 960

ggtgtaattc gaagcaacgc gaagaacctt accatgtctt gacatccctc tgaccgctct 1020

agagatagag tgtcgcttcg ggacagaggt gacaggtggt gcatgggtgt cgtcagctcg 1080

tgtcgtgaga tgtggggtta agtccgcaac gagcgcaccc ctatgatagt gccatcatta 1140

cgtgggcact ctagcgaact gcgggtatta acccgaggaa gggtgggaat acgtcaatat 1200

atg 1203

<210> 1880
<211> 1216
<212> DNA
<213> Streptococcus sp. oral taxon G62

<400> 1880
gacgaacgct ggcggcgtgc ctaatacatg caagtggaac gctgaagaga ggagcttgct 60

cttcttggat gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg 120

ataactattg gaaacgatag ctaataccgc atgaaatgga ttatcgcatg ataatcgatt 180

gaaaggtgca aatgcatcac taccagatgg acctgcgttg tattagctag ttggtgaggt 240

aacggctcac caaggcaacg atacatagcc gacctgagag ggtgatcggc cacactgggg 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttcgg caatggacgg 360

aagtctgacc gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg 420

taagagaaga acgagtgtga gagtggaaag ttcacactgt gacggtatct taccagaaag 480

ggacggctaa ctacgtgcca gcagccgcgg taatacgtag gtcccgagcg ttgtccggat 540

ttattgggcg taaagcgagc gcaggcggtt agataagtct gaagttaaag gctgtggctt 600

aaccatagta cgctttggaa actgtttaac ttgagtgcaa gaggggagag tggaattcca 660

tgtgtagcgg tgaaatgcgt agatatatgg aggaacaccg gtggcgaaag cggctctctg 720

gcttgcaact gacgctgagg ctcgaaagcg tggggagcaa acaggattag gtaccctggt 780

agtccacgcc gtaaacgatg agtgctaggt gttagaccct ttccggggtt tagtgccgca 840

gctaacgcat taagcactcc gcctggggag tacgaccgca aggttgaaac tcaaaggaat 900

agacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc 960

taccaggtct tgacatccct ctgaccgctc tagagataga gttttccctc gggacagagg 1020

tgacagggtg gtgcatgggt tgtcgtcagc tcgtgtcgtg agatgtcggg gttaggtccg 1080

ccacgagcgc acccctattg ttgttgccat cattagttgg gcaccctagc ggactgccgg 1140

tatttacccg aaggagggtg gggattacgt caagttacta tgccccctat gatcggggct 1200

acacgagtcc tacatg 1216

<210> 1881
<211> 1204
<212> DNA
<213> Streptococcus sp. oral taxon G63

<400> 1881
gacgtacgct ggcggtgtgc ctgatacatg caagtagcac gctgaagaga ggtgcttgct 60

cttcttggat gagttgcgaa cgggtgagtc acgcgtaggt aacctgcctg atagcggggg 120

ctaactattg taaacgatag ctaataccgc atgaaatgga ttatcgcatg ataatcgatt 180

gaaaggtgca gatgcatcac taccagatgg acctgcgttg tattagctag ttggtgaggt 240

aacggctcac cacggcaacg atacatagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gccccagaca cgtacgggga ggcagcagta gggtatcttc ggcaatggac 360

ggaagtactg accgagcaac gccgcgtgag tgaagaaggt gttcggatcg taaagctctg 420

ttgtaagaga agaacgagtg tgagagtgga aagttcacac tgtgacggta tcttaccaga 480

aagggacggc taactacgtg ccagcagccg cggtaatacg taggtcccga gcgttgtccg 540

gatttattgg gcgtaaagcg agcgcaggcg gttagataag tctgaagtta aaggctgtgg 600

cttaaccata gtacgctttg gaaactgttt aacttgagtg caagagggga gagtggaatt 660

ccatgtgtag cggtgaaatg cgtagatata tggaggaaca ccggtggcga aagcggctct 720

ctggcttgta actgacgctg aggctcgaaa gcgtggggag caaacaggat tagataccct 780

ggtagtccac gccgtaaacg atgagtgcta ggtgttagac cctttccggg gtttagtgcc 840

gcagctaacg cattaagcac tccgcctggg gagtacgacc gcaaggtgga aactcaaagg 900

aattgacggg ggcacgcaca agcggtggag catgtggttt aattcgaagc aacgcgaaga 960

accttaccag gtcttgacat ccctctgacc gctctagaga tagagttttc cctcgggaca 1020

gaggtgacag ggtggtgcat gggttgtcgt cagccgtgtc gtgagatgtt cgggttaagt 1080

ccgccacgag cgccacccct attgttagtt gcccatcatt taggtgggtc accttagcga 1140

gactgcccgg tattaaccgg agggagggtg ggaatacgtc aaatatcatg ccccttatac 1200

gtgg 1204

<210> 1882
<211> 1547
<212> DNA
<213> Streptococcus suis

<400> 1882
tgagagtttg atcctggctc aggacgaacg ctggcggcgt gcctaataca tgcaagtaga 60

acgctgaagt ctggtgcttg cactagacgg atgagttgcg aacgggtgag taacgcgtag 120

gtaacctgcc tcatagcggg ggataactat tggaaacgat agctaatacc gcataacagt 180

atttaccgca tggtagatat ttgaaaggag caattgcttc actatgagat ggacctgcgt 240

tgtattagct agttggtgag gtaacggctc accaaggctt cgatacatag ccgacctgag 300

agggtgatcg gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta 360

gggaatcttc ggcaatgggg gcaaccctga ccgagcaacg ccgcgtgagt gaagaaggtt 420

ttcggatcgt aaagctctgt tgtaagagaa gaactgtgag aagagtggaa agtttctcac 480

ttgacggtat cttaccagaa agggacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtcccgag cgttgtccgg atttattggg cgtaaagcga gcgcaggcgg tttgataagt 600

ctgaagtaaa aggctgtggc ttaaccatag tacgctttgg aaactgtcaa acttgagtgc 660

agaaggggag agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac 720

cggtggcgaa agcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtggggagc 780

gaacaggatt agataccctg gtagtccacg ccgtaaacga tgagtgctag gtgttgggtc 840

ctttccggga ctcagtgccg cagctaacgc attaagcact ccgcctgggg agtacgaccg 900

caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgaagca acgcgaagaa ccttaccagg tcttgacatc ccgatgaccg ccctagagat 1020

agggtttctc ttcggagcat cggtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt 1080

gagatgttgg gttaagtccc gcaacgagcg caacccctat tgttagttgc catcattcag 1140

ttgggcactc tagcgagact gccggtaata aaccggagga aggtggggat gacgtcaaat 1200

catcatgccc cttatgacct gggctacaca cgtgctacaa tggctggtac aacgagtcgc 1260

aagtcggtga cggcaagcta atctcttaaa gccagtctca gttcggattg taggctgcaa 1320

ctcgcctaca tgaagtcgga atcgctagta atcgcggatc agcacgccgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tttgtaacac ccgaagtcgg 1440

tgaggtaacc ttttaggagc cagccgccta aggtgggata gatgattggg gtgaagtcgt 1500

aacaaggtag ccgtatcgga aggtgcggct ggatcacctc ctttcta 1547

<210> 1883
<211> 1012
<212> DNA
<213> Streptococcus thermophilus

<220>
<221> modified_base

<222> (998)..(998)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1005)..(1006)
<223> a, c, t, g, unknown or other

<400> 1883
tagaacgctg aagagaggag cttgctcttc ttggatgagt tgcgaacggg tgagtaacgc 60

gtaggtaacc tgccttgtag cgggggataa ctattggaaa cgatagctaa taccgcataa 120

caatggatga cacatgtcat ttatttgaaa ggggcaattg ctccactaca agatggacct 180

gcgttgtatt agctagtagg tgaggtaacg gctcacctag gcgacgatac atagccgacc 240

tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac gggaggcagc 300

agtagggaat cttcggcaat gggggcaacc ctgaccgagc aacgccgcgt gagtgaagaa 360

ggttttcgga tcgtaaagct ctgttgtaag tcaagaacga gtgtgagagt ggaaagttca 420

cactgtgacg gtagcttacc agaaagggac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtcc cgagcgttgt ccggatttat tgggcgtaaa gcgagcgcag gcggtttgat 540

aagtctgaag ttaaaggctg tggctcaacc atagttcgct ttggaaactg tcaaacttga 600

gtgcagaagg ggagagtgga attccatgtg tagcggtgaa atgcgtagat atatggagga 660

acaccggtgg cgaaagcggc tctctggtct gtaactgacg ctgaggctcg aaagcgtggg 720

gagcgaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgttg 780

gatcctttcc gggattcagt gccgcagcta acgcattaag cactccgcct ggggagtacg 840

accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac caggtcttga catcccgatg ctatttctag 960

agatagaaag ttacttcggt acatcggtga caggtggngc atggnngtcg tc 1012

<210> 1884
<211> 1431
<212> DNA
<213> Streptococcus uberis

<400> 1884
agtagaacgc tgaggactgg tgcttgcact ggtctaagga gttgcgaacg ggtgagtaac 60

gcgtaggtaa cctacctcat agcgggggat aactattgga aacgatagct aataccgcat 120

gacaataggg tacacatgta ccctatttaa aaggggcaaa tgcttcacta tgagatggac 180

ctgcgttgta ttagctagtt ggtaaggtaa cggcttacca aggcgacgat acatagccga 240

cctgagaggg tgatcggcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtaggga atcttcggca atgggggaa ccctgaccga gcaacgccgc gtgagtgaag 360

aaggttttcg gatcgtaaag ctctgttgtt agagaagaac ggtaatggga gtggaaaatc 420

cattacgtga cggtaactaa ccagaaaggg acggctaact acgtgccagc agccgcggta 480

atacgtaggt cccgagcgtt gtccggattt attgggcgta aagcgagcgc aggcggtttg 540

ataagtctga agttaaaggc tgtggcttaa ccatagttcg ctttggaaac tgtcaaactt 600

gagtgcagaa ggggagagtg gaattccatg tgtagcggtg aaatgcgtag atatatggag 660

gaacaccggt ggcgaaagcg gctctctggt ctgtaactga cgctgaggct cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccgt aaacgatgag tgctaggtgt 780

taggcccttt ccggggctta gtgccggagc taacgcatta agcactccgc ctggggagta 840

cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 900

ggtttaattc gaagcaacgc gaagaacctt accaggtctt gacatcccga tgcccgctct 960

agagatagag ctttacttcg gtacatcggt gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctattgtt agttgccatc 1080

attaagttgg gcactctagc gagactgccg gtaataaacc ggaggaaggt ggggatgacg 1140

tcaaatcatc atgcccctta tgacctgggc tacacacgtg ctacaatggt tggtacaacg 1200

agtcgcaagc cggtgacggc aagctaatct cttaaagcca atctcagttc ggattgtagg 1260

ctgcaactcg cctacatgaa gtcggaatcg ctagtaatcg cggatcagca cgccgcggtg 1320

aatacgttcc cgggccttgt acacaccgcc cgtcacacca cgagagtttg taacacccga 1380

agtcggtgag gtaacctatt aggagccagc cgcctaaggt gggatagatg a 1431

<210> 1885
<211> 1466
<212> DNA
<213> Streptococcus urinalis

<400> 1885
cgctggcggc gtgcctaata catgcaagta gaacgctgag gtcatgtgct tgcacaagac 60

caaggagttg cgaacgggtg agtaacgcgt aggtaacctg cctcatagcg ggggataact 120

attggaaacg atagctaata ccgcatgaga gtttttaaca catgttagga acttaaaagg 180

agcaactgct tcactatgag atggacctgc gttgtattag ctagttggtg aggtaacggc 240

tcaccaaggc gacgatacat agccgacctg agagggtgat cggccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tagggaatct tcggcaatgg gggcaaccct 360

gaccgagcaa cgccgcgtga gtgaagaagg ttttcggatc gtaaagctct gttgttagag 420

aagaatggaa gtaggagtgg aaagtctact tcgtgacggt aactaaccag aaagggacgg 480

ctaactacgt gccagcagcc gcggtaatac gtaggtcccg agcgttgtcc ggatttattg 540

ggcgtaaagc gagcgcaggc ggttctataa gtctgaagtt aaaggcagtg gctcaaccat 600

tgttcgcttt ggaaactgta gaacttgagt gcagaagggg agagtggaat tccatgtgta 660

gcggtgaaat gcgtagatat atggaggaac accggtggcg aaagcggctc tctggtctgt 720

aactgacgct gaggctcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgccgtaaac gatgagtgct aggtgttagg ccctttccgg ggcttagtgc cgcagctaac 840

gcattaagca ctccgcctgg ggagtacgac cgcaaggttg aaactcaaag gaattgacgg 900

gggcccgcac aagcggtgga gcatgtggtt taattcgaag caacgcgaag aaccttacca 960

ggtcttgaca tcccgatgcc cgctctagag atagagtttt acttcggtac atcggagaca 1020

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaacccct attgttagtt gccatcattc agttgggcac tctagcaaga ctgccggtaa 1140

taaaccggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgac ctgggctaca 1200

cacgtgctac aatggttggt acaacgagtc gcaagtcggt gacgacaagc taatctctta 1260

aagccaatct cagttcggat tgtaggctgc aactcgccta catgaagtcg gaatcgctag 1320

taatcgcgga tcagcacgcc gcggtgaata cgttcccggg ccttgtacac accgcccgtc 1380

acaccacgag agtttgtaac acccgaagtc ggtgaggtaa cctttttagga gccagccgcc 1440

taaggtggga tagatgattg gggtga 1466

<210> 1886
<211> 1043
<212> DNA
<213> Streptococcus vestibularis

<220>
<221> modified_base
<222> (925)..(925)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (932)..(932)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (942)..(942)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (978)..(978)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1005)..(1007)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1019)..(1019)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1024)..(1024)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1027)..(1028)
<223> a, c, t, g, unknown or other

<400> 1886
agaacgctga agagaggagc ttgctcttct tggatgagtt gcgaacgggt gagtaacgcg 60

taggtaacct gccttgtagc gggggataac tattggaaac gatagctaat accgcataac 120

aatggatgac acatgtcatt tatttgaaag gggcaattgc tccactacaa gatggacctg 180

cgttgtatta gctagtaggt gaggtaacgg ctcacctagg cgacgataca tagccgacct 240

gagagggtga tcggccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtagggaatc ttcggcaatg ggggcaaccc tgaccgagca acgccgcgtg agtgaagaag 360

gttttcggat cgtaaagctc tgttgtaagt caagaacgag tgtgagagtg gaaaattcac 420

actgtgacgg tagcttacca gaaagggacg gctaactacg tgccagcagc cgcggtaata 480

cgtaggtccc gagcgttgtc cggatttatt gggcgtaaag cgagcgcagg cggtttgata 540

agtctgaagt taaaggctgt ggctcaacca tagttcgctt tggaaactgt caaacttgag 600

tgcagaaggg gagagtggaa ttccatgtgt agcggtgaaa tgcgtagata tatggaggaa 660

caccggtggc gaaagcggct ctctggtctg taactgacgc tgaggctcga aagcgtgggg 720

agcgaacagg attagatacc ctggtagtcc acgccgtaaa cgatgagtgc taggtgttgg 780

atcctttccg ggattcagtg ccgcagctaa cgcattaagc actccgcctg gggagtacga 840

ccgcaaggtt gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agcatgtggt 900

ttaatttcga agcaacgcga agaancttac cnggtcttga cntcccgatg ctatttctag 960

agatagaaag ttacttcngt acatcggtga caggtggtgc atggnnntcg tcagctcgng 1020

tcgngannat gttgggttaa gtc 1043

<210> 1887
<211> 1195
<212> DNA
<213> Streptococcus viridans

<400> 1887
gagtttgatc ctggctcagg acgaacgctg gcggcgtgcc taatacatgc aagtagaacg 60

cacagtttat accgtagctt gctacaccat agactgtgag ttgcgaacgg gtgagtaacg 120

cgtaggtaac ctgcctggta gcgggggata actattggaa acgatagcta ataccgcata 180

atattaatta ttgcatgata attaattgaa aggtgcaatt gcaccactac cagatggacc 240

tgcgttgtac tagctagtag gtgaggtaac ggctcaccta ggcgacgata catagccgac 300

ctgagagggt gatcggccac actgggactg agacacggcc cagactccta cgggaggcag 360

cagtagggaa tcttcggcaa tggacgaaag tctgaccgag caacgccgcg tgagtgaaga 420

aggttttcgg atcgtaaagc tctgttgtta gagaagaacg ggtgttagag tggaaagttc 480

acactgtgac ggtatcttac cagaaaggga ccgctaacta agtgccagca gccgcggtaa 540

tacgtaggtc ccgagcgttg tccggattta ttgggcgtaa acgagcgcag ccggttagat 600

aagtctgaag ttaaaggctg tggcttaacc atagtacgct ttggaaactg tttaacttga 660

gtgcagaagg ggagagtgaa ttccatgtgt agcggtaaat gcgtagatat atggaggaac 720

accggtggcg aaagcggctc tctggtctgt aactgacgct gaggctcgag agcgtgggga 780

gcgaacagga ttagataccc tggtagtcca cgccgtaaac gatgagtgct aggtgttagg 840

cccttccgg ggcttagtgc cgcagctaac gcattaagca ctccgcctgg ggagtacgac 900

cgcaaggttg aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt 960

taattcgaag caacgcgaag aaccttacca ggtcttgaca tcccgatgcc cgctctagag 1020

atagagtttt acttcggtac atcggtgaca ggtggtgcat ggttgtcgtc agctcgtgtc 1080

gtgaggtgtt gggttaagtc ccgcaacgag cgcaaccctt attgttagtt gccatcattc 1140

agttgggcac tctagcgaga ctgccggtaa taaaccggag gaaggtgggg atgac 1195

<210> 1888
<211> 1313
<212> DNA
<213> Streptomyces albus

<400> 1888
acgctggcgg cgtgcttaac acatgcaagt cgaacgagtg gcgaacgggt gagtaacacg 60

tgggcaatct gccctgcact ctgggacaag ccctggaaac ggggtctaat accggatatg 120

gaaaggcggt gcaggatgag cccgcggcct atcagcttgt tggtggggtg atggcctacc 180

aaggcgacga cgggtagccg gcctgagagg gcgaccggcc acactgggac tgagacacgg 240

cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgca agcctgatgc 300

agcgacgccg cgtgagggat gacggccttc gggttgtaaa cctctttcag cagggaagat 360

gacggtacct gcagaagaag caccggctaa ctacgtgcca gcagccgcgg taatacgtag 420

ggtgcgagcg ttgtccggaa ttattgggcg taaagagctc gtaggcggct tgtcgcgtcg 480

gatgtgaaag cccggggctt aaccccgggt ctgcattcga tacgggcagg ctagagttcg 540

gcaggggaga ttggaattcc tggtgtagcg gtgaaatgcg cagatatcag gaggaacacc 600

ggtggcgaag gcggatctct gggccgactg acgctgagga gcgaaagcgt ggggagcgaa 660

caggattaga taccctggta gtccacgccg taaacgttgg gcactaggtg tgggcgcgtc 720

cgtgccgcag ctaacgcatt aagtgccccg cctggggagt acggccgcaa ggctaaaact 780

caaaggaatt gacgggggcc cgcacaagcg gcggagcatg tggcttaatt cgacgcaacg 840

cgaagaacct taccaaggct tgacatatac aggtggtgca tggctgtcgt cagctcgtgt 900

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtcctgtgt tgccagcaat 960

tggggactca cgggagactg ccggggtcaa ctcggaggaa ggtggggacg acgtcaagtc 1020

atcatgcccc ttatgtcttg ggctgcacac gtgctacaat ggccggcaat gagctgcgat 1080

gccgtgaggt ggagcgaatc tcaaccggtc tcagttcgga tggggtctgc aactcgaccc 1140

cagaagtcgg agtcgctagt aatcgcagat cagcattgct gcggtgaata cgttcccggg 1200

ccttgtacac accgcccgtc acgtcacgaa agtcggtaac acccgaagcc ggtgcccagg 1260

gaatcgtcga aggtgggact ggcgattggg acgaagtcgt aacaaggtag ccg 1313

<210> 1889
<211> 1533

<212> DNA
<213> Streptomyces griseus

<400> 1889
ttcacggaga gtttgatcct ggctcaggac gaacgctggc ggcgtgctta acacatgcaa 60

gtcgaacgat gaagcctttc ggggtggatt agtggcgaac gggtgagtaa cacgtgggca 120

atctgccctt cactctggga caagccctgg aaacggggtc taataccgga taacactctg 180

tcccgcatgg gacggggtta aaagctccgg cggtgaagga tgagcccgcg gcctatcagc 240

ttgttggtgg ggtaatggcc taccaaggcg acgacgggta gccggcctga gagggcgacc 300

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg cgaaagcctg atgcagcgac gccgcgtgag ggatgacggc cttcgggttg 420

taaacctctt tcagcaggga agaagcgaga gtgacggtac ctgcagaaga agcgccggct 480

aactacgtgc cagcagccgc ggtaatacgt agggcgcaag cgttgtccgg aattattggg 540

cgtaaagagc tcgtaggcgg cttgtcacgt cggatgtgaa agcccggggc ttaaccccgg 600

gtctgcattc gatacgggct agctagagtg tggtagggga gatcggaatt cctggtgtag 660

cggtgaaatg cgcagatatc aggaggaaca ccggtggcga aggcggatct ctgggccatt 720

actgacgctg aggagcgaaa gcgtggggag cgaacaggat tagataccct ggtagtccac 780

gccgtaaacg ttgggaacta ggtgttggcg acattccacg tcgtcggtgc cgcagctaac 840

gcattaagtt ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag gaattgacgg 900

gggcccgcac aagcagcgga gcatgtggct taattcgacg caacgcgaag aaccttacca 960

aggcttgaca tataccggaa agcatcagag atggtgcccc ccttgtggtc ggtatacagg 1020

tggtgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccttgt tctgtgttgc cagcatgccc ttcggggtga tggggactca caggagactg 1140

ccggggtcaa ctcggaggaa ggtggggacg acgtcaagtc atcatgcccc ttatgtcttg 1200

ggctgcacac gtgctacaat ggccggtaca atgagctgcg atgccgcgag gcggagcgaa 1260

tctcaaaaag ccggtctcag ttcggattgg ggtctgcaac tcgaccccat gaagtcggag 1320

ttgctagtaa tcgcagatca gcattgctgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac gtcacgaaag tcggtaacac ccgaagccgg tggcccaacc ccttgtggga 1440

gggagctgtc gaaggtggga ctggcgattg ggacgaagtc gtaacaaggt agccgtaccg 1500

gaaggtgcgg ctggatcacc tcctttctaa gga 1533

<210> 1890
<211> 1415
<212> DNA
<213> Streptomyces sp. 1 AIP-2009

<400> 1890
tgcaagtcga cgatgaaccg ctttcgggcg gggattagtg gcgaacgggt gagtaacacg 60

tgggcaatct gccctgcact ctgggacaag ccctggaaac ggggtctaat accggatact 120

cactgccttg ggcatccttg gcggtggaaa gctccggcgg tgcaggatga gcccgcggcc 180

tatcagctag ttggtgaggt aatggctcac caaggcgacg acgggtagcc ggcctgagag 240

ggcgaccggc cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg 300

gaatattgca caatgggcga aagcctgatg cagcgacgcc gcgtgaggga tgacggcctt 360

cgggttgtaa acctctttca gcagggaaga agcgagagtg acggtacctg cagaagaagc 420

gccggctaac tacgtgccag cagccgcggt aatacgtagg gcgcaagcgt tgtccggaat 480

tattgggcgt aaagagctcg taggcggctt gtcacgtcgg ttgtgaaagc ccggggctta 540

accccgggtc tgcagtcgat acgggcaggc tagagttcgg taggggagat cggaattcct 600

ggtgtagcgg tgaaatgcgc agatatcagg aggaacaccg gtggcgaagg cggatctctg 660

ggccgatact gacgctgagg agcgaatgcg tggggagcga acaggattag ataccctggt 720

agtccacgcc gtaaacggtg ggcactaggt gtgggcaaca ttccacgttg tccgtgccgc 780

agctaacgca ttaagtgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 840

ttgacggggg cccgcacaag cagcggagca tgtggcttaa ttcgacgcaa cgcgaagaac 900

cttaccaagg cttgacatac accggaaagc attagagata gtgcccccct tgtggtcggt 960

gtacaggtgg tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1020

acgagcgcaa cccttgtccc gtgttgccag caagcccttc ggggtgttgg ggactcacgg 1080

gagaccgccg gggtcaactc ggaggaaggt ggggacgacg tcaagtcatc atgccccttа 1140

tgtcttgggc tgcacacgtg ctacaatggc cggtacaatg agctgcgata ccgcgaggtg 1200

gagcgaatct caaaaagccg gtctcagttc ggattggggt ctgcaactcg accccatgaa 1260

gtcggagttg ctagtaatcg cagatcagca ttgctgcggt gaatacgttc ccgggccttg 1320

tacacaccgc ccgtcacgtc acgaaagtcg gtaacacccg aagccggtgg cccaacccct 1380

tgtgggaggg agctgtcgaa ggtgggacca gcgat 1415

<210> 1891
<211> 1436
<212> DNA
<213> Streptomyces sp. SD 511

<220>
<221> modified_base
<222> (6)..(7)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (9)..(9)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (15)..(15)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1300)..(1300)

<223> a, c, t, g, unknown or other

<400> 1891
atgaanncnt ttcgntgggg gattagtggc gaacgggtga gtaacacgtg ggcaatctgc 60

cctgcactct gggacaagcc ctggaaacgg ggtctaatac cggatacgac cgcttcgggc 120

atccgatggt ggtggaaagc tccggcggtg caggatgagc ccgcggccta tcagcttgtt 180

ggtgaggtaa cggctcacca aggcgacgac gggtagccgg cctgagaggg cgaccggcca 240

cactgggact gagacacggc ccagactcct acgggaggca gcagtgggga atattgcaca 300

atgggcgcaa gcctgatgca gcgacgccgc gtgagggatg acggccttcg ggttgtaaac 360

ctctttcagc agggaagaag cgcaagtgac ggtacctgca gaagaagcgc cggctaacta 420

cgtgccagca gccgcggtaa tacgtagggc gcaagcgttg tccggaatta ttgggcgtaa 480

agagctcgta ggcggcttgt cgcgtcggat gtgaaagccc ggggcttaac tccgggtctg 540

cattcgatac gggcaggcta gagttcggta ggggagatcg gaattcctgg tgtagcggtg 600

aaatgcgcag atatcaggag gaacaccggt ggcgaaggcg gatctctggg ccgatactga 660

cgctgaggag cgaaagcgtg gggagcgaac aggattagat accctggtag tccacgccgt 720

aaacgttggg aactaggtgt gggcgacatt ccacgtcgtc cgtgccgcag ctaacgcatt 780

aagttccccg cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc 840

cgcacaagcg gcggagcatg tggcttaatt cgacgcaacg cgaagaacct taccaaggct 900

tgacatacac cggaaacatc cagagatggg tgccccttg tggtcggtgt acaggtggtg 960

catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc 1020

cttgtcccgt gttgccagca ggcccttgtg gtgctgggga ctcacgggag accgccgggg 1080

tcaactcgga ggaaggtggg gacgacgtca agtcatcatg ccccttatgt cttgggctgc 1140

acacgtgcta caatggccgg tacaaagagc tgcgataccg tgaggtggag cgaatctcaa 1200

aaagccggtc tcagttcgga ttggggtctg caactcgacc ccatgaagtc ggagtcgcta 1260

gtaatcgcag atcaacattg ctgcggtgaa tacgttcccn ggccttgtac acaccgcccg 1320

tcacgtcacg aaagtcggta acacccgaaa ccggtggccc aacccccttgt gggaaggagc 1380

tgtccaaggt gggactggcg attgggacga atcgtaacaa ggtacctacc ggaagg 1436

<210> 1892
<211> 1447
<212> DNA
<213> Streptomyces sp. SD 524

<220>
<221> modified_base
<222> (23)..(23)
<223> a, c, t, g, unknown or other

<400> 1892
caagtgcaac gatgaaccac ttnggtgggg attagtggcg aacgggtgag taacacgtgg 60

gcaatctgcc ctgcactctg ggacaagccc tggaaacggg gtctaatacc ggatactgag 120

cctcgcaggc atctgcgggg ttcgaaagct ccggcggtgc aggatgagcc cgcggcctat 180

cagcttgttg gtgaggtaac ggctaccaag gcgacgacgg gtagccggcc tgagagggcg 240

accggccaca ctgggactga gacacggccc agactcctac gggaggcagc agtggggaat 300

attgcacaat gggcgcaagc ctgatgcagc gacgccgcgt gagggatgac ggccttcggg 360

ttgtaaacct ctttcagcag ggaagaagcg caagtgacgg tacctgcaga agaagcgccg 420

gctaactacg tgccagcagc cgcggtaata cgtagggcgc gagcgttgtc cggaattatt 480

gggcgtaaag agctcgtagg cggcttgtcg cgtcggttgt gaaagcccgg ggcttaaccc 540

cgggtctgca gtcgatacgg gcaggctaga gttcggtagg ggagatcgga attcctggtg 600

tagcggtgaa atgcgcagat atcaggagga acaccggtgg cgaaggcgga tctctgggcc 660

gatactgacg ctgaggagcg aaagcgtggg gagcgaacag gattagatac cctggtagtc 720

cacgccgtaa acggtgggca ctaggtgtgg gcgacattcc acgtcgtccg tgccgcagct 780

aacgcattaa gtgccccgcc tggggagtac ggccgcaagg ctaaaactca aaggaattga 840

cgggggcccg cacaagcggc ggagcatgtg gcttaattcg acgcaacgcg aagaacctta 900

ccaaggcttg acatacaccg gaaagcatca gagatggtgc ccccttgtg gtcggtgtac 960

aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1020

gcgcaaccct tgtcccgtgt tgccagcaag cccttcgggg tgttggggac tcacgggaga 1080

ccgccggggt caactcggag gaaggtgggg acgacgtcaa gtcatcatgc cccttatgtc 1140

ttgggctgca cacgtgctac aatggccggt acaatgagct gcgataccgc gaggtggagc 1200

gaatctcaaa aagccggtct cagttcggat tggggtctgc aactcgaccc catgaagtcg 1260

gagtcgctag taatcgcaga tcagcattgc tgcggtgaat acgttcccgg gccttgtaca 1320

caccgcccgt cacgtcacga aagtcggtaa cacccgaagc cggtggccca acccttgtg 1380

ggagggagct gtcgaaggtg ggactggcga ttgggacgaa gtcgtaacaa ggtaccgtac 1440

cggaagg 1447

<210> 1893
<211> 1405
<212> DNA
<213> Streptomyces sp. SD 528

<220>
<221> modified_base
<222> (1385)..(1385)
<223> a, c, t, g, unknown or other

<400> 1893
caagtcgaac gatgaacctc cttcgggagg ggattagtgg cgaacgggtg agtaacacgt 60

gggcaatctg ccctgcactc tgggacaagc cctggaaacg gggtctaata ccggatacga 120

catcctcggg catccgatgg atgtggaaag ctccggcggt gcaggatgag cccgcggcct 180

atcagcttgt tggtgaggta acggctcacc aaggcgacga cgggtagccg gcctgagagg 240

gcgaccggcc acactgggac tgagacacgg cccagactcc tacgggaggc agcagtgggg 300

aatattgcac aatgggcgca agcctgatgc agcgacgccg cgtgagggat gacggccttc 360

gggttgtaaa cctctttcag cagggaagaa gcgcaagtga cggtacctgc agaagaagcg 420

ccggctaact acgtgccagc agccgcggta atacgtaggg cgcgagcgtt gtccggaatt 480

attgggcgta aagagctcgt aggcggcttg tcgcgtcggt tgtgaaagcc cggggcttaa 540

ccccgggtct gcagtcgata cgggcaggct agagttcggt aggggagatc ggaattcctg 600

gtgtagcggt gaaatgcgca gatatcagga ggaacaccgg tggcgaaggc ggatctctgg 660

gccgatactg acgctgagga gcgaaagcgt ggggagcgaa caggattaga taccctggta 720

gtccacgccg taaacggtgg gcactaggtg tgggcaacat tccacgttgt ccgtgccgca 780

gctaacgcat taagtgcccc gcctggggag tacggccgca aggctaaaac tcaaaggaat 840

tgacgggggc ccgcacaagc ggcggagcat gtggcttaat tcgacgcaac gcgaagaacc 900

ttaccaaggc ttgacataca ccggaaagct ctggagacag agccccttg tggtcggtgt 960

acaggtggtg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac 1020

gagcgcaacc cttgtcccgt gttgccagca ggcccttgtg gtgctgggga ctcacgggag 1080

accgccgggg tcaactcgga ggaaggtggg gacgacgtca agtcatcatg ccccttatgt 1140

cttgggctgc acacgtgcta caatggccgg tacaatgagc tgcgataccg cgaggtggag 1200

cgaatctcaa aaagccggtc tcagttcgga ttggggtctg caactcgacc ccatgaagtc 1260

ggagtcgcta gtaatcgcag atcagcattg ctgcggtgaa tacgttcccg ggccttgtac 1320

acaccgcccg tcacgtcacg aaagtcggta acacccgaag ccggtggccc aacccccttgt 1380

gggganggagc tgtcgaagtg ggact 1405

<210> 1894
<211> 1441
<212> DNA
<213> Streptomyces sp. SD 534

<400> 1894
cgatgaaccc acttcggtgg gggattagtg gcgaacgggt gagtaacacg tgggcaatct 60

gccctgcact ctgggacaag ccctggaaac ggggtctaat accggatacg accactttag 120

gcatctgatg gtggtggaaa gctccggcgg tgcaggatga gcccgcggcc tatcagcttg 180

ttggtgaggt aacggctcac caaggcgacg acgggtagcc ggcctgagag ggcgaccggc 240

cacactggga ctgagacacg gcccagactc ctacgggagg cagcagtggg gaatattgca 300

ccatgggcga aagcctgatg cagcgacgcc gcgtgaggga tgacggcctt cgggttgtaa 360

acctctttca gcagggaaga agcgaaagtg acggtacctg cagaagaagc gccggctaac 420

tacgtgccag cagccgcggt aatacgtagg gcgcaagcgt tgtccggaat tattgggcgt 480

aaagagctcg taggcggctt gtcgcgtcgg atgtgaaagc ccggggctta accccgggtc 540

tgcattcgat acgggcaggc tagagttcgg taggggagat cggaattcct ggtgtagcgg 600

tgaaatgcgc agatatcagg aggaacaccg gtggcgaagg cggatctctg ggccgatact 660

gacgctgagg agcgaaagcg tggggagcga acaggattag ataccctggt agtccacgcc 720

gtaaacgttg ggaactaggt gtgggcgaca ttccacgttg tccgtgccgc agctaacgca 780

ttaagttccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa ttgacggggg 840

cccgcacaag cggcggagca tgtggcttaa ttcgacgcaa cgcgaagaac cttaccaagg 900

cttgacatac accggaaaca cccagagatg ggtgccccct tgtggtcggt gtacaggtgg 960

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1020

cccttgtccc gtgttgccag caggcccttg tggtgctggg gactcacggg agaccgccgg 1080

ggtcaactcg gaggaaggtg gggacgacgt caagtcatca tgcccccttat gtcttgggct 1140

gcacacgtgc tacaatggcc ggtacaaaga gctgcgatac cgcgaggtgg agcgaatctc 1200

aaaaagccgg tctcagttcg gattggggtc tgcaactcga ccccatgaag tcggagtcgc 1260

tagtaatcgc agatcagcat tgctgcggtg aatacgttcc cgggccttgt acacaccgcc 1320

cgtcacgtca cgaaagtcgg taacacccga agccggtggc ccaacccctt gtgggaggga 1380

gctgtcgaag gtgggactgg cgattgggac gaagtcgtta caaggtagcc gtaccggaag 1440

g 1441

<210> 1895
<211> 1483
<212> DNA
<213> Streptomyces thermoviolaceus

<400> 1895
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gatgaagccc cttcgggggt 60

ggattagtgg cgaacgggtg agtaacacgt gggcaatctg ccctgcactc tgggacaagc 120

cctggaaacg gggtctaata ccggatacga cacagggagg catctcctct gtgtggaaag 180

ctccggcggt gcaggatgag cccgcggcct atcagcttgt tggtgaggta acggctcacc 240

aaggcgacga cgggtagccg gcctgagagg gcgaccggcc acactgggac tgagacacgg 300

cccagactcc tacgggaggc agcagtgggg aatattgcac aatgggcgca agcctgatgc 360

agcgacgccg cgtgagggat gacggccttc gggttgtaaa cctctttcag cagggaagaa 420

gcgcaagtga cggtacctgc agaagaagcg ccggctaact acgtgccagc agccgcggta 480

atacgtaggg cgcaagcgtt gtccggaatt attgggcgta aagagctcgt aggcggcttg 540

tcgcgtcggt tgtgaaagcc cggggcttaa ctccgggtct gcagtcgata cgggcaggct 600

agagttcggt aggggagatc ggaattcctg gtgtagcggt gaaatgcgca gatatcagga 660

ggaacaccgg tggcgaaggc ggatctctgg gccgatactg acgctgagga gcgaaagcgt 720

ggggagcgaa caggattaga taccctggta gtccacgccg taaacggtgg gcactaggtg 780

tgggcagcat tccacgttgt ccgtgccgta gctaacgcat taagtgcccc gcctggggag 840

tacggccgca aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc ggcggagcat 900

gtggcttaat tcgacgcaac gcgaagaacc ttaccaaggc ttgacataca ccggaaacat 960

ccagagatgg gtgccccctt gtggtcggtg tacaggtggt gcatggctgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtcccg tgttgccagc 1080

aggcccttgt ggtgctgggg actcacggga gaccgccggg gtcaactcgg aggaaggtgg 1140

ggacgacgtc aagtcatcat gcccccttatg tcttgggctg cacacgtgct acaatggccg 1200

gtacaaagag ctgcgatacc gcgaggtgga gcgaatctca aaaagccggt ctcagttcgg 1260

attggggtct gcaactcgac cccatgaagt cggagtcgct agtaatcgca gatcagcatt 1320

gctgcggtga atacgttccc gggccttgta cacaccgccc gtcacgtcac gaaagtcggt 1380

aacacccgaa gccggtggcc caacccccttg tgggagggag ctgtcgaagg tgggactggc 1440

gattgggacg aagtcgtaac aaggtagccg taccggaagg tgc 1483

<210> 1896
<211> 1368
<212> DNA
<213> Subdoligranulum variabile

<220>
<221> modified_base
<222> (23)..(23)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (25)..(25)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (44)..(44)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1320)..(1320)
<223> a, c, t, g, unknown or other

<400> 1896
gttatttcgg ttgaagtttt cgnanggata ctggtttaac ttantggcga acgggtgagt 60

aacgcgtgag taacctgccc tggagtgggg gacaacagtt ggaaacgact gctaataccg 120

cataagccca cggtccggca tcggattgag ggaaaaggat ttattcgctt caggatggac 180

tcgcgtccaa ttagctagtt ggtgaggtaa cggcccacca aggcgacgat tggtagccgg 240

actgagaggt tgaacggcca cattgggact gagacacggc ccagactcct acgggaggca 300

gcagtggggg atattgcaca atgggggaaa ccctgatgca gcgacgccgc gtggaggaag 360

aaggttttcg gattgtaaac tcctgtcgtt agggacgaat cttgacggta cctaacaaga 420

aagcaccggc taactacgtg ccagcagccg cggtaaaacg tagggtgcaa gcgttgtccg 480

gaattactgg gtgtaaaggg agcgcaggcg gaccggcaag ttggaagtga aatctatggg 540

ctcaacccat aaattgcttt caaaactgct ggccttgagt agtgcagagg taggtggaat 600

tcccggtgta gcggtggaat gcgtagatat cgggaggaac accagtggcg aaggcgacct 660

actgggcacc aactgacgct gaggctcgaa agcatgggta gcaaacagga ttagataccc 720

tggtagtcca tgccgtaaac gatgattact aggtgttgga ggattgaccc cttcagtgcc 780

gcagttaaca caataagtaa tccacctggg gagtacgacc gcaaggttga aactcaaagg 840

aattgacggg ggcccgcaca agcagtggag tatgtggtta ttcgaagcaa cgcgaagaac 900

cttaccaggt cttgacatcc gatgcataat gcagatatgc atgaagtcct tcgggacatc 960

gagacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1020

aacgagcgca acccttattg ccagttacta cgcaagagga ctctggcgag actgccgttg 1080

acaaaacgga ggaaggtggg gatgacgtca aatcatcatg ccctttatga cctgggctac 1140

acacgtacta caatggcgtt taacaaagag aagcaagacc gcgaggtgga gcaaaactca 1200

aaaacaacgt ctcagttcag attgcaggct gcaactcgcc tgcatgaagt cggaattgct 1260

agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggccttgtac acaccgcccn 1320

tcacaccatg agagccgggg ggacccgaag tcggtagtct aaccgcaa 1368

<210> 1897
<211> 1514
<212> DNA
<213> Succinatimonas hippei

<400> 1897
tgaagagttt gatcatggct cagattgaac gctggcggca ggcttaatac atgcaagtcg 60

aacggtaaca tagcgaaagc ttgcttttgc tgatgacgag tggcggacgg gtgagtagta 120

tctgggaaac tgccctgaag aggggacaa cagctggaaa cggctgctaa taccgcataa 180

accctgcggg ggaaaggaag gcaacttccg cttcaggatg tgcccagaag ggattagcta 240

gtaggtgagg taaaggctca cctaggcgac gatctctagc cggtctgaga ggatgaccgg 300

ccacatcggg actgagacac ggcccggact cctacgggag gcagcagtag ggaatattgc 360

acaatggggg gaaccctgat gcagccatgc cgcgtgtgtg aagaaggcct tcgggttgta 420

aagcactttc agcggggagg aaattaagtt agacgttacc cgcagaagaa gcaccggcta 480

actccgtgcc agcagccgcg gtaatacgga gggtgcgagc gttaatcgga ataactgggc 540

gtaaagggca cgcaggcggg ctgataagta aggtgtgaaa taccggggct caacctcggg 600

gctgcatttt aaactgtcag tctagagtat tgcagaggga gacggaattc cgggtgtagc 660

ggtgaaatgc gtagatatcc ggaagaacac cggaggcgaa ggcggtcttc tgggcaaata 720

ctgacgctca ggtgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 780

ccgtaaacga tgtcgattag gagattgagc agaagcttgg ttttcggagc aaacgcgcta 840

aatcgaccgc ctggggagta cggccgcaag gttaaaactc aaatgaattg acgggggccc 900

gcacaagcgg tggagcatgt ggtttaattc gatgcaacgc gaagaacctt acctgacctt 960

gacatctgag gaatgcctga gagatttagg cagtgccttc gggagcctca agacaggtgc 1020

tgcatggctg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 1080

cccttgtcct ttgttgccag cgcgtgatgg cgggaactca aaggagactg ccggtgacaa 1140

accggaggaa ggcagggatg acgtcaagtc atcatggccc ttacggtcag ggctacacac 1200

gtgctacaat ggggcgtaca gagggaagcg aggccgtgag gcggagcgga gcccacaaag 1260

cgtcccacag ttcggattgg agtctgcaac tcgactccat gaaggcggaa tcgctagtaa 1320

tcgcaaatca gaatgttgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca 1380

ccatgggagt ggattgcacc agaagtggct tgcctaaccc gtaagggagg gcggttacca 1440

cggtgtggtt tatgactggg gtgaagtcgt aacaaggtaa ccctagggga acctggggtt 1500

ggatcacctc ctta 1514

<210> 1898
<211> 1391
<212> DNA
<213> Sutterella morbirenis

<400> 1898
cacatgcaag tcgaacggca gcacgaggag cttgctcctt ggtggcgagt ggcgcacggg 60

tgagtaatat atcggaacgt gtcctattgt gggggataac tagccgaaag gttagctaat 120

accgcataag acctgagggt gaaagcgggg gatcttcgga cctcgcgcag ttggagcggc 180

cgatagccga ttagctagtt ggtagggtaa tggcctacca aggcaacgat cggtagctgg 240

tctgagagga cgaccagcca cactgggact gagacacggc ccagactcct acgggaggca 300

gcagtgggga attttggaca atgggggcaa ccctgatcca gccatgccgc gtgcaggatg 360

aaggtcttcg gattgtaaac tgcttttgtc agggaagaaa agtttagagc gaataactct 420

gaatgctgac ggtacctgaa gaataagcac cggctaacta cgtgccagca gccgcggtaa 480

tacgtagggt gcaagcgtta atcggaatta ctgggcgtaa agcgtgcgca ggcggttctg 540

taagatgggt gtgaaagccc cgggctcaac ctgggaattg cattcatgac tgcaggacta 600

gagttcacca gaggggggtg gaattccaag tgtagcagtg aaatgcgtag atatttggaa 660

gaacaccgat ggcgaaggca gcccccctggg gtgcgactga cgctcatgca cgaaagcgtg 720

gggagcaaac aggattagat accctggtag tccacgccct aaacgatgtc tactggttgt 780

tggggattta tatccttggt aacgaagcta acgcgtgaag tagaccgcct ggggagtacg 840

gtcgcaagat taaaactcaa aggaattgac ggggacccgc acaagcggtg gatgatgtgg 900

attaattcga tgcaacgcga aaaaccttac ctagccttga catgtcgaga atcccgaaga 960

gatttgggag tgcccgcaag ggaattcgaa cacaggtgct gcatggctgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtcatt agttgctacg 1080

caagagcact ctaatgagac tgccggtgac aaaccggagg aaggcaggga tgacgtcaag 1140

tcctcatggc ccttatggct agggcttcac acgtcataca atggtcggaa cagagggcag 1200

cgaagccgcg aggtggagcc aatcccagaa aaccgatcgt agtccggatt ggagtctgca 1260

actcgactcc atgaagtcgg aatcgctagt aatcgcggat cagcatgccg cggtgaatac 1320

gttcccgggt cttgtacaca ccgcccgtca caccatggga gtggggttca ccagaagacg 1380

ttagtttaac c 1391

<210> 1899
<211> 1489
<212> DNA
<213> Sutterella parvirubra

<400> 1899
attgaacgct ggcggcatgc tttacacatg caagtcgaac ggcagcacag ggagcttgct 60

cccgggtggc gagtggcgca cgggtgagta agacatcgga acgtgtcctc ttgtggggga 120

taactacccg aaagggtggc taataccgca taagtcctga gggagaaagc gggggatctt 180

cggacctcgc gcgagaggag cggccgatgg ccgattagct agttggtgag gtaaaggctc 240

accaaggcga cgatcggtag ctggtctgag aggacgacca gccacactgg gactgagaca 300

cggcccagac tcctacggga ggcagcagtg gggaattttg gacaatgggc gaaagcctga 360

tccagccatg ccgcgtgtgg gatgaaggcc ttcgggttgt aaaccacttt tgtcagggac 420

gaaaaggttc aggcyaatac cttgaactgc tgacggtacc tgaagaataa gcaccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggtgcaagc gttaatcgga attactgggc 540

gtaaagcgtg cgcaggcggt tctgtaagat agatgtgaaa tccccgggct taaccttgga 600

attgcattta tgactgcagg actcgagttt gtcagagggg ggtggaattc caagtgtagc 660

agtgaaatgc gtagatattt ggaagaacac cgatggcgaa ggcagccccc tgggacatga 720

ctgacgctca tgcacgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 780

ccctaaacga tgtctactgg ttgttgggga cgatttggtc cttggtaacg aagctaacgc 840

gtgaagtaga ccgcctgggg agtacggtcg caagattaaa actcaaagga attgacgggg 900

acccgcacaa gcggtggatg atgtggatta attcgatgca acgcgaaaaa ccttacctag 960

ccttgacatg tcggaaagct ctgagagatc ggagygtgcc cgcaagggaa tccgaacaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt gtcactagtt gctacgaaag ggcactctag tgagactgcc ggtgacaaac 1140

cggaggaagg tggggatgac gtcaagtcct catggccctt atggctaggg cctcacacgt 1200

catacaatgg tcggaacaga gggcagcgaa gccgcgaggt ggagcaaatc ccagaaaacc 1260

gatcgtagtc cggattgcag tctgcaactc gactgcatga agtcggaatc gctagtaatc 1320

gcggatcagc atgccgcggt gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc 1380

atgggagtgg ggttcaccag aagacgtttg tctaaccgca aggaggacgg cgtccacggt 1440

gggtttcatg actggggtga agtcgtaaca aggtagccgt accggaagg 1489

<210> 1900
<211> 1457
<212> DNA
<213> Sutterella sanguinus

<400> 1900
attgaacgct ggcggcatgc tttacacatg caagtcgaac ggcagcacga ggagcttgct 60

ccttggtggc gagtggcgca cgggtgagta atatatcgga acgtgtccta ttgtggggga 120

taactagccg aaaggttagc taataccgca taagacctga gggtgaaagc gggggatctt 180

cggacctcgc gcagttggag cggccgatag ccgattagct agttggtagg gtaatggcct 240

accaaggcaa cgatcggtag ctggtctgag aggacgacca gccacactgg gactgagaca 300

cggcccagac tcctacggga ggcagcagtg gggaattttg gacaatgggg gcaaccctga 360

tccagccatg ccgcgtgcag gatgaaggtc ttcggattgt aaactgcttt tgtcagggaa 420

gaaaagttta gagcgaataa ctctgaatgc tgacggtacc tgaagaataa gcaccggcta 480

actacgtgcc agcagccgcg gtaatacgta gggtgcaagc gttaatcgga attactgggc 540

gtaaagcgtg cgcaggcggt tctgtaagat gggtgtgaaa gccccgggct caacctggga 600

attgcattca tgactgcagg actagagttc accagagggg ggtggaattc caagtgtagc 660

agtgaaatgc gtagatattt ggaagaacac cgatggcgaa ggcagccccc tggggtgcga 720

ctgacgctca tgcacgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg 780

ccctaaacga tgtctactgg ttgttgggga tttatatcct tggtaacgaa gctaacgcgt 840

gaagtagacc gcctggggag tacggtcgca agattaaaac tcaaaggaat tgacggggac 900

ccgcacaagc ggtggatgat gtggattaat tcgatgcaac gcgaaaaacc ttacctagcc 960

ttgacatgtc gagaatcccg aagagatttg ggagtgcccg caagggaatt cgaacacagg 1020

tgctgcatgg ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg 1080

caacccttgt cattagttgc tacgcaagag cactctaatg agactgccgg tgacaaaccg 1140

gaggaaggca gggatgacgt caagtcctca tggcccttat ggctagggct tcacacgtca 1200

tacaatggtc ggaacagagg gcagcgaagc cgcgaggtgg agccaatccc agaaaaccga 1260

tcgtagtccg gattggagtc tgcaactcga ctccatgaag tcggaatcgc tagtaatcgc 1320

ggatcagcat gccgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat 1380

gggagtgggg ttcaccagaa gacgttagtt taaccgcaag gaggacgacg tccacggtgg 1440

gcttcatgac tggggtg 1457

<210> 1901
<211> 1320
<212> DNA
<213> Sutterella sp. YIT 12072

<400> 1901
attgaacgct ggcggcatgc cttacacatg caagtcgaac gagtggcgaa cgggtgagta 60

atacatcgga acgtgtccgt ttgtggggga caaccagccg aaaggttggc taataccgca 120

taaggaaagg cgcagacgga gcggccgatg attgattagc ttgttggcgg ggtaaaggcc 180

caccaaggcg acgatcaata gctggtctga gaggacgacc agccacactg gaactgagac 240

acggtccaga ctcctacggg aggcagcagt ggggaatttt ggacaatggg ggcaaccctg 300

atccagccat gccgcgtgcg ggaagaaggc cttcgggttg taaaccgctt ttgtcaggga 360

cgatgacggt acctgaagaa taagcaccgg ctaactacgt gccagcagcc gcggtaatac 420

gtagggtgca agcgttaatc ggaattactg ggcgtaaagc gtgcgcaggc ggttgggtaa 480

gacagatgtg aaatccccgg gcttaacctg ggaactgcat ttgtgactgt ccgactggag 540

tacgtcagag gggggtggaa ttccgcgtgt agcagtgaaa tgcgtagata tgcggaagaa 600

caccgatggc gaaggcagcc ccctgggacg actgacgctc atgcacgaaa gcgtggggag 660

caaacaggat tagataccct ggtagtccac gccctaaacg atgtctgccg gttgttgggg 720

cttcagtaac gaagctaacg cgtgaagcag accgcctggg gagtacggtc gcaagattaa 780

aactcaaagg aattgacggg gacccgcaca agcggtggat gatgtggatt aattcgatgc 840

aacgcgaaaa accttaccta gccttgacat gcacaggtgc tgcatggctg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccttgtcat cagttgctac 960

ggcactctga tgagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaagtcct 1020

catggccctt atggctaggg cctcacacgt catacaatgg tcggcagagg gcagcgaagc 1080

cgcgaggtga agccaatccc agccgatcgt agtccggatg cagtctgcaa ctcgactgca 1140

gaagtcggaa tcgctagtaa tcgcggatca gcatgccgcg gtgaatacgt tcccgggtct 1200

tgtacacacc gcccgtcaca ccatgggagt ggggttcacc agaaggcgtt gcccaaggcg 1260

gcgcccacgg tgggtttcat gactggggtg aagtcgtaac aaggtagtcg taccggaagg 1320

<210> 1902
<211> 1455
<212> DNA
<213> Sutterella stercoricanis

<400> 1902
ggcggcatgc tttacacatg caagtcgaac ggcagcacag ggagcttgct cctgggtggc 60

gagtggcgca cgggtgagta atacatcgga acgtgtccta ttgtggggga taactgtcgg 120

aaagggtggc taataccgca taagacctga gggtgaaagc gggggatcgc aagacctcgc 180

gcaattggag cggccgatgc ccgattagct agttggtgag gtaatagctt accaaggcga 240

cgatcggtag ctggtctgag aggacgacca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaattttg gacaatgggg gcaaccctga tccagccatg 360

ccgcgtgcag gatgaaggtc ttcggattgt aaactgcttt tgtcagggac gaaaaggatt 420

gtgctaatac catgatctgc tgacggtacc tgaagaataa gcaccggcta actacgtgcc 480

agcagccgcg gtaatacgta gggtgcaagc gttaatcgga attactgggc gtaaagcgtg 540

cgcaggcggt tctgtaagac agatgtgaaa tccccgggct caacctggga attgcatttg 600

tgactgcagg actagagttc atcagagggg ggtggaattc caagtgtagc agtgaaatgc 660

gtagatattt ggaagaacac caatggcgaa ggcagccccc tgggatgcga ctgacgctca 720

tgcacgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccctaaacga 780

tgtctactgg ttgttgggga ttaatatcct tggtaacgaa gctaacgcgt gaagtagacc 840

ccctggggag agcggtcgca agattaaaac tcaaaggaat tgacggggac ccgcacaagc 900

ggtggatgat gtggattaat tcgatgcaac gcgaaaaacc ttacgtagcc ttgacatgcc 960

aggaatcctg aagagatttg ggagtgcccg caagggaatc tggacacagg tgctgcatgg 1020

ctgtcgtcag ctcgtgtcgt gagatgttgg gttaagtccc gcaacgagcg caacccttgt 1080

cattagttgc tacgcaagag cactctaatg agactgccgg tgacaaaccg gaggaaggtg 1140

gggatgacgt caagtcctca tggcccttat ggctagggcc tcacacgtca tacaatggtc 1200

ggaacagagg gcagcgaagc cgcgaggtgg agcaaatccc agaaaaccga tcgtagtccg 1260

gattgcagtc tgcaactcga ctgcatgaag tcggaatcgc tagtaatcgc ggatcagcat 1320

gccgcggtga atacgttccc gggtcttgta cacaccgccc gtcacaccat gggagtgggg 1380

ttcaccagaa gacgtttgtc taaccgtaag gaaggacggc gtccacggtg ggtttcatga 1440

ctggggtgaa gtcgt 1455

<210> 1903
<211> 1537
<212> DNA
<213> Sutterella wadsworthensis

<400> 1903
ttgaactaaa gagtttgatc ctggctcaga ttgaacgctg gcggcatgct ttacacatgc 60

aagtcgaacg gcagcgcggg gagcttgctc cctggcggcg agtggcgcac gggtgagtaa 120

tacatcggaa cgtgtcttct agtgggggat aactgcccga aagggcagct aataccgcat 180

gagacctgag ggtgaaagcg ggggatcgca agacctcgcg ctggaagagc ggccgatgtc 240

cgattagcta gttggtgagg taaaggctca ccaaggcgac gatcggtagc tggtctgaga 300

ggacgaccag ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg 360

ggaattttgg acaatggggg caaccctgat ccagccatgc cgcgtgcagg atgaaggtct 420

tcggattgta aactgctttt gtcagggacg aaaagggatg cgataacacc gcattccgct 480

gacggtacct gaagaataag caccggctaa ctacgtgcca gcagccgcgg taatacgtag 540

ggtgcaagcg ttaatcggaa ttactgggcg taaagcgtgc gcaggcggtt ctgtaagata 600

gatgtgaaat ccccgggctc aacctgggaa ttgcatatat gactgcagga cttgagtttg 660

tcagaggagg gtggaattcc acgtgtagca gtgaaatgcg tagatatgtg gaagaacacc 720

gatggcgaag gcagccctct gggacatgac tgacgctcat gcacgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc cctaaacgat gtctactagt tgttggggac 840

gatagtcctt ggtaacgcag ctaacgcgtg aagtagaccg cctggggagt acggtcgcaa 900

gattaaaact caaaggaatt gacggggacc cgcacaagcg gtggatgatg tggattaatt 960

cgatgcaacg cgaaaaacct tacctagcct tgacatgcca ggaaggtctg agagatcagg 1020

ccgtgcccgc aagggaatct ggacacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg ttaagtcccg caacgagcgc aacccttgtc attagttgct acgaaagggc 1140

actctaatga gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aagtcctcat 1200

ggcccttatg gctagggcct cacacgtcat acaatggtcg gaacagaggg aagcgaagcc 1260

gcgaggtgaa gccaatccca gaaaaccgat cgtagtccgg attgcagtct gcaactcgac 1320

tgcatgaagt cggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg 1380

ggtcttgtac acaccgcccg tcacaccatg ggagtggggt tcaccagaag acgtttgccc 1440

aaccgaaagg aaggcggcgt ccacggtggg cttcatgact ggggtgaagt cgtaacaagg 1500

tagccgtacc ggaaggtgcg gctggatcac ctccttt 1537

<210> 1904
<211> 1328
<212> DNA
<213> Synergistes genomosp. C1

<400> 1904
gacgaacgct ggcggcgtgc ttaacacatg caagttgagc gagcagcgga cgggtgagta 60

aagcacaagg acttgtccga aagagaggga cacctgcggg aaaccggagc taatacctaa 120

taaaaaaggc gcttttggag agacttgtgt cctatcaggc agttggtgag gtaacggctc 180

accaaaccga agacgggtag ccggactgag aggtcgaccg gccacattgg aactgagaga 240

cggtccagac tcctacggga ggcagcagtg gggaatattg ggcaatgggc gcaagcctga 300

cccagcgacg ccgcgtgagg gaagacagcc ttcgggttgt aaacctctgt tgcaggggaa 360

gatgacggta ccctgcgagg aagctccggc taactacgtg ccagcagccg cggtaatacg 420

tagggagcga gcgttgtccg gaattactgg gcgtaaaggg cgcgtaggcg gcgcttcaag 480

tcgtctgtca aaagccgagg ctcaacctcg gtgcgcagac gaaactggag agcttgagaa 540

gcagagaggc aaacagaatt cctggtgtag cggtgaaatg cgtagatatc aggaagaata 600

ccagtggcga aggcggtttg ctggctgctc taacgctgaa gcgcgaaagc caggggagca 660

aacgggatta gataccccgg tagtcctggc agtaaacgat gtatgctggg tgtgggacgt 720

tccgtgccga agttgacgcg ataagcatac cgcctgggga gtacggtcgc aagattgaaa 780

ctcaaaggaa ttgacggggg cccgcacaag cggtggagca cgtggtttaa ttcgatgcaa 840

accgaagaac cttacctgga cttgacatca acaggtgctg catggctgtc gtcagctcgt 900

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cctattgccg gttgctacca 960

gctgagcact ccggcgagac tgccatcgac aagatggagg aaggtgggga cgacgtcaag 1020

tcatcatggc ccatatgtcc agggcgacac acatgctaca atggatggca gagagaagcg 1080

agaccgaaag gagaagcaga tcccaaccat ccccagttcg gatgcagtct gcaactcgac 1140

tgcagaagtt ggaatcgcta gtaatcgcgg atcagccaag ccgcggtgaa tacgttcccg 1200

ggccttgtac acaccgcccg tcacaccatc cgagtcgggt gctctcaaag ccggagccta 1260

aggatccgcc taaagagtgt ccggtgaggg gggtgaagtc gtaacaaggt agccgtacgg 1320

gaacgtgc 1328

<210> 1905
<211> 1412
<212> DNA
<213> Synergistes sp. RMA 14551

<400> 1905
tggcgaacga agacctagag gagcttgctt taatatggtt ttagtggcgg acgggtgagt 60

aacgcgtgag gacttgtcga gtacaggggg acaacaggtg gaaacgtctg ctaatacccc 120

ataagccttc gggtaaaagg agcgatccgg tacacgagag acttgtgtcc tatcagctag 180

taggtggggt aacgagccca cccaggccaa gacggatagc cggactgaga ggtcgatcgg 240

ccacactgga actgagacac ggtccagact cctacgggag gcagcagtgg ggaatattgg 300

gcaatggggg caaccctgac ccagcgacgc cgcgtgagkg aagamakccy tcgggwtgta 360

aamctctgtt gcwgtgggaa gataggacgt gacggtacca ctrcgaggaa gccccggcaa 420

actacgtgcc agcagccgcg gtaatacgta gggagcgagc gttatccgga attactgggc 480

gtaaagcggc gcgtaggctg gtgttcaagt cgttcgttaa atattgaggc ttaacctcaa 540

ggagctggcc gaaactgaga cactggagac acagagaggc aaacagaatt cctggtgtag 600

cggtgaaatg cgtagatatc aggaagaata ccggtggcga aggcggtttg cttggatgtg 660

atctgacgct tgaagcgcga aagccggggg agcgaacggg attagatacc ccggtagtcc 720

cggcagtaaa ctgatgtatg ctgggtgtgg ccgtagcgat acagccgtgc cgaagttaac 780

gcgataagca taccgcctgg ggagtactgg tcgcaagatt gaaactcaaa ggaattgacg 840

ggggcccgca caagcggtgg agcacgtggt ttaattcgat gcaaaccgaa gaaccttacc 900

tggacttgac atacacgtag tagcgaatcg aaagaggagc gaggatgtag caatacattc 960

agcgtgaaca ggtgctgcat ggcttgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1020

cccgcaacga gcgcaacccc ttgttgccgg ttgctaacgc gcaaaggcga gcactccggc 1080

gagactgcca tcgacaagat ggaggaaggt ggggacgacg tcaagtcatc atggccctta 1140

tgtccagggc gacacacatg ctacaatggc tggtacagag agaagcgaag ccgagaggcc 1200

gagcagatcc catcaaagcc agtcccagtt cggattgcag tctgcaactc gactgcatga 1260

agttggaatc gctagtaatc gcggatcagc caagccgcgg tgaatacgtt cccgggcctt 1320

gtacacaccg cccgtcacac catccgagtt gggtgctctc gaagtcggag gcttaaccgc 1380

aaggaaaaga tccgcctaaa gagtgtccgg tg 1412

<210> 1906
<211> 1432
<212> DNA
<213> Synergistetes bacterium ADV897

<400> 1906
gaagcgacgc tggcggcgtg cctaacacat gcaagttgag cggagagttt tcgaagaaga 60

cttcggttgg aattggaaac gatcagcagc ggacgggtga gtaaagcaca aggacgtatc 120

cttttgaggg ggacaactgc gggaaaccgg agctaatagc ccataagccg agaggtgaaa 180

gcgcgcaagc gcgcaagagg agcgacttgt gtcctatcag gcagttggtg aggtaagagc 240

tcaccaaacc gaagacgggt agccggactg agaggttgta cggccacatt ggaactgaga 300

gacggtccag actcctacgg gaggcagcag tggggaatat tgggcaatgg gggcaaccct 360

gacccagcga cgccgcgtga gggaagacag ccttcgggtt gtaaacctct gttgcagggg 420

aagaaggacg tgacggtacc ctgcgaggaa gctccggcta actacgtgcc agcagccgcg 480

gtaatacgta gggagcgagc gttatccgga attactgggc gtaaagggcg cgtaggcggt 540

gtttcaagtc gttcgttaaa tattgaggct taacctcaag gagcggccga aactgagaca 600

ctggagacac agagaggcaa acagaattcc tggtgtagcg gtgaaatgcg tagatatcag 660

gaagaatacc ggtggcgaag gcggtttgct ggatgtgatc tgacgctgaa gcgcgaaagc 720

cgggggagcg aacgggatta gataccccgg tagtcccggc agtaaacgat gtatgctggg 780

tgtggccgta gcgatacagc cgtgccgaag ttaacgcgat aagcataccg cctggggagt 840

acggtcgcaa gattgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcacg 900

tggtttaatt cgatgcaaac cgaagaacct tacctggact tgacatacac gtagtagcga 960

atcgaaagag gagcgaggat gtatcaatgc attcagcgtg aacaggtgct gcatggctgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctgttgcc 1080

ggttgctaac gcgcaaaggc gagcactccg gcgagactgc catcgacaag atggaggaag 1140

gtggggacga cgtcaagtca tcatggcccc tatgtccagg gcgacacaca tgctacaatg 1200

gctggtacag agagaagcga agccgagagg ccgagcagat cccatcaaag ccagtcccag 1260

ttcggattgc agtctgcaac tcgactgcat gaagttggaa tcgctagtaa tcgcggatca 1320

gccaagccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatccgag 1380

ttgggtgctc tcgaagtcgg aggcttaacc gcaaggaaag atccgcctaa ag 1432

<210> 1907
<211> 1447
<212> DNA
<213> Synergistetes bacterium LBVCM1157

<400> 1907
cccggacgac gctggcggcg tgcctaacac atgcaagtcg aacgaaatta cgaagaaagc 60

ttgctttaat cgtaatttag tggcggacgg gtgagtaacg cgtgaggact tgtcggatac 120

agggggacaa cagatggaaa cgtctgctaa taccccataa gccttcgggt aaaaggagca 180

atccggtatt tgagagactc gcgttctatc agctagtagg tggggtaacg gcccacctag 240

gccaagacgg atagccggac tgagaggtcg accggccaca ctggaactga gagacggtcc 300

agactcctac gggaggcagc agtggggaat attgggcaat gggggcaacc ctgacccagc 360

gacgccgcgt gggtgaagaa atccttcggg atgtaaagcc ctgttgtgtg ggaagataat 420

gacggtacca cacgaggaag ccccggcaaa ctacgtgcca gcagccgcgg taatacgtag 480

ggggcaagcg ttgttcggaa ttactgggcg taaagcgcac gcaggctgac cgttaagtct 540

gtcgtcaaag gcggaggctc aacctccgtt ctacgataga tactgtcggt ctagagtatg 600

tgagagggaa gtggaattcc cggtgtagcg gtgaaatgcg tagatatcgg gaggaacacc 660

agtggcgaag gcggcttcct ggcacacaac tgacgctcat gtgcgaaagc cagggcagcg 720

aacgggatta gataccccgg tagtcctggc cgtaaacgat ggatactggg tgtgggtgaa 780

gcagttcatc cgtgccgtag ttaacgcgtt aagtatcccg cctggggact acggtcgcaa 840

gactgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcacg tggtttaatt 900

cgatgcaaac cgaagaacct tacctgggtt tgacatacaa gtggtactga gatgaaagtt 960

gagggactgt agcttgctac agagcttgaa caggtgctgc atggctgtcg tcagctcgtg 1020

tcgtgagatg ttgggttaag tcccgcaacg agcgcaaccc ctatgtccag ttgctaacaa 1080

gtgaagttga gcactctgga gagactgccg ccgacaaggc ggaggaaggt ggggatgacg 1140

tcaagtcatc atggccttta tgcccagggc gacacacgtg ctacaatggc cggcacagaa 1200

ggcagcttgc tagtgatagt tggcgaatcc ttaaaagccg gtcccagttc ggattgtagt 1260

ctgcaacccg actacatgaa gccggaatcg ctagtaatcg cagatcagcc aagctgcggt 1320

gaatacgttc ccgggccttg tacacaccgc ccgtcacacc acccgagttg ggggcacccg 1380

atagccgcag gctataaccg cagtaaggga aagaagcgtc taaggtgcgc gcgagtaaca 1440

gcatctc 1447

<210> 1908
<211> 1474
<212> DNA
<213> Synergistetes bacterium oral clone 03 5 D05

<400> 1908
gacgaacgct ggcggcgtgc ctaatacatg caagtagaac gctgaaggaa ggagcttgct 60

ctttccggat gagttgcgaa cgggtgagta acgcgtaggt aacctgcctg gtagcggggg 120

ataactattg gaaacgatag ctaataccgc ataatagcag ttattgcatg ataactgttt 180

gaaaggtgca aatgcatcac taccagatgg acctgcgttg tattagctag ttggtgaggt 240

aacggctcac caaggcgacg atacatagcc gacctgagag ggtgatcggc cacactggga 300

ctgagacacg gcccagactc ctacgggagg cagcagtagg gaatcttcgg caatggacgg 360

aagtctgacc gagcaacgcc gcgtgagtga agaaggtttt cggatcgtaa agctctgttg 420

taagagaaga acgagtgtga gagtggaaag ttcacactgt gacggtatct taccagaaag 480

ggacggctaa ctacgtgcca gcagccgcgg taatacgtag gtcccgagcg ttgtccggat 540

ttattgggcg taaagcgagc gcaggcggtt agataagtct gaagttaaag gctgtggctt 600

aaccatagta cgctttggaa actgggagac ttgagtgcag aagaggagag cggaattcca 660

tgtgtagcgg tgaaatgcgt agatatatgg aggaacacca gtggcgaagg cggctctctg 720

gtctgtaact gacgccgagg ctcgaaagcg tggggagcaa acaggattag ataccctggt 780

agtccatgcc gtaaacgttg ggcactaggt gtgggggaca ttccacgttt tccgcgccgt 840

agctaacgca ttaagtgccc cgcctgggga gtacggccgc aaggctaaaa ctcaaaggaa 900

ttgacggggg cccgcacaag cggcggagca tgcggattaa ttcgatgcaa cgcgaagaac 960

cttaccaagg cttgacatgc attagatcgc gtcagagatg gcgtttccct tcggggctgg 1020

tatacaggtg gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc 1080

aacgagcgca accctcgttc tatgttgcca gcacgtgatg gtggggactc ataggagact 1140

gccggggtca actcggagga aggtggggat gacgtcaaat catcatgccc cttatgtctt 1200

gggcctcacg catgctacaa tggccggtac agagggttgc gatactgtga ggtggagcta 1260

atccctaaaa gccggtctca gttcggattg gggtctgcaa ctcgacccca tgaagtcgga 1320

gtcgctagta atcgcagatc agcaacgctg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca agtcacgaaa gttggtaaca cccgaagccg gtggcctaac cctggtgggg 1440

ggagccgtcg aaggtgggac tggcgattgg gact 1474

<210> 1909
<211> 1453
<212> DNA
<213> Synergistetes bacterium oral taxon 362

<400> 1909
gatgaacgct ggcggcgtgc gtaacacatg caagttggac gacgatgcca tgaagtggta 60

acacggaatg gtatacggag tagcggacgg gtgagtaaaa catgaggagc tgtcctgttg 120

agggggataa cgttcggaaa cggaccctaa taccccatag gccgagaggt taaaggcaga 180

gatgcgcgac aggaggcact cgtgtcctat cagctggttg gtgaggtaac ggctcaccaa 240

ggcgacgacg ggtagccggc ctgagagggt gaccggccac actggaactg agacacggtc 300

cagactccta cgggaggcag cagtggggaa tattgggcaa tgggaggaat cctgacccag 360

cgacgccgcg tgaacgaaga cggccttcgg gttgtaaagt tcttttatgt gggaagaatg 420

aagtgacggt accacatgaa taagccccgg ctaactacgt gccagcagcc gcggtaatac 480

gtaggggcg agcgttgtcc ggaattactg ggcgtaaagg gcacgcaggc tgtgcttcaa 540

gtcagctgta aaaggatgcg gcttaaccgt gttatgcagt tgagactgag gtgctggaat 600

accggagagg caagtggaat tcccagtgta gcggtgaaat gcgtagatat tgggaagaac 660

atcggtggcg aaggcgactt gctggacggt aactgacgct gaggtgcgaa agccagggta 720

gcgaacggga ttagataccc cggtagtcct ggccgtaaac gatgaatgct aggtgtgcga 780

gcagagatgt tggtgtgccg cagttaacgc gataagcatt ccgcctgggg agtacggtcg 840

caagattgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc acgtggttta 900

attcgatgca aaccgaagaa ccttacctgg gtttgacatg tatgtggtag gagatggaaa 960

cattgacgac gctgctttcg ggcagtgagc atacacaggt gctgcatggc tgtcgtcagc 1020

tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctgcg attagttgcc 1080

agcgagttaa gtcgggcact ctaatgggac tgccatcgac aagatggagg aaggtgggga 1140

tgacgtcaag tcatcatggc ccttatgtcc agggcgacac acgtgctaca atggccggta 1200

cagagggaag cgaggctgtg aggttgagcg gatcccataa agccggtctc agtccggatt 1260

gaagtctgca attcgacttc atgaagctgg aatcgctagt aatcgcagat cagccaagct 1320

gcggtgaata cgttcccggg ccttgtacac accgcccgtc acaccacccg agccgggtgt 1380

acccgaagcc ggtggcctaa ccttatggga ggagccgtcg aaggtgtgtc tggtgaggag 1440

ggtgaagtcg taa 1453

<210> 1910
<211> 1337
<212> DNA
<213> Synergistetes bacterium oral taxon D48

<400> 1910
gatgaacgct ggcggcgtgc gtaacacatg caagttgaac gacggtgcca tgaagtggta 60

acacggagtg gtatacggag tagcggacgg gtgagtaaag catgagaatc tgtcctgtcg 120

aggggggatag cgttcggaaa cggaccctaa taccccatag tccgagaggt taaaggcagc 180

gatgcgcggc aggaggagct cgtgtcctat cagctggttg gtgaggtaac ggctcaccaa 240

ggcaacgacg ggtagccggc ctgagagggt gaccggccac actggaactg agaaacggtc 300

cagactccta cgggaggcag cagtggggaa tattgggcaa tgggaggaat cctgacccag 360

cgacgccgcg tgaacgaaga cggccttcgg gttgtaaagt tcttttatgt gggaagaagg 420

aagtgacggt accacatgaa taagccccgg ctaactacgt gccagcagcc gcggtaatac 480

gtaggggggcg agcgttgtcc ggaattactg ggcgtaaagg gcacgcaggc tgtgcttcaa 540

gtcagctgta aaaggatgcg gcttaaccgt gttatgcggc tgagactgag gtgctggagt 600

accggagagg caagtggaat tcccagtgta gcggtgaaat gcgtagatat tgggaagaac 660

atcggtggcg aaggcgactt gctggacggt aactgacgct gaggtgcgaa agccagggta 720

gcgaacggga ttagataccc cggtagtcct ggccgtaaac gatgaatgct aggtgtgcga 780

gcagagatgt tggtgtgccg cagttaacgc gataagcatt ccgcctgggg agtacggtcg 840

caagattgaa actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta 900

attcgatggt acgcgaggaa ccttacctgg gtttgacata gtatctgatg ccgtagagat 960

acggcagcgt agcaatacga ggtacaacgg gtgctgcatg gctgtcgtca gctcgtgtcg 1020

tgagatgtta ggttaagtcc tgcaacgagc gcaaccctcg tcgtatattg ccagcggttc 1080

ggccgggcac tctggcagga ctgccatcga caagattgga ggaaggtggg gatgacgtca 1140

gtcatcatgg cccatatgtc cagggcgaca cacgtgctac aatgggcggt acagagggaa 1200

gcgacactgc gaggtgaagc ggatcccatt aaagccgctc tcagttcgga ttgaagtctg 1260

caattcgact tcatgaagtt ggaatcgcta gtaatcgcag atcagccaag ctgcggtgaa 1320

tccgttcccg ggccttg 1337

<210> 1911
<211> 1535
<212> DNA
<213> Syntrophococcus sucromutans

<400> 1911
agagtttgat catggctcag gatgaacgct ggcggcgtgc ttaacacatg caagtcgagc 60

gaagcacttt tgatttcttc ggattgaagg agtgactgag cggcggacgg gtgagtaacg 120

cgtggggaac ctgccccata ccgggggata acagttggaa acgactgcta ataccgcata 180

agcgcacagg aaggcatctt ccagtgtgaa aaactccggt ggtatgggat ggacccgcgt 240

tggattagcc agttggtggg gtaacggcct accaaagcga cgatccatag ccggcctgag 300

agggcgaccg gccacattgg gactgagaca cggcccaaac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggg gaaaccctga tgcagcgacg ccgcgtgagt gatgaagtat 420

ttcggtatgt aaagctctat cagcagggaa gaagacgacg gtacctgact aagaagcccc 480

ggctaactac gtgccagcag ccgcggtaat acgtaggggg caagcgttat ccggatttac 540

tgggtgtaaa gggagcgcag acggcagtgc aagtctgaag tgaaaacccg aggctcaacc 600

acgggattgc tttggaaact gtacagctag agtgtcggag gggtaagcgg aattcctagt 660

gtagcggtga aatgcgtaga tattaggagg aacaccggtg gcgaaggcgg cttactggac 720

gataactgac gttgaggctc gaaagcgtgg ggagcaaaca ggattagata ccctggtagt 780

ccacgcggta aacgatgaat actaggtgtt ggcacgcaag gcgtgtcggt gccgccgcaa 840

acgcattaag tattccacct ggggagtacg ttcgcaagaa tgaaactcaa aggaattgac 900

ggggacccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga agaaccttac 960

caagtcttga catccgcctg accggccggt aacgcggccc ttccttcggg acaggcgaga 1020

caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag tcccgcaacg 1080

agcgcaaccc ttatcctcag tagccagcac gaaaggtggg cactctgggg agactgccag 1140

ggagaacctg gaggaaggtg gggatgacgt caaatcatca tgcccttat gatttgggct 1200

acacacgtgc tacaatggcg tgaacagagg gaagcgaagg ggcgatccgg agcaaatctc 1260

aaaaaacacg tcccagttcg gactgcaggc tgcaacccgc ctgcacgaag ctggaatcgc 1320

tagtaatcgc agatcagaat gctgcggtga atatgttccc gggtcttgta cacaccgccc 1380

gtcacaccat gggagtcggt aatgcccgaa gcctgtgacc caaccagcaa tggagggagc 1440

agtcgaaggc agggccggtg actggggtga agtcgtaaca aggtagccgt atcggaaggt 1500

gcggctggat cacctcctta agcttggtac ccggg 1535

<210> 1912
<211> 1295
<212> DNA
<213> Syntrophomonadaceae genomosp. P1

<400> 1912
acgaacgctg gcggcgtgct taacacatgc aagtcgaacg agtggcgaac gggtgagtaa 60

cgcatgagta atctgcccat aagcggggga taccaaatgg aaacatttgc taataccgca 120

tacggaaagc cacttatgga tgagctcgcg tctgattagc tggttggcag ggtaaaggcc 180

taccaaggca acgatcagta gccggcctga gagggtgacc ggccacactg ggactgagac 240

acggcccaga ctcctacggg aggcagcagt ggggaatatt gcgcaatggg ggaaaccctg 300

acgcagcgac gccgcgtgag cgaagaaggc cttagggttg taaagctctg ttttaaggga 360

cgaagacggt accttaagag gaagccccgg ctaactacgt gccagcagcc gcggtaagac 420

gtaggggcg agcgttgtcc ggaatcactg ggtgtaaagg gcacgcaggc gggtgtttaa 480

gtcattcgtg aaataccgca gcttaactgc ggggttgcga gtgaaactgg aaatcttgag 540

ggcaagagag gacagtagaa ttcctggtgt agcggtgaaa tgcgtagaaa tcaggaggaa 600

taccggtggc gaaggcgact gtctggattg cctgacgctg aggtgcgaaa gcgtgggtag 660

caaacaggat tagataccct ggtagtctac gctgtaaacg atggatacta ggtgtaggag 720

cttctgtgcc ggagcaaacg caataagtat cccacctggg gagtacgatc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtgagc atgtggttta attcgatgca 840

acgcgaagaa ccttaccagg tcttaacatc gacaggtggt gcatggttgt cgtcagctcg 900

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctgccatt agttactaac 960

aattgaggac tctaatggga ccgcctgtga caagcaggag gaaggtgggg atgacgtcaa 1020

atcatcatgc cctttatgat ctgggctaca cacgtgctac aatggatggc aaagagcagc 1080

aaagcagcga tgccgagcca atctcatcca ttcccagttc ggatggagtc tgcaactcga 1140

cttcagaagc aggaatcgct agtaatcgtg gatcagcatg ccacggtgaa tgcgttcccg 1200

ggccttgtac acaccgcccg tcacaccacg aaagtcggca acacccgaag ccggtagcta 1260

ggcagccgtt gaaggtgggg ttggtgattg gggtg 1295

<210> 1913
<211> 1451
<212> DNA
<213> Tannerella forsythia

<400> 1913
agcgataggc ttaacacatg caagtcgagg ggcatcgagg gtagcaatac ctgtcggcga 60

ccggcgcacg ggtgagtaac gcgtatgtaa cctgcccgca acagagggat aacccggcga 120

aagtcggact aatacctcat aaaacagggg ttccgcatgg ggctatttgt taaagattta 180

ttggttgcgg atgggcatgc gtaccattag gtagttggtg aggtaacggc tcaccaagcc 240

atcgatggtt aggggttctg agaggaaggt cccccacact ggtactgaga cacggaccag 300

actcctacgg gaggcagcag tgaggaatat tggtcaatgg gcgagagcct gaaccagcca 360

agtcgcgtga aggatgactg ccctatgggt tgtaaacttc ttttacaggg gaataaaatg 420

agatacgtgt attttattgc atgtaccttg tgaataagca tcggctaact ccgtgccagc 480

agccgcggta atacggagga tgcgagcgtt atccggattt attgggttta aagggtgcgt 540

aggtgggctg ttaagtccgc ggtgaaagtt tgtcgcttaa cgataaaatt gccgttgaaa 600

ctggtagtct tgagtataga tgaagtaggc ggaatgcgtg gtgtagcggt gaaatgcata 660

gagatcacgc agaactccga ttgcgaaggc agcttactaa ggtataactg acactgaagc 720

acgaaagcgt gggtatcaaa caggattaga taccctggta gtccacgcag taaacgatga 780

ttactaggag tttgcgatat agtgtaagct ctacagcgaa agcgttaagt aatccacctg 840

gggagtacgc cggcaacggt gaaactcaaa ggaattgacg ggggcccgca caagcggagg 900

aacatgtggt ttaattcgat gatacgcgag gaaccttacc cgggattgaa atgtagacga 960

cggagagtga gagctttctt cccttcgggg cgtctatgta ggtgctgcat ggttgtcgtc 1020

agctcgtgcc gtgaggtgtc ggcttaagtg ccataacgag cgcaaccctg actgtcagtt 1080

gctaacaggt aaagctgagg actctggcgg gactgccggc gtaagctgtg aggaaggttg 1140

ggatgacgtc aaatcagcac ggcccttaca tccggggcga cacacgtgtt acaatggcag 1200

ggacaaaggg cagctaccgg gcgaccggat gccaatctcc aaaccctgtc tcagttcgga 1260

tcggagtctg caactcgact ccgtgaagct ggattcgcta gtaatcgcgc atcagccatg 1320

gcgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcaagccatg ggagccgggg 1380

gtacctgaag tccgtaaccg cgaggatcgg cctagggtaa aactggtgac tggggctaag 1440

tcgtaacaag g 1451

<210> 1914
<211> 1375
<212> DNA
<213> Tannerella sp. 6_1_58FAA_CT1

<400> 1914
caacatggta tcagcttgct gatactgatg gcgaccggcg cacgggtgag taacgcgtat 60

gtaatctacc tgtaacagag ggataacccg gagaaatccg gactaatacc tcatagcaca 120

tattattcgc atgaatttta tgttaaagag actcggttac agatgaacat gcgttccatt 180

agctagttgg cggggttacg gcccaccaag gcaacgatgg ataggggttc tgagaggaag 240

gtcccccaca ctggtactga gacacggacc agactcctac gggaggcagc agtgaggaat 300

attggtcaat gggcgaaagc ctgaaccagc caagtcgcgt ggaggaagac ggccctacgg 360

gttgtaaact ccttttacct gggaataacg ggcgctacgt gtagcgctgt gcaagtaccg 420

ggagaataag catcggctaa ttccgtgcca gcagccgcgg taatacggaa gatgcgagcg 480

ttatccggat ttattgggtt taaagggtgc gtaggcggaa gaataagtca gcggtgaaat 540

gcttcagctc aactggagaa ttgccgatga aactgttttt ctagagtata aaagaggtat 600

gcggaatgcg tggtgtagcg gtgaaatgca tagatatcac gcagaacccc gattgcgaag 660

gcagcatact gggctataac tgacgctgaa gcacgaaagc gtgggtatcg aacaggatta 720

gataccctgg tagtccacgc cgtaaacgat gaatactaac tgtttgcgat ataatgtaag 780

cggtacagcg aaagcgttaa gtattccacc tggggagtac gccggcaacg gtgaaactca 840

aaggaattga cgggggcccg cacaagcgga ggaacatgtg gtttaattcg atgatacgcg 900

aggaacctta cccgggctca aacgacaggg gaataatccc gaaaaggatt agccagcaat 960

gggcgctgtc gaggtgctgc atggttgtcg tcagctcgtg ccgtgaggtg tcggcttaag 1020

tgccataacg agcgcaaccc ttaccggtag ttactaacag gtcaagctga ggactctacc 1080

gggactgcca gcgcaagctg cgaggaaggt ggggatgacg tcaaatcagc acggcccttа 1140

cgtccggggc gacacacgtg ttacaatggc aggtacagag agtcgcttcg tagcaatacg 1200

tagccaatcc caaaaacctg tctcagttcg gatcggagtc tgcaactcga ctccgtgaag 1260

ctggattcgc tagtaatcgc gcatcagcca tggcgcggtg aatacgttcc cgggccttgt 1320

acacaccgcc cgtcaagcca tgggagccgg gagtacctga agtatgcaac cgcaa 1375

<210> 1915
<211> 1474
<212> DNA
<213> Tatlockia micdadei

<220>
<221> modified_base
<222> (5)..(5)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (12)..(14)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (29)..(30)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (37)..(37)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (48)..(48)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (80)..(80)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (82)..(88)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (117)..(117)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (130)..(130)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (136)..(137)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (163)..(163)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (169)..(169)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (176)..(176)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (179)..(179)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (222)..(224)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (229)..(229)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (249)..(249)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (304)..(304)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (335)..(335)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (420)..(420)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (426)..(426)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (452)..(452)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (479)..(479)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (508)..(508)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (552)..(552)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (571)..(571)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (589)..(591)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (598)..(598)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (625)..(625)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (652)..(653)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (828)..(828)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (886)..(886)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (945)..(945)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (957)..(959)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (983)..(983)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (993)..(993)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1042)..(1042)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1092)..(1092)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (1117)..(1117)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1213)..(1213)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1276)..(1276)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1287)..(1287)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1296)..(1296)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1302)..(1302)
<223> a, c, t, g, unknown or other

<400> 1915
aactnaagag tnnnatcctg gctcagatnn aacgctngcg gcatgctnaa cacatgcaag 60

tcgaacggca gcacggtctn gnnnnnnnat gggtgacgag tggcgaacgg gtgagtnacg 120

cgtaggaatn tgcctnnaag tgtgggataa cttggggaaa ctnaagctna taccgnatna 180

gctctaagga ggaaagctgg ggaccgcgag gcctgcgcgc tnnnagatna gcctgcgtcc 240

gattagctng ttggtggggg aagggcctac caaggcgacg atcggtagct ggtctgagag 300

gatnatcagc cacactggga ctgagacacg gcccngtctc ctacgggagg cagcagtggg 360

gaatattgga caatgggggg aaccctratc cagcaatgcc gcgtgtgtga agaaggcctn 420

agggtngtaa agcactttca gtggggagga gngrtgatag gttaagagct aattatctng 480

acgttaccca cagaagaagc accggctnac tccgtgccag cagccgcggt aatacggagg 540

gtgcgagcgt tnatcggaat tactgggcgt naagggtgcg taggtggtnn nataagtnat 600

ctgtgaaatt cctgggctca acctngggtg gtcagataag actgtgagac tnngagtata 660

ggagagggta gtggaatttc cggtgtagcg gtgaaatgcg tagagatcgg aaggaacacc 720

agtggcgaag gcggctacct ggcctaatac tgacactgag gcacgaaagc gtggggagca 780

aacaggatta gataccctgg tagtccacgc tgtaaacgat gtcaactngt tgttggcctt 840

atgaatgagg ttagtgacga agcaaacgcg ataagttgac cgcctnggga gtacggtcgc 900

aagatyaaaa ctcaaaggaa ttgacggggg cccgcacaag cggtngagca tgtggtnnna 960

ttcgatgcaa cgcgaagaac ctnacctacc ctngacatac agtgaattct gcagagatgt 1020

ggaagtgccg cgaggagcac tnatacaggt gctgcatggc tgtcgtcagc tcgtgtcgtg 1080

agatgttggg tnaagtcccg taacgagcgc aaccctngty cttagttgcc agcgcgtaga 1140

tggyggggac tctaaggaga ctgccggtga caaaccggag gaaggcgggg atgacgtcaa 1200

gtcatcatgg ccnttacggg tagggctaca cacgtgctac aatggccggt acagagggcg 1260

gcgaagggga gacctngagc aaatctntga aagctngtcg tngtccggat tgaagtctgc 1320

aactcgactk catgaagtcg gaatcgctag taatcgcgaa tcagcatgtc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc accagaagta 1440

gatagtctaa ccaatggggg acgtatacca cggt 1474

<210> 1916
<211> 1480
<212> DNA
<213> Tatumella ptyseos

<400> 1916
ggcggcaggc ctaacacatg caagtcgaac ggtagcacag aggagcttgc tccttgggtg 60

acgagtggcg gacgggtgag taatgtctgg gaaactgcct gatggagggg gataactact 120

ggaaacggta gctaataccg cataatgtcg caagaccaaa gcgggggacc ttcgggcctc 180

gcaccatcgg atgtgcccag atgggattag cttgtaggtg aggtaatggc tcacctaggc 240

gacgatccct agctggtctg agaggatgac cagccacact ggaactgaga cacggtccag 300

actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct gatgcagcca 360

tgccgcgtgt atgaagaagg ccttcgggtt gtaaagtact ttcagcgggg aggaaggcag 420

tcgtgttaat agcacgattg attgacgtta cccgcagaag aagcaccggc taactccgtg 480

ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg gcgtaaagcg 540

cacgcaggcg gtctgtcaag tcggatgtga aatccccggg ctcaacccgg gaactgcatt 600

cgaaactggc agactagagt cttctagagg ggggtagaat tccaggtgta gcggtgaaat 660

gcgtagagat ctggaggaat accggtggcg aaggcggccc cctggacaaa gactgacgct 720

caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca cgccgtaaac 780

gatgtcgact tggaggctgt tcccttgagg agtggcttcc ggagctaacg cgttaagtcg 840

accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg ggcccgcaca 900

agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta ctcttgacat 960

ccagagaact tgccagagat ggattggtgc cttcgggaac tctgagacag gtgctgcatg 1020

gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc gcaaccccta 1080

tcctttgttg ccagcgattc ggtcgggaac tcaaaggaga ctgccggtga taaaccggag 1140

gaaggtgggg atgacgtcaa gtcatcatgg cccttacgag tagggctaca cacgtgctac 1200

aatggcgcat acaaagagaa gcgacctcgc gagagcaagc ggacctcata aagtgcgtcg 1260

tagtccggat tggagtctgc aactcgactc catgaagtcg gaatcgctag taatcgtaga 1320

tcagaatgct acggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatggg 1380

agtgggttgc aaaagaagta gatagcttaa ccttcgggag ggcgtttacc actttgtgat 1440

tcatgactgg ggtgaagtcg taacaaggta accgtagggg 1480

<210> 1917
<211> 1479
<212> DNA
<213> Tessaracoccus sp. oral taxon F04

<400> 1917
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

ggtaaggccc tttcgggggt acacgagtgg cgaacgggtg agtaacacgt gagtaacctg 120

cccttgactc tgggataaca tctggaaaca ggtgctaata ctggatattc tgcgatgcct 180

gcatgggtgt cgttggaaag ttccggcggt cagggatgga ctcgcggcct atcagcttgt 240

tggtgaggta gtggctcacc aaggcttcga cgggtagccg gactgagagg ttgaccggcc 300

acattgggac tgagatacgg cccaaactcc tacgggaggc agcagtgggg aatattgcac 360

aatggacgga agtctgatgc agcaacgccg cgtgcgggat gacggccttc gggttgtaaa 420

ccgctttcat ccatgacgaa gcgagagtga cggtagtggg agaagaagca ccggctaact 480

acgtgccagc agccgcggtg atacgtaggg tgcgagcgtt gtccggattt attgggcgta 540

aagagcttgt aggcggtttg ttgcgtcggg agtgaaaact cagggcttaa ccctgagcct 600

gctttcgata cgggcagact tgaggaaggt aggggagaat ggaattcctg gtgaagcggt 660

ggaatgcgta gatatcagga ggaacaccag tggcgaaggc ggttctctgg acctttcctg 720

atgctgagaa gcgaaagcgt ggggagcaaa caggcttaga taccctggta gtccacgccg 780

taaacggtgg gtactaggtg tgggggacat tccacgttct ccgtgccgca gctaacgcat 840

taagtacccc gcctggggag tacggccgca aggctaaaac tcaaaggaat tgacggggcc 900

ccgcacaagc ggcggagcat gcggattaat tcgatgcaac gcggagaacc ttacctgggt 960

ttgacatatg ccggaaacat ctagagatag gtgccccttt ttggtcggta taccggtggt 1020

gcatggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 1080

cctcgtccta tgttgccagc gggtaatgcc ggggactcat aggagaccgc cggggtcaac 1140

tcggaggaag gtggggatga cgtcaagtca tcatgcccct tatgtccagg gcttcacgca 1200

tgctacaatg gccggtacaa agagctgcga acctgtgagg gtgagcgaat ctcaaaaagc 1260

cggtctcagt tcggattggg gtctgcaact cgaccccatg aagtcggagt cgctagtaat 1320

cgcagatcag caacgctgcg gtgaatacgt tcccggggct tgtacacacc gcccgtcaag 1380

tcatgaaagt cggtaacacc cgaagccggt ggcctaaccc cttgtgggag ggagctgtcg 1440

aaggtgggac cggtaattag gactaagtcg taacaaggt 1479

<210> 1918
<211> 1562
<212> DNA
<213> Tetragenococcus halophilus

<400> 1918
tcaagatgag agtttgatcc tggctcagga cgaacgctgg cggcgtgcct aatacatgca 60

agtcgaacgc tgcttaagaa gaaacttcgg ttttttctta agtggagtgg cggacgggtg 120

agtaacacgt ggggaaccta tccatcagcg ggggataaca cttggaaaca ggtgctaata 180

ccgcatacgg ctttttttca cctgaaagaa agctcaaagg cgctttacag cgtcactgat 240

ggctggtccc gcggtgcatt agccagttgg tgaggtaacg gctcaccaaa gcaacgatgc 300

atagccgacc tgagagggtg atcggccaca ctgggactga gacacggccc agactcctac 360

gggaggcagc agtagggaat cttcggcaat ggacgcaagt ctgaccgagc aacgccgcgt 420

gagtgaagaa ggttttcgga tcgtaaagct ctgttgtcag caaagaacag gagaaagagg 480

aaatgctttt tccatgacgg tagctgacca gaaagccacg gctaactacg tgccagcagc 540

cgcggtaata cgtaggtggc aagcgttgtc cggatttatt gggcgtaaag cgagcgcagg 600

cggtgattta agtctgatgt gaaagccccc agctcaactg gggagggtca ttggaaactg 660

gatcacttga gtgcagaaga ggagagtgga attccatgtg tagcggtgaa atgcgtagat 720

atatggagga acaccagtgg cgaaggcggc tctctggtct gtaactgacg ctgaggctcg 780

aaagcgtggg tagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg 840

ctaagtgttg gagggtttcc gcccttcagt gctgcagtta acgcattaag cactccgcct 900

ggggagtacg accgcaaggt tgaaactcaa aggaattgac gggggcccgc acaagcggtg 960

gagcatgtgg tttaattcga agcaacgcga agaaccttac caggtcttga catcctttga 1020

ccgccctaga gatagggttt ccccttcggg ggcaaagtga caggtggtgc atggttgtcg 1080

tcagctcgtg tcgtgagatg ttgggttaag tcccgtaacg agcgcaaccc ttattgttag 1140

ttgccagcat tgagttgggc actctagcaa gactgccggt gacaaaccgg aggaaggcgg 1200

ggatgacgtc aaatcatcat gcccccttatg acctgggcta cacacgtgct acaatgggaa 1260

gtacaacgag caagccaagc cgcaaggcct agcgaatctc tgaaagcttc tctcagttcg 1320

gattgcaggc tgcaactcgc ctgcatgaag ccggaatcgc tagtaatcgc ggatcagcat 1380

gccgcggtga atccgttccc gggccttgta cacaccgccc gtcacaccac gagagtttgt 1440

aacacccaaa gtcggtgcgg caacccttag gggagccagc cgcctaaggt gggacgaatg 1500

attggggtga agtcgtaaca aggtagccgt atcggaaggt gcggctggat cacctccttt 1560

ct 1562

<210> 1919
<211> 1492
<212> DNA
<213> Tetragenococcus koreensis

<400> 1919
ctcaggacga acgctggcgg cgtgcctaat acatgcaagt cgaacgctgc ttcgatcgaa 60

acttcggttt cttttgaagc ggagtggcgg acgggtgagt aacacgtggg gaacctatcc 120

atcagcgggg gataacactt ggaaacaggt gctaataccg cataaggctt tctttcgcct 180

gaaagaaagc taaaaggcgc tttttgcgtc actgatggct ggtcccgcgg tgcattagcc 240

agttggtgag gtaacggctc accaaagcaa cgatgcatag ccgacctgag agggtgatcg 300

gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagta gggaatcttc 360

ggcaatggac gaaagtctga ccgagcaacg ccgcgtgagt gaagaaggtt ttcggatcgt 420

aaagctctgt tgtcagtaaa gaacaggaaa aagaggcaat gctttttcta tgacggtagc 480

tgaccagaaa gccacggcta actacgtgcc agcagccgcg gtaatacgta ggtggcaagc 540

gttgtccgga tttattgggc gtaaagcgag cgcaggcggt gatttaagtc tgatgtgaaa 600

gcccccggct caaccgggga gggtcattgg aaactggatc acttgagtgc agaagaggag 660

agtggaattc catgtgtagc ggtgaaatgc gtagatatat ggaggaacac cagtggcgaa 720

ggcggctctc tggtctgtaa ctgacgctga ggctcgaaag cgtgggtagc aaacaggatt 780

agataccctg gtagtccacg ccgtaaacga tgagtgctaa gtgttggagg gtttccgccc 840

ttcagtgctg cagttaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa 900

actcaaagga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgaagca 960

acgcgaagaa ccttaccagg tcttgacatc ctttgaccac gcgagagatc gcgtttcccc 1020

ttcgggggca aagtgacagg tggtgcatgg ttgtcgtcag ctcgtgtcgt gagatgttgg 1080

gttaagtccc gcaacgagcg caacccttat tgttagttgc cagcattcag ttgggcactc 1140

tagcaagact gccggtgaca aaccggagga aggtggggat gacgtcaaat catcatgccc 1200

cttatgacct gggctacaca cgtgctacaa tgggaagtac aacgagcaag ccaagccgca 1260

aggccgcgcg aatctctgaa agcttctctc agttcggatt gcaggctgca actcgcctgc 1320

atgaagccgg aatcgctagt aatcgcggat cagcatgccg cggtgaatcc gttcccgggc 1380

cttgtacaca ccgcccgtca caccacgaga gtttgtaaca cccaaagtcc ggtgcggcaa 1440

cctcattaga ggagccagcc gcctaaggtg ggatgaatga ttggggtgaa gt 1492

<210> 1920
<211> 1454
<212> DNA
<213> Thermoanaerobacter pseudethanolicus

<400> 1920
agttgagtgc cggatagcgg cggacgggtg agtaacgcgt gggcaaccta cccttaagac 60

cgggataaca cctcgaaagg ggtgctaata ctggataagc tccttgtagg gcatcctatg 120

aggagggaag gtagcgggag ctaccgctta aggatgggcc cgcgtcccat cagctagttg 180

gtagggtaac ggcctaccaa ggcgacgacg ggtagccggc ctgagagggt ggtcggccac 240

actgggactg agacacggcc cagactccta cgggaggcag cagtggggaa tcttgcgcaa 300

tgggcgaaag cctgacgcag cgacgccgcg tgagcgagga aggccttcgg gtcgtaaagc 360

tcgatagtgt gggaagaagg gatgacggta ccacacgaaa gccccggcta actacgtgcc 420

agcagccgcg gtaagacgta gggggcgagc gttgtccgga attactgggc gtaaagggcg 480

cgtaggcggc cgttcaagtc aggtgtaaaa tacccgggct caacccgggg atagcacttg 540

aaactgggcg gctagagggc aggagagggg agtggaattc ccggtgtagc ggtgaaatgc 600

gtagatatcg ggaggaatac cagtggcgaa ggcgactctc tggactgacc ctgacgctga 660

ggcgcgaaag cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga 720

tgggtactag gtgtgggatg cggaagcatt ccgtgccgta gttaacgcaa taagtacccc 780

gcctggggag tacggccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc 840

ggtggagcat gtggtttaat tcgaagcaac gcgaagaacc ttaccagggc ttgacatgca 900

ggtagtagcg agccgaaagg tgagcgacct taccttaaag gtgaggagcc tgcacaggtg 960

gtgcatggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1020

acccctgcct ctagttgcca gcgggtgaag ccgggcactc tagagggact gccgtggaca 1080

acacggagga aggtggggat gacgtcaaat catcatgccc tatatgccct gggccacaca 1140

cgtgctacaa tggccggtac agagggaagc gaagccgcga ggtggagcga aacccaaaaa 1200

gccggtccaa gttcggattg caggctgcaa ctcgcctgca tgaagtcgga atcgctagta 1260

atcgcggatc agcatgccgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1320

accacgagag tctgcaacac ccgaagccgg tgacccaacc gggaaggagg gagccgtcga 1380

aggtggggca gatgattggg gtgaagtcgt aacaaggtag ccgtatcgga aggtgcggct 1440

ggatcacctc cttt 1454

<210> 1921
<211> 1542
<212> DNA
<213> Thermobifida fusca

<400> 1921
ggagagtttg atcctggctc aggacgaacg ctggcggcgt gcttaacaca tgcaagtcga 60

gcggtaaggc cccttcgggg gtacacgagc ggcgaacggg tgagtaacac gtgagtaacc 120

tgcccctgac tctgggataa gcctgggaaa ctgggtctaa taccggatat gacctcgtgc 180

cgcatggtgt ggggtggaaa ggtgtttttc cggtcaggga tgggctcgcg gcctatcagc 240

ttgttggtgg ggtaacggcc taccaaggcg atgacgggta gccggcctga gagggcgacc 300

ggccacactg ggactgagac acggcccaga ctcctgcggg aggcagcagt ggggaatatt 360

gcgcaatggg cggaagcctg acgcagcgac gccgcgtggg ggatgaaggc cttcgggttg 420

taaacctctt ttaccactca cgaaggcccc tggttttctg ggggttgacg gtaggtggtg 480

aataaggacc ggctaactac gtgccagcag ccgcggtaat acgtagggtc cgagcgttgt 540

ccggaattat tgggcgtaaa gagctcgtag gcggcctgtc gcgtctgctg tgaaagtccg 600

gggcttaact ccgggtgtgc agtggatacg ggcaggcttg aggtaggtag gggagactgg 660

aattcctggt gtagcggtga aatgcgcaga tatcaggagg aacaccggtg gcgaaggcgg 720

gtctctgggc cttacctgac gctgaggagc gaaagcgtgg ggagcgaaca ggattagata 780

ccctggtagt ccacgccgta aacgttgggc gctaggtgtg gggactttcc acggtttccg 840

tgccgtagct aacgcattaa gcgccccgcc tggggagtac ggccgcaagg ctaaaactca 900

aaggaattga cgggggcccg cacaagcggc ggagcatgtt gcttaattcg acgcaacgcg 960

aagaacctta ccaaggcttg acatcaccgg taatcctcca gagatggggg gtccttcggg 1020

gatcggtgac aggtggtgca tggctgtcgt cagctcgtgt cgtgagatgt tgggttaagt 1080

cccgcaacga gcgcaacccc tgtcccatgt tgccagcacg tggtggtggg gactcatggg 1140

agactgccgg ggtcaactcg gaggaaggtg gggatgacgt caagtcatca tgcccccttat 1200

gccttgggct gcaaacatgc tacaatggcc ggtacagagg gcgtgcgatg tcgtgaggcg 1260

gagcgaatct cttaaagccg gtctcagttc ggattggggt ctgcaactcg accccatgaa 1320

ggtggagtcg ctagtaatcg cggatcagca acgccgcggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcacgtc acgaaagtcg gcaacacccg aaacacgtgg cctaaccctt 1440

tgtgggggggg agcgtgtgaa ggtggggctg gcgattggga cgaagtcgta acaaggtagc 1500

cgtaccggaa ggtgcggctg gatcacctcc tttctaagga gc 1542

<210> 1922
<211> 1503
<212> DNA
<213> Thermofilum pendens

<400> 1922
actccggttg atcctgccgg acccgaccgc tatcggggtg gggctaaccc atggaagtct 60

aggagccggg gctacggccg gctccggcgg acggctcagt agcacgtggc taacctaccc 120

tcgggagggg gataaccccg ggaaactggg gataaacccc cataggcgcg gacacctgga 180

atgggtccgc gctgaaaggg ccacggtacc atgcttaccg tggccgcccg aggatggggc 240

tgcgccctat caggtagttg gcggggtaac ggcccgccaa gccgataacg ggtgggggcc 300

gtgagagcgg gagccccgag atgggcactg agacaagggc ccaggcccta cggggtgcac 360

caggggcgaa acttccgcaa tgcgggaaac cgtgacggag tcaccccgag tgccacccga 420

agagggtggc ttttgcccgg tctaaaaagc cgggcgaata agcgggggggc aagcttggtg 480

tcagccgccg cggtaatacc aaccccgcga gtggtcggga cgtttattgg gcctaaagcg 540

tccgtagccg gcccggtaag tccctcctta aagcccacgg ctcaaccgtg ggagcggagg 600

gatactgccg ggctaggggg cgggagaggc cgggggtact cctggggtag gggcgaaatc 660

ctataatccc aggaggacca ccagtggcga aggcgcccgg ctagcacgcg cccgacggtg 720

agggacgaaa gctgggggag caaaggggat tagatacccc cgtagtccca gctgtaaacg 780

atgcgggcta ggtgttggac gggcttcgag cccgtccagt gccgtaggga agccgttaag 840

cccgccgcct ggggagtacg gccgcaaggc tgaaacttaa aggaattggc gggggagcac 900

cacaaggggt gaagcttgcg gtttaattgg agtcaacgcc ggaaacctta ccgggggcga 960

cagcaggatg aaggccaggc tgacgacctt gccagacgag ctgagaggag gtgcatggcc 1020

gtcgccggct cgtgccgtga ggtgtcctgt taagtcaggg aacgagcgag acccccgccc 1080

ctagttgcta cccagccctt cggggctggg gcactctagg gggactgccg gcgataagcc 1140

ggaggaaggt gggggctacg gcaggtcagt atgccccgaa acccccgggc tacacgcgag 1200

ctgcaatggc ggggacagcg ggttccgacc ccgaaagggg gaggtaatcc cttaaacccc 1260

gcctcagtag gaatcgaggg ctgcaactcg ccctcgtgaa cgtggaatcc ctagtaaccg 1320

cgtgtcacca acgcgcggtg aatacgtccc tgctccttgc acacaccgcc cgtcgctcca 1380

cccgagggag gcctaggtga ggcctcctgc cgacgaggtg ggaggtcgaa cctgggcctc 1440

ccaaggggg agaagtcgta acaaggtggc cgtaggggaa cctgcggccg gatcacctcc 1500

ttt 1503

<210> 1923
<211> 1470
<212> DNA
<213> Thermus aquaticus

<400> 1923
gctcagggtg aacgctggcg gcgtgcctaa gacatgcaag tcgtgcgggc cgtggggtat 60

ctcacggtca gcggcggacg ggtgagtaac gcgtgggtga cctacccgga agaggggac 120

aacatgggga aacccaggct aatcccccat gtggacacat cctgtggggt gtgtttaaag 180

ggttttgccc gcttccggat gggcccgcgt cccatcagct agttggtggg gtaagagccc 240

accaaggcga cgacgggtag ccggtctgag aggacggccg gccacagggg cactgagaca 300

cgggccccac tcctacggga ggcagcagtt aggaatcttc cgcaatgggc gcaagcctga 360

cggagcgacg ccgcttggag gaggaagccc ttcggggtgt aaactcctga acccgggacg 420

aaacccccga tgaggggact gacggtaccg gggtaatagc gccggccaac tccgtgccag 480

cagccgcggt aatacggagg gcgcgagcgt tacccggatt tactgggcgt aaagggcgtg 540

taggcggctt ggggcgtccc atgtgaaagg ccacggctca accgtggagg agcgtgggat 600

acgctcaggc tagacggtgg gagagggtgg tggaattccc ggagtagcgg tgaaatgcgc 660

agataccggg aggaacgccg atggcgaagg cagccacctg gtccactcgt gacgctgagg 720

cgcgaaagcg tggggagcaa accggattag atacccgggt agtccacgcc ctaaacgatg 780

cgcgctaggt ctctgggtta tctgggggcc gaagctaacg cgttaagcgc gccgcctggg 840

gagtacggcc gcaaggctga aactcaaagg aattgacggg ggcccgcaca agcggtggag 900

catgtggttt aattcgaagc aacgcgaaga accttaccag gccttgacat gctagggaac 960

ctgggtgaaa gcctggggtg ccccgcgagg ggagccctag cacaggtgct gcatggccgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctgccgtt 1080

agttgccagc gggtgaagcc gggcactcta acgggactgc ctgcgaaagc aggaggaagg 1140

cggggacgac gtctggtcat catggccctt acggcctggg cgacacacgt gctacaatgc 1200

ccactacaga gcgaggcgac ctggcaacag ggagcgaatc gcaaaaaggt gggcgtagtt 1260

cggattgggg tctgcaaccc gaccccatga agccggaatc gctagtaatc gcggatcagc 1320

catgccgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacgc catgggagcg 1380

ggttctaccc gaagtcgccg ggagccttag ggcaggcgcc gagggtaggg cccgtgactg 1440

gggcgaagtc gtaacaaggt agctgtaccg 1470

<210> 1924
<211> 1400
<212> DNA
<213> Tissierella praeacuta

<400> 1924
ggctcaggac gaacgctggc ggcgtgccta acacatgcaa gtcgagcgaa gtttttaaag 60

aagatttctt cggaatgaaa ctttaattat cttagcggcg gacgggtgag taacgcgtga 120

gaaacctgcc ttttacaaag ggatagcctc gggaaactgg gattaatacc ttatgacact 180

gtcgcatgag atttaagtca aagcgtaaag cggtaaaaga tggtctcgcg tcccattagt 240

tagttggtga ggtaaaggct caccaagaca gcgatgggta gccggcctga gagggtgaac 300

ggccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatgga ggaaactctg atgcagcgac gccgcgtgaa cgatgaaggc tttcgggtcg 420

taaagttctg tcctaaggga cgataatgac ggtaccttag gaggaagccc cggctaacta 480

cgtgccagca gccgcggtaa tacgtagggg gcaagcgttg tccggattta ttgggcgtaa 540

agggtgcgta ggcggccttt taagtcagat gtgaaagatc acggctcaac cgtggtaagc 600

atttgaaact gaaaggcttg agttaaggag aggaaagtgg aattcctagt gtagcggtga 660

aatgcgtaga tattaggagg aataccagtg gcgaaggcga ctttctggac ttatactgac 720

gctgaggcac gaaagcgtgg ggagcgaaca ggattagata ccctggtagt ccacgccgta 780

aacgatgagt gctaggtgtt gggggtcaaa cctcggtgcc gcagctaacg cattaagcac 840

tccgcctggg gagtacgtac gcaagtatga aactcaaagg aattgacggg gacccgcaca 900

agcagcggag catgtggttt aattcgaagc aacgcgaaga accttaccag ggcttgacat 960

gcccctgacc gtcctagaga tagggcttta ccttcgggta caggggacac aggtggtgca 1020

tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct 1080

tgcctttagt tgctaacaga taagctgagc actctagagg gactgccgat gacaaatcgg 1140

aggaaggtgg ggatgacgtc aaatcatcat gccctttatg tcctgggcta cacacgtgct 1200

acaatggtcg gtacaacgag cagctactta gcgataagat gctaatctct taaagccgat 1260

cccagttcgg attgcaggct gcaactcgcc tgcatgaagt cggagttgct agtaatcgcg 1320

gatcagaatg tcgcggtgaa tgcgttcccg ggtcttgtac acaccgcccg tcacaccatg 1380

ggagttggca atacccgaag 1400

<210> 1925
<211> 1441
<212> DNA
<213> Trabulsiella guamensis

<400> 1925
acgctggcgc agccttacac atgcaagtcg agcggcagcg ggggaaagct gctttcccgc 60

cggcgagcgg cggacgggtg agtaatgtct gggaaactgc ctgatggagg gggataacta 120

ctggaaacgg tagctaatac cgcataacgt cttcggacca aagtgggggа ccttcgggcc 180

tcatgccatc agatgtgccc agatgggatt agctagtagg tggggtaacg gctcacctag 240

gcgacgatcc ctagctggtc tgagaggatg accagccaca ctggaactga gacacggtcc 300

agactcctac gggaggcagc agtggggaat attgcacaat gggcgcaagc ctgatgcagc 360

catgccgcgt gtatgaagaa ggccttcggg ttgtaaagta ctttcagcgg ggaggaaggt 420

gttgtggtta ataaccagag caattgacgt tacccgcaga agaagcaccg gctaactccg 480

tgccagcagc cgcggtaata cggagggtgc aagcgttaat cggaattact gggcgtaaag 540

cgcacgcagg cggtctgtca agtcggatgt gaaatccccg ggctcaacct gggaactgca 600

tccgaaactg gcaggcttga gtcttgtaga ggggggtaga attccaggtg tagcggtgaa 660

atgcgtagag atctggagga ataccggtgg cgaaggcggc cccctggaca aagactgacg 720

ctcaggtgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc cacgccgtaa 780

acgatgtcga cttggaggtt gtgcccttga ggcgtggctt ccggagctaa cgcgttaagt 840

cgaccgcctg gggagtacgg ccgcaaggtt aaaactcaaa tgaattgacg gggcccgca 900

caagcggtgg agcatgtgtt ttaatttcga tgcaacgcga agaaccttac ctggtcttga 960

cacccacaga accctgtaga gatacggggg tgccttcggg aactgtgaga caggtgctgc 1020

atggctgtcg tcagctcgtg ttgtgaaatg ttgggttaag tcccgcaacg agcgcaaccc 1080

ttatcctttg ttgccagcgg tccggccggg aactcaaagg agactgccag tgataaactg 1140

gaggaaggtg gggatgacgt caagtcatca tggcccttac gaccagggct acacacgtgc 1200

tacaatgcat atacaagaga agcgacctcg cgagagcaag cggcctcata aagtatgtcg 1260

tagtccggat tggagtctgc aactcgactc catgaagtcg gaatcgctag taatcgtgga 1320

tcagaatgcc acggtgaata cgttcccggg ccttgtacac accgcccgtc acaccatggg 1380

agtgggttgc aaaagaagta ggtagcttaa ccttcgggag ggcgcttacc acttgtgatt 1440

a 1441

<210> 1926
<211> 1543
<212> DNA
<213> Treponema denticola

<400> 1926
tggagagttt gatcctggct cagaacgaac gctggcggcg cgtcttaagc atgcaagtcg 60

aacggtaagg gagagcttgc tctcccctag agtggcggac tggtgagtaa cgcgtgggtg 120

acctgccctg aagatgggga tagctagtag aaatattaga taataccgaa tgtgctcatt 180

tacataaagg taaatgagga aaggagctac ggctccgctt caggatgggc ccgcgtccca 240

ttagctggtt ggtgaggtaa aggctcacca aggcaacgat gggtatccgg cctgagaggg 300

tgaacggaca cattgggact gagatacggc ccaaactcct acgggaggca gcagctaaga 360

atcttccgca atggacgaaa gtctgacgga gcgacgccgt gtgaatgaag aaggccgaaa 420

ggttgtaaaa ttcttttgca gatgaagaat aagaagaaga gggaatgctt ctttgatgac 480

ggtagtcatg cgaataagcc ccggctaatt acgtgccagc agccgcggta acacgtaagg 540

ggcgagcgtt gttcggaatt attgggcgta aagggtatgt aggcggttag gtaagcctgg 600

tgtgaaatct acgagctcaa ctcgtaaact gcattgggta ctgcttgact tgaatcacgg 660

aggggaaacc ggaattccaa gtgtaggggt ggaatctgta gatatttgga agaacaccgg 720

tggcgaaggc gggtttctgg ccgatgattg acgctgatat acgaaggtgc ggggagcaaa 780

caggattaga taccctggta gtccgcacag taaacgatgt acactaggtg tcggggcaag 840

agcttcggtg ccgacgcaaa cgcattaagt gtaccgcctg ggaagtatgc ccgcaagggt 900

gaaactcaaa ggaattgacg ggggcccaca caagcggtgg agcatgtggt ttaattcgat 960

gatacgcgag aaaccttacc tgggtttgac atcaagagca atgacataga gatatggcag 1020

cgtagcaata cggctcttga caggtgctgc atggctgtcg tcagctcgtg ccgtgaggtg 1080

ttgggttaag tcccgcaacg agcgcaaccc ctactgccag ttactaacag gtaaagctga 1140

ggactctggc ggaactgccg atgacaaatc ggaggaaggt ggggatgacg tcaagtcatc 1200

atggccctta cgtccagggc tacacacgtg ctacaatggt tgctacaaat cgaagcgaca 1260

ccgcgaggtc aagcaaaacg caaaaaagca atcgtagtcc ggattgaagt ctgaaactcg 1320

acttcatgaa gttggaatcg ctagtaatcg cacatcagca cggtgcggtg aatacgttcc 1380

tgggccttgt acacaccgcc cgtcacacca tccgagtcga gggtacccga agtcgctagt 1440

ctaacccgta agggaggacg gtgccgaagg tacgtttggt aaggagggtg aagtcgtaac 1500

aaggtagccg taccggaagg tgcggctgga tcacctcctt tct 1543

<210> 1927
<211> 1297
<212> DNA
<213> Treponema genomosp. P1

<400> 1927
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac gagtggcgga ctggtgagga 60

acacgtgggt aatctaccct taagatgggg atagctgtta gaaatagcag gtaataccga 120

atacagaaag tcgcttgagg atgagcttgc gtcccattag ctagttggtg aggtaacggc 180

ccaccaaggc gacgatgggt atccggcctg agagggtgaa cggacacatt gggactgaga 240

tacggcccaa actcctacgg gaggcagcag ctaagaatat tccgcaatgg acggaagtct 300

gacggagcga cgccgcgtgg atgaagaagg ctgaaaagtt gtaaaatcct tttgttgatg 360

aagatgacgg tagtcggtga ataagccccg gctaattacg tgccagcagc cgcggtaaca 420

cgtaaggggc gagcgttgtt cggaattatt gggcgtaaag ggcatgtagg cggttatgta 480

agcctgatgt gaaatcctgg ggcttaaccc cagaatagca ttgggtactg tgtaactcga 540

attacggaag ggaaactgga attccaagtg taggggtgga atctgtagat atttggaaga 600

acaccggtgg cgaaggcggg tttctggccg aattgacgct gagatgcgaa agtgtgggga 660

tcgaacagga ttagataccc tggtagtcca caccgtaaac gatgtacact aggtgttggg 720

gcttcagtgc caaagcaaac gcgataagtg taccgcctgg ggagtatgcc cgcaagggtg 780

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 840

gtacgcgagg aaccttacct gggtttgaca tcgacaggtg ctgcatggct gtcgtcagct 900

cgtgccgtga ggtgttgggt taagtcccgc aacgagcgca acccctactg ccagttacta 960

acagctgagg actctggcgg aactgccgat gacaaatcgg aggaaggtgg ggatgacgtc 1020

aagtcatcat ggcccttatg tccagggcta cacacgtgct acaatggttg ccaaagcgac 1080

gcgagaccgt aaggtggagc aaaccgcaag cgatcgtagt tcggatgaag tctgaaactc 1140

gacttcagaa gttggaatcg ctagtaatcg cgcatcagca cggcgcggtg aatacgttcc 1200

cgggccttgt acacaccgcc cgtcacacca tccgagttgg gggtacccga agtcgctgtc 1260

taggacggtg ccgaaggtac gcttggtaag gagggtg 1297

<210> 1928
<211> 1297
<212> DNA
<213> Treponema genomosp. P4 oral clone MB2_G19

<400> 1928
aacgaacgct ggcggtgcgt tttaagcatg caagtcgaac gagtggcgga ctggtgagta 60

acgcgtgggt gatctacctt taagatgggg atagctttta gaaataagag ataataccga 120

atatggaaag ccgcttgaag atgagcctgc gtcccattag ctagttggtg gggtaaaggc 180

ctaccaaggc aatgatgggt atccggcctg agagggtgac cggacacatt gggactgaga 240

tacggcccaa actcctacgg gaggcagcag ctgagaatct tccgcaatgg acgaaagtct 300

gacggagcga caccgcgtga atgatgaagg ccgaaaggtt gtaaagttct tttgcagaca 360

aagatgacgg tagtttgcga ataagccccg gctaattacg tgccagcagc cgcggtaata 420

cgtaaggggc gagcgttgtt cggaattatt gggcgtaaag ggcatgtagg cggtttagta 480

agcctgatgt gaaatctacg agcttaactc gtaaactgca ttgggtactg cttaactaga 540

gttatggagg ggaaactgga attccaagtg taggggtgga atctgtagat atttggaaga 600

acaccggtgg cgaaggcggg tttctagcca aactgacgct gatatgcgaa ggtgcgggga 660

gcaaacagga ttagataccc tggtagtccg cacagtaaac tatgtacact agatgttggg 720

gactcagtgt tgaagcaaac gcaataagtg taccgcctgg ggagtatgcc cgcaagggtg 780

aaactcaaag gaattgacgg gggcccacac aagcggtgga gcatgtggtt taattcgatg 840

atacgcgagg aaccttacct gggtttgaca tcgacaggtg ctgcatggct gtcgtcagct 900

cgtgccgtga ggtgttgggt taagtcccgc aacgagcgca acccctactg ccagttacta 960

acagctgagg actctggcgg aactgccggt gataaaccgg aggaaggtgg gggtgacgtc 1020

aagtcatcat ggcccttatg tccagggcta cacacgtgct acaatggttg tcaaagtgat 1080

gcgaagtcgc gagacggagc gaaacgcatg caatcgtagt ccggatggaa tctgaaacct 1140

gattccagaa gctggaatcg ctagtaatcg catatcagca cgatgcggtg aatacgttcc 1200

tgggccttgt acacaccgcc cgtcacacca tccgagtcga gggtacccga agatgctgtc 1260

taggacggtg gcgaaggtac gtttggtaag gagggtg 1297

<210> 1929
<211> 1297
<212> DNA
<213> Treponema genomosp. P5 oral clone MB3_P23

<400> 1929
aacgaacgct ggcggtgcgt cttaagcatg caagtcgaac gagtggcgga ctggtgagta 60

acgcgtggat gatctacctt tgagatgggg atagcttcta gaaataggag gtaataccga 120

ataacaaaag ccgctcgaag atgagtctgc gtcccattag ctagttggtg aggtaaaggc 180

ccaccaaggc gacgatgggt acccggcctg agagggtgaa cgggcacatt gggactgaga 240

tacggcccaa actcctacgg gaggcagcag ctgagaatct tccgcaatgg acgaaagtct 300

gacggagcga caccgcgtga acgatgaagg ccggaaggtt gtaaagttct tttgcagaca 360

aagatgacgg tagtttgcga ataagccccg gctaattacg tgccagcagc cgcggtaata 420

cgtaaggggc gagcgttgtt cggaattatt gggcgtaaag ggcatgtagg cggttaggta 480

agcctgatgt gaaatgtatg agcttaactc ataaactgca ttgggtactg cttgacttga 540

atcatggagg ggaaactgga attccaagtg taggggtgga atctgtagat atttggaaga 600

acaccggtgg cgaaggcggg tttctagcca aattgacgct aaggtgcgag ggtgcgggga 660

gcaaacagga ttagataccc tggtagtccg cacagtaaac gatgtacact aggtgttggg 720

gactcagtgc cggagcaaac gcaataagtg taccgcctgg ggagtatgcc cgcaagggtg 780

aaactcaaag gaattgacgg gggcccacac aagcggtgga gcatgtggtt taattcgatg 840

atacgcgagg aaccttacct gggtttgaca tcgacaggtg ctgcatggct gtcgtcagct 900

cgtgccgtga ggtgttgggt taagtcccgc aacgagcgca acccctactg ccagttacta 960

acagctgagg actcaggcgg aactgccggt gatataccgg aggaaggtgg ggatgacgtc 1020

aagtcatcat ggcccttatg tccagggcta cacacgtgct acaatggttg tcaaagtgag 1080

gcgaagccgc gaggttaagc gaatcgcaag caatcgtagt ccggatggaa tctgaaacct 1140

gattccagaa gctggaatcg ctagtaatcg catatcagca cgatgcggtg aatacgttcc 1200

tgggccttgt acacaccgcc cgtcacacca tccgagtcga aggtacccga agatgctgtc 1260

taggacggtg gcgaaggtac gtttggtaag gagggtg 1297

<210> 1930
<211> 1297
<212> DNA
<213> Treponema genomosp. P6 oral clone MB4_G11

<400> 1930
aacgaacgct ggcggtgcgt tttaagcttg caagtcgaac gagtggcgga ctggtgagta 60

acgcgtaggt gatctacctt taagactggg acagccttta gaaataaggg gtaataccgg 120

atgtgggaag ccgcttagag atgagcctgc gtcccattag ctagttggta aggtaacggc 180

ctaccaaggc gatgatgggt atccgacctg agagggtgat cggacacatt gggactgaga 240

tacggcccaa actcctacgg gaggcagcag ctgagaatct tccgcaatgg acgaaagtcg 300

gacggagcga caccgcgtga atgatgaagg ccgaagggtt gtaaagttct tttgcagaca 360

aagatgacgg tagtttgcga ataagccccg gctaattacg tgccagcagc cgcggtaata 420

cgtaaggggc gagcgttgct cggaattatt gggcgtaaag ggcatgtagg cggttgggta 480

agcctgatgt gaaatctacg agcttaactc gtaaactgca ttgggtactg ctcatcttga 540

atcatagagg gggaactgga attccaagtg taggggtgga atctgtagat atttggaaga 600

acaccggtgg cgaaggcggg ttcctagcta aattgacgct gatgtgcgaa ggtgcgggga 660

gcaaacagga ttagataccc tggtagtccg ctcagtaaac gatgtacact aggtgttggg 720

gactcagtgc cggcgcaaac gcaataagtg taccgcctgg ggagtatgcc cgcaagggtg 780

aaactcaaag gaattgacgg gggcccacac aagcggtgga gcatgtggtt taattcgatg 840

atacgcgagg aaccttacct gggtttgaca tcgacaggtg cagcatggct gtcgtcagct 900

cgtgccgtga ggtgttgggt taagtcccgc aacgagcgca acccctactg ccagttacta 960

acagctgagg actctggcgg aactgccggt gataaaccgg aggaaggtgg ggatgacgtc 1020

aagtcatcat ggcccttatg tccagggcta cacacgtgct acaatggttg tcaaagtgat 1080

gcgaagtcgc gagacggagc gaaacgcatg caatcgtagt ccggatggaa tctgaaacct 1140

gattccagaa gctggaatcg ctagtaatcg catatcagca cgatgcggtg aatacgttcc 1200

tgggtcttgt acacaccgcc cgtcacacca tccgagtcga gggtacccga agatgctgtc 1260

taggacggtg gcgaaggtac gtttggtaag gagggtg 1297

<210> 1931
<211> 1479
<212> DNA
<213> Treponema lecithinolyticum

<220>
<221> modified_base
<222> (897)..(897)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1440)..(1440)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1449)..(1449)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1458)..(1458)
<223> a, c, t, g, unknown or other

<400> 1931
aacgaacgct ggcggcgcgt cttaaacatg caagtcgaac ggtaaggaag gagcttgctc 60

ctttctgaga gtggcggact ggtgagtaac acgtgggtga catacctttt agatggggat 120

agctattaga aatagtaggt aataccgaat gtgaccgtat ctgttagagg gatacgagga 180

aaggagctaa ggcttcgcta aaagaatggc ccgcggccca ttatgctcgt tggtgaggta 240

acggcccacc aaggcgatga tgggtatccg gcctgagagg gtggacggac acattgggac 300

tgagatacgg cccagacttc tacgggaggc agcagttaag aatattccgc aatggacgaa 360

agtctgacgg agcgacgccg cgtggatgaa gaatgccgaa aggttgtaaa atccttttaa 420

gcctgaggaa taagcacagt agggaatgat tgtgtggtga ctgtagggct tgaataagca 480

ccggcaaatt acgtgccagc agccgcggta acacgtaagg tgcgagcgtt gttcggaatt 540

attgggcgta aagggcatgt aggcggatga gcaagcttgg tgtgaaatgc tacagcttaa 600

ctgtgggaca gcattgagaa ctgcacatct tgaattactg aagggtaact agaattccac 660

gtgtaggggt gaaatctgta gatatgtgga agaataccaa tggcgaaggc aagttaccgg 720

cagataattg acgctgaggt gcgaaagtgc ggggagcgaa caggattaga taccctggta 780

gtccgcacag taaacgatgt acactaggtg tctggcaaca aagctgggtg ccaaagcaaa 840

cgtggtaagt gtaccgcctg gggagtatgc ccgcaagggt gaaactcaaa ggaattnacg 900

ggggcccgca caagcggtgg agcatgtggt ttaattcgat ggtacgcgag gaaccttacc 960

tgggtttgac atagtactta agttcgtaga gatacggatg cgtagcaata cgaagtacaa 1020

caggtgctgc atggctgtcg tcagctcgtg ccgtgaggtg ttgggttaag tcccgcaacg 1080

agcgcaaccc ctactgccag ttactaacag gtaatgcttg aggactctgg cggaactgcc 1140

ggtgacaaac cggaggaagg tggggatgac gtcaagtcat catggccctt atgtccaggg 1200

ctacacacgt gctacaatgg tagcgacaga gtgaagcgaa gccgcgaggt ggagcaaaac 1260

gcagaaaagc tatcgtagtt cggattggag tctgaaactc gactccatga agttggaatc 1320

gctagtaatc gcatatcagc acgatgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcacacc atccgagtag agggtacccg aagtcggtag tctaaccgca aggaggacgn 1440

tgccgaagnt atgctttnta aggagggtga agtcgtaac 1479

<210> 1932
<211> 1548
<212> DNA
<213> Treponema pallidum

<400> 1932
atggagagtt tgatcctggc tcagaacgaa cgctggcggt gcgttttaag catgcaagtc 60

gaacggcaag gaagcgaatt ttcgtttctc tagagtggcg gactggtgag taacgcgtgg 120

gtaatctgcc tttgagatgg ggatagcctc tagaaatagg gggtaatacc gaatacgctc 180

ttttggacgt aggtctttga gaggaaaggg gctgcggcct cgctcagaga tgagcctgcg 240

acccattagc ttgttggtgg ggtaatggcc taccaaggcg tcgatgggta tccgacctga 300

gagggtgacc ggacacactg ggactgagat acggcccaga ctcctacggg aggcagcagc 360

taagaatatt ccgcaatggg cgaaagcctg acggagcgac accgcgtgga tgaggaaggt 420

cgaaagattg taaagttctt ttgccgacga agaatgagga cgggagggaa tgcccgtttg 480

atgacggtag tcgtgcgaat aagccccggc taattacgtg ccagcagccg cggtaacacg 540

taaggggcga gcgttgttcg gaattattgg gcgtaaaggg catgcaggcg gactggtaag 600

cctggtgtga aatccccgag ctcaacttgg gaactgcact gggtactgct ggtctagaat 660

cacggagggg aaaccggaat tccaagtgta ggggtggaat ctgtagatat ttggaagaac 720

accggtggcg aaggcgggtt tctggccgat gattgacgct gaggtgcgaa ggtgtgggga 780

gcgaacagga ttagataccc tggtagtcca cacagtaaac gatgtacact aggtgttggg 840

gcatgagtct cggcgccgac gcgaacgcat taagtgtacc gcctggggag tatgctcgca 900

agagtgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagcat gtggtttaat 960

tcgatgatac gcgaggaacc ttacccgggt ttgacatcaa gaggagcgcc gtagaaatgc 1020

ggtggcgtag cgatacgcct cttgacaggt gctgcatggc tgtcgtcagc tcgtgccgtg 1080

aggtgttggg ttaagtcccg caacgagcgc aacccctact gccagttgcc agcaagtggt 1140

gttggggact ctggcggaac tgccggtgac aaaccggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttatgtcc ggggctacac acgtgctaca atggttgcta cagagcgatg 1260

cgaggttgtg aagtggagca aaccgcaaaa aggcaatcgt agtccggatt gaagtctgaa 1320

actcgacttc atgaagttgg aatcgctagt aatcgcacat cagcatggtg cggtgaatgt 1380

gttcccgggc cttgtacaca ccgcccgtca caccatccga gttggagata cccgaagtca 1440

ctagcctaac ccgcaaggga gggcggtgcc gaaggtatgt ttggtaagga gggtgaagtc 1500

gtaacaaggt agccgtaccg gaaggtgcgg ctggatcacc tcctttct 1548

<210> 1933
<211> 1485
<212> DNA
<213> Treponema parvum

<400> 1933
gctcagaacg aacgctggcg gcgcgtctta agcatgcaag tcgaacggca agaggaaagc 60

ttgcttttct cctagagtgg cggactggtg agtaacacgt gggtgacgaa ccctcctgac 120

agggatagct ggtagaaata tcagataata ccggatacga actctatagt tagagtatag 180

agaggaaagg tgctttggca ccgcaggggg atcggctcgc ggcctatcag ctagttggca 240

gggtaaaggc ctgccaaggc gacgacgggt atccggcctg agagggtgga cggacacatt 300

gggactgaga tacggcccag actcctacgg gaggcagcag ctaagaatat tccgcaatgg 360

gcgaaagcct gacggagcga cgccgcgtgg acgatgaagg ccgaaaggtt gtaaagtcct 420

tttgaacctg aagaataagt ttaagaggga atgcttaagc ggtgacagaa aggtttgaat 480

aagcaacggc taattacgtg ccagcagccg cggtaacacg taagttgcga gcgttgttcg 540

gaattattgg gcgtaaaggg catctaggcg gtcattcaag cttggtgtga aataccgggg 600

cttaactccg gggctgcatt gagaactgga tgactggagt cactgaaggg caaccagaat 660

tccaggtgta ggggtgaaat ctgtagatat ctggaagaat accaatggcg aaggcaggtt 720

accggcagat gactgacgct gaagtgcgaa ggtgcgggga gcaaacagga ttagataccc 780

tggtagtccg cacagtcaac aatgtacact cggtgtccgg ccaagaggct gggtgccaaa 840

gcaaacgcga taagtgtacc gcctggggag tatgcccgca agggtgaaac tcaaaggaat 900

tgacgggggc ccgcacaagc ggtggagcat gtggtttaat tcgatggtac gcgaggaacc 960

ttacctgggt ttgacataca cagcgatcat atagagatat gtgagcgtag caatacggct 1020

gtgaacaggt gctgcatggc tgtcgtcagc tcgtgccgtg aggtgttggg ttaagtcccg 1080

caacgagcgc aacccctact gccagttacc agcatgtaaa gatggggact ctggcggaac 1140

tgccggtgac aaaccggagg aaggtgggga tgacgtcaag tcatcatggc ccttatgtcc 1200

agggcaacac acgtgctaca atggtcgcga cagagtgaag cgaagtcgag aggcgaagca 1260

aaacgcataa aagcgatcgt agtccggatt ggagtctgaa acccgactcc atgaagttgg 1320

aatcgctagt aatcgcacat cagcacggtg cggtgaatac gttcccgggc cttgtacaca 1380

ccgcccgtca caccatccga gtaaaggata cccgaagcca gtggttcaac cgcaaggagg 1440

gcgctgtcga aggtatgctt gtaaggggg gtgaagtcgt aacaa 1485

<210> 1934
<211> 1547
<212> DNA
<213> Treponema phagedenis

<400> 1934
tggagagttt gatcctggct cagaacgaac gctggcggcg cgtcttaagc atgcaagtcg 60

aacggcaagg gaggagcttg cttctcccct agagtggcgg actggtgagt aacgcgtggg 120

tgatctaccc ttaagatggg gatagctcct agaaatagga ggtaataccg aatacgctta 180

tacggataaa gccgtataag gaaaggaggc tgcggccttg cttgaggatg agcccgcgtc 240

ccattatgct tgttggtgag gtaacggctt accaaggcga cgatgggtat ccggcctgag 300

agggtggacg gacacattgg gactgagata cggcccaaac tcctacggga ggcagcagct 360

aagaatattc cgcaatggac ggaagtctga cggagcgacg ccgcgtggac gaagaaggcc 420

gaaaggttgt aaagttcttt tgccgatgaa gaataagagg atgagggaat gcgtccttga 480

tgacggtagt cgagcgaata agccccggct aattacgtgc cagcagccgc ggtaacacgt 540

aaggggcgag cgttgttcgg aattattggg cgtaaagggc acgcaggcgg gttggtaagc 600

ctgatgtgaa atactcaagc ttaacttgag aattgcattg ggtactgcca gtcttgaatc 660

acggagggga aaccggaatt ccaagtgtag gggtggaatc tgtagatatt tggaagaaca 720

ccggtggcga aggcgggttt ctggccgatg attgacgctg aggtgcgaag gtgtggggag 780

caaacaggat tagataccct ggtagtccac acagtaaacg atgtacacta ggtgttgggg 840

caagagcttc agtgccggcg caaacgcaat aagtgtaccg cctggggagt atgcccgcaa 900

gggtgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgatgatacg cgaggaatct tacctgggtt tgacatcaaa agcaatatta tagagatatg 1020

gtagcgtagc aatacggctt ttgacaggtg ctgcatggct gtcgtcagct cgtgccgtga 1080

ggtgttgggt taagtcccgc aacgagcgca acccctactg tcagttgcta acaggtaaag 1140

ctgaggactc tggcggaact gccgatgaca aatcggagga aggtggggat gacgtcaagt 1200

catcatggcc cttatgtcca gggctacaca cgtgctacaa tggttgctac aaagtgaagc 1260

gagactgtga ggttaagcaa atcgcaaaaa agcaatcgta gttcggattg aagtctgaaa 1320

ctcgacttca tgaagttgga atcgctagta atcgcacatc agcacggtgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accatccgag ttgagggtac ccgaagtcgc 1440

cagtctaacc cgtaagggag ggcggtgccg aaggtatgtt tggcaaggag ggtgaagtcg 1500

taacaaggta gccgtaccgg aaggtgcggc tggatcacct cctttct 1547

<210> 1935
<211> 1260
<212> DNA
<213> Treponema putidum

<400> 1935
agtggcggac tggtgagtaa cgcgtgggtg acctgccctg aagatgggga tagctagtag 60

aaatattaga taataccgaa tgtggaaagc cgctttagga tgggcctgcg tcccattagc 120

tagttggtga ggtaaaggct caccaaggca acgatgggta tccggcctga gagggtgaac 180

ggacacattg ggactgagat acggcccaaa ctcctacggg aggcagcagc taagaatctt 240

ccgcaatgga cgaaagtctg acggagcgac gccgtgtgaa tgaagaaggc cgaaaggttg 300

taaaattctt ttgcagatga agatgacggt agtctgcgaa taagccccgg ctaattacgt 360

gccagcagcc gcggtaacac gtaaggggcg agcgttgttc ggaattattg ggcgtaaagg 420

gtatgtaggc ggttaggtaa gcctggtgtg aaatctacga gctcaactcg taaactgcat 480

tgggtactgc ttaacttgaa tcacggaggg gaaaccggaa ttccaagtgt aggggtggaa 540

tctgtagata tttggaagaa caccggtggc gaaggcgggt ttctggccga attgacgctg 600

atatacgaag gtgcggggag caaacaggat tagataccct ggtagtccgc acagtaaacg 660

atgtacacta ggtgtcgggg cttcggtgcc gacgcaaacg cattaagtgt accgcctggg 720

aagtatgccc gcaagggtga aactcaaagg aattgacggg ggcccacaca agcggtggag 780

catgtggttt aattcgatga tacgcgagga accttacctg ggtttgacat cgacaggtgc 840

tgcatggctg tcgtcagctc gtgccgtgag gtgttgggtt aagtcccgca acgagcgcaa 900

cccctactgc cagttactaa cagctgagga ctctggcgga actgccgatg acaaatcgga 960

ggaaggtggg gatgacgtca agtcatcatg gcccttacgt ccagggctac acacgtgcta 1020

caatggttgc caaatcgaag cgacaccgcg aggtcaagca aaacgcaagc aatcgtagtc 1080

cggatgaagt ctgaaactcg acttcagaag ttggaatcgc tagtaatcgc acatcagcac 1140

ggtgcggtga atacgttcct gggccttgta cacaccgccc gtcacaccat ccgagtcgag 1200

ggtacccgaa gtcgctgtct aggacggtgc cgaaggtacg tttggtaagg agggtgaagt 1260

<210> 1936
<211> 1455
<212> DNA

<213> Treponema refringens

<220>
<221> modified_base
<222> (1447)..(1447)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1454)..(1454)
<223> a, c, t, g, unknown or other

<400> 1936
acgaacgctg gcggcgcgtt ttaagcatgc aagtcgaacg gcaaggtaag agcttgctct 60

taccctagag tggcggactg gtgagtaacg cgtgggtaat ctacctttag gatggggata 120

gctactagaa atagtagata ataccgaatg tgcttatatg ttaaatcatg taaggaaagg 180

gagctaaggc tttgcctaaa gaagagctcg cgtcccatta gctagttggt atggtaagag 240

cgtaccaagg caacgatggg tatccgacct gagagggtga tcggacacat tgggactgag 300

acacagccca gactcctacg ggaggcagca gctaagaatc ttccgcaatg ggcgcaagcc 360

tgacggagcg acgccgcgtg aatgaagaag gccgaaaggt tgtaaaattc ttttaagttt 420

gaagaataat cagtrtaggg aatgatactg agatgacggt aaaacttgaa taagccccgg 480

ctaattacgt gccagcagcc gcggtaacac gtaaggggcg agcgttgttc ggaattattg 540

ggcgtaaagg gtatgcaggc ggttagataa gcccgatgtg aaatgctcaa gcttaacttg 600

agaactgcat taggtactgt ttaacttgaa tcacgaaggg gaaactggaa ttccgggtgt 660

aggggtggaa tctgtagata tccggaggaa taccggtggc gaaggcgggt ttctggtcga 720

tgattgacgc tgagatacga aagtgtgggg agcaaacagg attagatgcc ctggtagtcc 780

acaccataaa cgatgtacac taggtgttgg ggcaagagct tcagtgccga agcaaacgtg 840

ataagtgtac cgcctgggga gtatgccggc aacggtgaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggtggagca tgtggtttaa ttcgaggata cgcgaggaac cttacctggg 960

tttgacatca agagtaatac ggtagagata ctgtagcgta gcaatacgac ttttgacagg 1020

tgctgcatgg ctgtcgtcag ctcgtgccgt gaggtgttgg gttaagtccc gcaacgagcg 1080

caacccctac tgccagttac taacaggtga agctgaggac tctggcggaa ctgccgatga 1140

caaatcggag gaaggtgggg atgacgtcaa gtcatcatgg cccttatgcc cagggctaca 1200

cacgtgctac aatggttgct acagaatgaa gctaaactgc gaagtggagc gaaacgtaaa 1260

aaagcaatcg tagtccggat tgaagtctga aacccgactt catgaagttg gaatcgctag 1320

taatcgcaca tcagcacggt gcggtgaata cgttcctggg ccttgtacac accgcccgtc 1380

acaccatccg agtcgaagat acccgaagtc gcttgtttaa cccgcaaggg aggacggtgc 1440

cgaaggnatg tttng 1455

<210> 1937
<211> 1477
<212> DNA

<213> Treponema socranskii

<220>
<221> modified_base
<222> (1458)..(1458)
<223> a, c, t, g, unknown or other

<400> 1937
gctcagaacg aacgctggcg gcgcgtctta accatgcaag tcgagcggca ggcagcaatg 60

ccgagagcgg cggactggtg agtaacacgt ggataacgta ccccgatgcc cgggacagcc 120

tgtagaaata gagggtgata ccggatagat cactgtatac ggaaggtaga cagcgggaaa 180

ggagcttcgg ctccgcgccg ggaacggtct gcggcccatc agctggacgg cggggtaacg 240

gcccgccgtg gcgaggacgg gtatccggcc tgagagggcg gacggacaca ttgggactga 300

gatacggccc agactcctac gggaggcagc aggtaagaat attccgcaat ggggggaacc 360

ctgacggagc gacgccgcgt gaacgaagaa ggccggaagg ttgtaaagtt cttttctgtc 420

cgaggaataa gtgtaggagg aaatgcctgc atggtgacgg taggacagga ataagcaccg 480

gctaattacg tgccagcagc cgcggtaaca cgtaaggtgc gagcgttgtt cggaattatt 540

gggcgtaaag ggcatgcagg cgggtcgcca agcttggtaa gaaataccgg ggctcaactc 600

cggagctata ttgagaactg gcgagctgga gttgccgaag ggtatccgga attccgcgtg 660

aaggggtgaa atctgtagat atgcggaaga acaccgatgg cgaaggcagg ataccggcgg 720

acgactgacg ctgaggtgcg aaggtgcggg gagcaaacag gattagatac cctggtagtc 780

cgcacagtca acgatgtaca ctgggcgtgt gcgcaagagc gtgcgtgccg aagcaaacgc 840

gataagtgta ccgcctgggg agtatgcccg caagggtgaa actcaaagga attgacgggg 900

gcccgcacaa gcggtggagc atgtggttta attcgatggt acgcgaggaa ccttacctgg 960

gtttgacatc aagagggatc atatagagat atgtgagcgt agcaatacgg ctcttgacag 1020

gtgctgcatg gctgtcgtca gctcgtgccg tgaggtgttg ggttaagtcc cgcaacgagc 1080

gcaaccccta ctgccggtta ctaacaggta aagctgagga ctcaggcgga actgcctgcg 1140

acaagcagga ggaaggcggg gacgacgtca agtcatcatg gcccttatgt ccagggctac 1200

acacgtgcta caatggccgc cacagagcga ggcgaagccg agaggcggag cagaacgcag 1260

aaaagcggtc gtagtccgga ttgaagtctg aaactcgact tcatgaagct ggaatcgcta 1320

gtaaccgcac atcagcacgg cgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatcc gagcaggggg tacccgaagc cggcagtcca accgcaaggg ggacgctgtc 1440

gaaggtacgc tttgtgangg gggtgaagtc gtaacaa 1477

<210> 1938
<211> 1498
<212> DNA
<213> Treponema sp. 6:H:D15A-4

<400> 1938
cggcgcgtct taaccatgca agtcgagcgg caggcagcaa tgccgagagc ggcggactgg 60

tgagtaacac gtggataacg taccccgatg cccgggacag cctgtagaaa tagagggtaa 120

taccggatag gtcaccatat tcgcaaggga tatggcggga aaggagcttc ggctccgcgc 180

cgggaacggt ctgcggccca tcagctggac ggcggggtaa aagcccgccg tggcgaggac 240

gggtatccgg cctgagaggg cggacggaca cattgggact gagatacggc ccagactcct 300

acgggaggca gcaggtaaga atattccgca atgggggaa ccctgacgga gcgacgccgc 360

gtgaacgaag aaggccggaa ggttgtaaag ttcttttctg ttcgaggaat aagtgtagga 420

ggaaatgcct gcatggtgac ggtagggcag gaataagcac cggctaatta cgtgccagca 480

gccgcggtaa cacgtaaggt gcgagcgttg ttcggaatta ttgggcgtaa agggcatgca 540

ggcgggtcgc caagcttgat gagaaatacc ggggctcaac tccggagcta tattgagaac 600

tggcgagcta gagttgccga agggtatccg gaattccgcg tgaaggggtg aaatctgtag 660

atatgcggaa gaacaccgat ggcgaaggca ggataccggc ggacgactga cgctgaggtg 720

cgaaggtgcg gggagcaaac aggattagat accctggtag tccgcacagt caacgatgta 780

cactgggcgt gtgcgcaaga gcgtgcgtgc cgaagcaaac gcgataagtg taccgcctgg 840

ggagtatgcc cgcaagggtg aaactcaaag gaattgacgg gggcccgcac aagcggtgga 900

gcatgtggtt taattcgatg gtacgcgagg aaccttacct gggtttgaca tacacagcaa 960

tcatatagag atatgtgagc gtagcaatac ggctgtgaac aggtgctgca tggctgtcgt 1020

cagctcgtgc cgtgaggtgt tgggttaagt cccgcaacga gcgcaacccc tactgccggt 1080

tactaacagg taaagctgag gactcaggcg gaactgcctg cgacaagcag gaggaaggcg 1140

gggacgacgt caagtcatca tggcccttat gtccagggct acacacgtgc tacaatggcc 1200

gccacagagc ggggcgaagc cgagaggcgg agcagaacgc agaaaagcgg tcgtagtccg 1260

gattgaagtc tgaaactcga cttcatgaag ctggaatcgc tagtaaccgc acatcagcac 1320

ggcgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccat ccgagcaggg 1380

ggtacccgaa gccggcagtc caaccgcaag ggggacgctg tcgaaggtac gctttgtgag 1440

gggggtgaag tcgtaacaag gtagtcgtac cggaaggtgc ggctggawca cctccttc 1498

<210> 1939
<211> 1404
<212> DNA
<213> Treponema sp. clone DDKL-4

<220>
<221> modified_base
<222> (821)..(821)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (831)..(831)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (840)..(841)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (843)..(843)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (886)..(886)
<223> a, c, t, g, unknown or other

<400> 1939
tagagtggcg gactggtgag taacgcgtgg gtgatctgcc cttaagatgg ggatagctcc 60

tagaaatagg aggtaatacc gaatacgctt atacggataa agccgtataa ggaaaggagg 120

ctacggcctt gcttgaggat gagcccgcgt cccattatgc ttgttggtga ggtaacggct 180

taccaaggcg acgatgggta tccggcctga gagggtggac ggacacattg ggactgagat 240

acggcccaaa ctcctacggg aggcagcagc taagaatatt ccgcaatgga cggaagtctg 300

acggagcgac gccgcgtgga cgaagaaggc cgaaaggttg taaagttctt ttgccgatga 360

agaataagag gatgagggaa tgcgtccttg atgacggtag tcgagcgaat aagccccggc 420

taattacgtg ccagcagccg cggtaacacg taaggggcga gcgttgttcg gaattattgg 480

gcgtaaaggg cacgcaggcg ggttggtaag cctgatgtga aatactcaag cttaacttga 540

gaattgcatt gggtactgcc agtsttgaat cacggagggg aaaccggaat tccaagtgta 600

ggggtggaat ctgtagatat ttggaagaac accggtggcg aaggcgggtt tctggccgat 660

gattgacgct gaggtgcgaa ggtgtgggga gcaaacagga ttagataccc tggtagtcca 720

cacagtaaac gatgtacact aggtgttggg caagagcttc agtgccggcg caaacgcaat 780

aagtgtaccg cctggggagt atgcccgcaa gggtgaaact naaaggaatt nacgggggcn 840

ngnacaagcg gtggagcatg tggtttaatt cgatgatacg cgaggnatct tacctgggtt 900

tgacatcaaa agcaatatta tagagatatg gtagcgtagc aatacggctt ttgacaggtg 960

ctgcatggct gtcgtcagct cgtgccgtga ggtgttgggt taagtcccgc aacgagcgca 1020

acccctactg tcagttgcta acaggtaacg ctgaggactc tggcggaact gccgatgaca 1080

aatcggagga aggtggggat gacgtcaagt catcatggcc cttatgtcca gggctacaca 1140

cgtgctacaa tggttgctac aaagtgaagc gagactgtga ggttaagcaa atcgcaaaaa 1200

agcaatcgta gttcggattg aagtctgaaa ctcgacttca tgaagttgga atcgctagta 1260

atcgcacatc agcacggtgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1320

accatccgag ttgagggtac ccgaagtcgc cagtctaacc cgtaagggag ggcggtgccg 1380

aaggtatgtt tggcaaggag ggtg 1404

<210> 1940
<211> 1327
<212> DNA
<213> Treponema sp. oral clone JU025

<400> 1940

ggagtttgat cctggctcag aacgaacgct ggcggcgcgt cttaaacatg caagtcgaac 60

gagtggcgga ctggtgagta acacgtgggt gatatacctt ttagttgggg atagctgtta 120

gaaatagcag gtaataccga atgtggaaag ccgctagaag aatggctcgc ggcccattag 180

ctcgttggtg aggtaacggc ccaccaaggc aatgatgggt atccggcctg agagggtgaa 240

cggacacatt gggactgaga tacggcccag acttctacgg gaggcagcag ttaagaatat 300

tccgcaatgg acgaaagtct gacggagcga cgccgcgtgg atgaagaatg ccgaaaggtt 360

gtaaaatcct tttaagcctg aggatgacag tagggcttga ataagcaacg gctaattacg 420

tgccagcagc cgcggtaaca cgtaagttgc gagcgttgtt cggaattatt gggcgtaaag 480

ggcatgtagg cggatatgca agcttggtgt gaaatactgc agcttaactg cggaactgca 540

ttgagaactg cacatcttga attactgaag ggtaaccaga attccacgtg taggggtgaa 600

atctgtagat atgtggaaga ataccaatgg cgaaggcagg ttaccggcag aattgacgct 660

gaggtgcgaa agtgcgggga gcgaacagga ttagataccc tggtagtccg caccgtaaac 720

gatgtacact aggtgtccgg cgctgggtgc caaagcaaac gtgataagtg taccgcctgg 780

ggagtatgcc cgcaagggtg aaactcaaag gaattgacgg gggcccgcac aagcggtgga 840

gcatgtggtt taattcgatg gtacgcgagg aaccttacct gggtttgaca taaacaggtg 900

ctgcatggct gtcgtcagct cgtgccgtga ggtgttgggt taagtcccgc aacgagcgca 960

acccctactg ccagttacta acagctgagg actctggcgg aactgccggt gacaaaccgg 1020

aggaaggtgg ggatgacgtc aagtcatcat ggcccttatg tccagggcta cacacgtgct 1080

acaatggtag gcaaagtgag gcgaagctgt aaagcggagc aaaacgcaaa ctatcgtagt 1140

ccggatggag tctgaaactc gactccagaa gttggaatcg ctagtaatcg cgcatcagca 1200

cggcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tccgagtaga 1260

gggtacccga agtcggtgtc taggacgctg ccgaaggtat gttttgtaag gagggtgaag 1320

tcgtaac 1327

<210> 1941
<211> 1327
<212> DNA
<213> Treponema sp. oral clone JU031

<400> 1941
ggagtttgat cctggctcag aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac 60

gagtggcgga ctggtgagta acacgtgggt gatctaccct tgagatgggg atagccgtta 120

ggaatagcgg gtaataccga atacagaaag tcgctcgagg atgagcttgc gtcccattag 180

ctagttggtg aggtaagggc ccaccaaggc gacgatgggt atccggcctg agagggtgaa 240

cggacacatt gggactgaga tacggcccaa actcctacgg gaggcagcag ctaagaatat 300

tccgcaatgg acggaagtct gacggagcga cgccgcgtgg atgaagaagg ctgaaaagtt 360

gtaaaatcct tttgctgatg aagatgacga taatcggcga ataagccccg gctaattacg 420

tgccagcagc cgcggtaaca cgtaaggggc gagcgttgtt cggaattatt gggcgtaaag 480

ggcatgtagg cggttatgta agcctgatgt gaaatgctgg ggctcaaccc cagaactgca 540

ttgggtactg cgtagcttga attacggaag ggaaactgga attccaagtg taggggtgga 600

atctgtagat atttggaaga acaccggtgg cgaaggcggg tttctggccg aattgacgct 660

gagatgcgaa agtgtgggga tcgaacagga ttagataccc tggtagtcca caccgtaaac 720

gatgtacact aggtgctgga gcttcagtgc caaagcaaac gtgataagtg taccgcctgg 780

ggagtatgcc cgcaagggtg aaactcaaag ggattgacgg gggcccgcac aagcggtgga 840

gcatgtggtt taattcgatg gtacgcgagg aaccttacct gggttcgaca tcgacaggtg 900

ctgcatggct gtcgtcagct cgtgccgtga ggtgttgggt taagtcccgc aacgagcgca 960

acccctactg ccagttacta gcagctgagg actctggcgg aactgccgat gacaaatcgg 1020

aggaaggtgg ggatgacgtc aagtcatcat ggcccttatg tccagggcta cacacgtgct 1080

acaatggttg ccaaagcgaa gcgatgctgt gaggctaagc aaaccgcaag caatcgtagt 1140

tcggatgaag tctgaaactc gacttcagaa gttggaatcg ctagtaatcg cgcatcagca 1200

cggcgcggtg aatacgttcc cgggccttgt acacaccgcc cgtcacacca tccgagttga 1260

gggtacccga agtcgctgtc taggacggtg ccgaaggtac gtttggtaag gagggtgaag 1320

tcgtaac 1327

<210> 1942
<211> 1295
<212> DNA
<213> Treponema sp. oral clone P2PB_53 P3

<400> 1942
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac gagtggcgga ctggtgagta 60

acgcgtgggt gacctgccct gaagatgggg atagctagta gaaatattag ataataccga 120

atgtggaaag ccgcttcagg atgggcctgc gtcccattag ctggttggtg aggtaaaggc 180

tcaccaaggc aacgatgggt atccggcctg agagggtgaa cggacacatt gggactgaga 240

tacggcccaa actcctacgg gaggcagcag ctaagaatct tccgcaatgg acgaaagtct 300

gacggagcga cgccgtgtga atgaagaagg ccgaaaggtt gtaaaattct tttgcagatg 360

aagatgacgg taatctgcga ataagccccg gctaattacg tgccagcagc cgcggtaaca 420

cgtaaggggc gagcgttgtt cggaattatt gggcgtaaag ggtatgtagg cggttaggta 480

agcctggtgt gaaatctacg agctcaactc gtaaactgca tcgggtactg cttgacttga 540

atcacggagg ggaaaccgga attccaagtg taggggtgga atctgtagat atttggaaga 600

acaccggtgg cgaaggcggg tttctggccg aattgacgct gatatacgaa ggtgcgggga 660

gcaaacagga ttagataccc tggtaatccg cacagtaaac gatgtacact aggtgtcgga 720

gcttcggtgc cgacgcaaac gcattaagtg taccgcctgg gaagtatgcc cgcaagggtg 780

aaactcaaag gaattgacgg gggcccacac aagcggtgga gcatgtggtt taattcgatg 840

atacgcgaga aaccttacct gggttgacat cgacaggtgc tgcatggctg tcgtcagctc 900

gtgccgtgag gtgttgggtt aagtcccgca acgagcgcaa cccctactgc cagttactaa 960

cagctgagga ctctggcgga actgccgatg acaaatcgga ggaaggtggg gatgacgtca 1020

agtcatcatg gcccttacgt ccagggctac acacgtgcta caatggttgc caaatcgaag 1080

cgacaccgcg aggtcaagca aaacgcagca atcgtagtcc ggatgaagtc tgaaactcga 1140

cttcagaagt tggaatcgct agtaatcgca catcagcacg gtgcggtgaa tacgttcctg 1200

ggccttgtac acaccgcccg tcataccatc cgagtcgagg gtacccgaag tcgctgtcta 1260

ggacggtgcc gaaggtacgt ttggtaagga gggtg 1295

<210> 1943
<211> 1460
<212> DNA
<213> Treponema sp. oral taxon 228

<400> 1943
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggcaagagag gagcttgctt 60

ctctcctaga gtggcggact ggtgaggaac gcgtgggtaa tctaccctta agatggggat 120

agccgctaga aatagcgggt aataccaata gacttatagc tgagaaagaa gtgataagga 180

aaggaagcta aggcttcgct taaggatgag cctgcgtccc attagctagt tggtaaggta 240

acggcctacc aaggcgacga tgggtatccg gcctgagagg gtgaacggac acattgggac 300

tgagatacgg cccaaactcc tacgggaggc agcagctaag aatattccgc aatggacgaa 360

agtctgacgg agcgacgccg cgtggatgaa gaaggctgaa aagttgtaaa atccttttgt 420

tgatgaagaa taagggtgag agggaatgtt catctgatga cggtaatcag cgaataagcc 480

ccggctaatt acgtgccagc agccgcggta acacgtaagg ggcgagcgtt gttcggaatt 540

actgggcgta aagggcatgt aggcggttat gtaagcctga tgtgaaatcc tgaggcttaa 600

cctcagaata gcattgggta ctgtgtaact tgaattacgg aagggaaact ggaattccaa 660

gtgtaggggt ggaatctgta gatatttgga agaacaccgg tggcgaaggc gggtttctgg 720

ccgataattg acgctgagat gcgaaagtgt ggggatcgaa caggattaga taccctggta 780

gtccacaccg taaacgatgt acactaggtg ttggggcaag agcttcagtg ccaaagtaaa 840

cgcgataagt gtaccgcctg gggagtatgc ccgcaagggt gaaactcaaa ggaattgacg 900

ggggcccgca caagcggtgg agcatgtggt ttaattcgat ggtacgcgag gaaccttacc 960

tgggtttgac atctagtgga atgtcttaga gataaggcag tgtagcaata caccgctaga 1020

caggtgctgc atggctgtcg tcagctcgtg ccgtgaggtg ttgggttaag tcccgcaacg 1080

agcgcaaccc ctactgccag ttactaacag gtaaagcttg agactctggc ggaactgccg 1140

atgacaaatc ggaggaaggt ggggatgacg tcaagtcatc atggcccttа tgtccagggc 1200

tacacacgtg ctacaatggt tgctacaaag cgaagcgaga ccgtaaggtg gagcaaaccg 1260

caaaaaagca atcgtagttc ggattgaagt ctgaaactcg acttcatgaa gttggaatcg 1320

ctagtaatcg cgcatcagca cggcgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcacacca tccgagttgg gggtgcccga agtcgcttgt ctaacccgca agggagacgg 1440

tgccgaaggt acgcttggta 1460

<210> 1944
<211> 1423
<212> DNA
<213> Treponema sp. oral taxon 230

<400> 1944
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggcaagagag gagcttgctt 60

ctctcctaga gtggcggact ggtgaggaac cgtgggtaat ctacccttaa gatggggata 120

gcgtagaaat agcgtaatac cgaatactgg aggaaagggc taggctcgct aggatgagcg 180

cgtcccatta gctagttggt aggtaaggcc accaaggcga cgatgggtat ccggcctgag 240

agggtgacgg acacattggg actgagatac ggcccaaact cctacgggag gcagcagcta 300

agaatattcc gcaatggacg gtctgacgga gcgacgccgc gtggatgaag aaggctgaaa 360

agttgtaaaa tccttttgtt gatgaggaat aagggtgaga gggaatgctc atctgatgac 420

ggtaatcgac gaataagccc cggctaatta cgtgccagca gccgcggtaa cacgtaaggg 480

gcgagcgttg ttcggaatta ttgggcgtaa agggcatgta ggcggttatg taagcctgat 540

gtgaaatcct ggggcttaac cctagaatag cattgggtac tgtataactt gaattacgga 600

aggggaactg gaattccaag tgtaggggtg gaatctgtag atatttggaa gaacaccggt 660

ggcgaaggcg ggtttctggc cgataattga cgctgagatg cgaaagtgtg gggatcgaac 720

aggattagat accctggtag tccacaccgt aaacgatgta cactaggtgt tggggcaaga 780

gcttcagtgc caaagcaaac gcgataagtg taccgcctgg ggagtatgcc cgcaagggtg 840

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 900

gtacgcgagg aaccttacct gggtttgaca tctagtggaa tgccttagag ataaggtagt 960

gtagtttact acaccgctag acaggtgctg catggctgtc gtcagctcgt gccgtgaggt 1020

gttgggttaa gtcccgcaac gagcgcgacc cctattgcca gttactaaca ggtaaagctt 1080

gaggactctg gcggaactgc cgatgacaaa tcggaggaag gtggggatga cgtcaagtca 1140

tcatggccct tatgtccagg gctacacacg tgctacaatg gctgctacaa agcgaggcga 1200

gactgtgaag gtgagcaaac cgcaaaaaag cagccgtagt tcggattgaa gtctgaaact 1260

cgacttcatg aagttggaat cgctagtaat cgcgcatcag cacggcgcgg tgaatacgtt 1320

cccgggcctt gtacacaccg cccgtcacac catccgagtt gggggtaccc gaagtcgctc 1380

gtctaacccg taagggagga cggtgccgaa ggtacgcttg gtg 1423

<210> 1945
<211> 1439
<212> DNA
<213> Treponema sp. oral taxon 231

<400> 1945
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggcaagagag gagcttgctt 60

ctctcctaga gtggcggact ggtgaggaac acgtgggtaa tctacccttа agatggggat 120

agctgctaga aatagcagat aataccgaat acactcggcg cttcataaga ggcgttgagg 180

aaaggaagct acggcttcgc ttgaggatga gcttgcgtcc cattagctag ttggtgaggt 240

aacggcccac caaggcgacg atgggtatcc ggcctgagag ggtgaacgga cacattggga 300

ctgagatacg gcccaaactc ctacgggagg cagcagctaa gaatattccg caatggacgg 360

aagtctgacg gagcgacgcc gcgtggatga agaaggctga aaagttgtaa gatccttttg 420

ttgatgaaga ataaggatga gagggaatgc tcatctgatg acggtaatcg acgaataagc 480

cccgttacgt gccagcagcc gcggtaacac gtaaggggcg agcgttgttc ggaattattg 540

ggcgtaaagg gcatgtaggc ggttatgtaa gcctgtgtga aatctgggct taaccctgaa 600

agcattgggt actgttactt gaattacgga agggaactga attccaagtg taggggtgga 660

atctgtgata tttggaagaa caccggtggc gaaggcgggt ttctggccga taattgacgc 720

tgagtgcgaa agtgtgggga tcgaacagga ttagataccc tggtagtcca cactgtaaac 780

gatgtacact aggtgttggg aagagcttca gtgccaaaga aacggataag tgtaccgcct 840

ggggagtatg cccgcaaggg tgaaactcaa aggaattgac gggggcccgc acaagcggtg 900

gagcatgtgg tttaattcga tggtacgcga ggaaccttac ctgggtttga catctaggag 960

tagagataag tagcaatacc gctagacagg tgctgcatgg ctgtcgtcag ctcgtgccgt 1020

gaggtgttgg gttaagtccc gcaacgagcg caacccctac tgccagttac taacaggtaa 1080

agcttgagga ctctggcgga actgccgatg acaaatcgga ggaaggtggg gatgacgtca 1140

agtcatcatg gcccttatgt ccagggctac acacgtgcta caatggttct acaaagcgag 1200

caaccgtagg ggagcaaacc gcaaaaaagc aatcgtagtt cggattgaag tctgaaactc 1260

gacttcatga agttggaatc gctagtaatc gcgcatcagc acggtgcggt gaatacgttc 1320

ccgggccttg tacacaccgc ccgtcacacc atccgagttg ggggtacccg aagtcgcttg 1380

tctaaccgca aggggacggt gccgaggtac gcttggtaag gagggtgaag tcgtaacaa 1439

<210> 1946
<211> 1482
<212> DNA
<213> Treponema sp. oral taxon 232

<400> 1946
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggcaagagag gagcttgctt 60

ctctcctaga gtggcggact ggtgaggaac gcgtgggtaa tctaccctta agatggggat 120

agccgctaga aatagcgggt aataccgaat agacttatag ctgagaaaga agtgataagg 180

aaaggaagct aaggcttcgc ttaaggatga gcctgcgtcc cattagctag ttggtaaggt 240

aacggcctac caaggcgacg atgggtatcc ggcctgagag ggtgaacgga cacattggga 300

ctgagatacg gcccaaactc ctacgggagg cagcagctaa gaatattccg caatggacgg 360

aagtctgacg gagcgacacc gcgtggatga agaaggctga aaagttgtaa aattcttttg 420

ctgatgaaga ataaagataa gagggaatgc ttatcagatg acggtagtcg gcgaataagc 480

cccggctaat tacgtgccag cagccgcggt aacacgtaag gggcgagcgt tgttcggaat 540

tattgggcgt aaagggcatg caggcggttg tgtaagcctg atgtgaaatc ctgaggctta 600

accttggggc tgcattgggt actgcacgac ttgaattacg gaaggggaac tggaattcca 660

agtgtagggg tggaatctgt agatatttgg aagaacaccg gtggcgaagg cgggtttctg 720

gccgataatt gacgctgaga tgcgaaagtg tggggatcga acaggattag ataccctggt 780

agtccacact gtaaacgatg tacactaggt gttggggtaa caatctcagt gccgaagcaa 840

acgtgataag tgtaccgcct ggggagtatg cccgcaaggg tgaaactcaa aggaattgac 900

gggggcccgc acaagcggtg gagcatgtgg tttaattcga tggtacgcga ggaatcttac 960

ctgggtttga catctagtgg gatactttag agataaggta gtgtagcaat acaccgctag 1020

acaggtgctg catggctgtc gtcagctcgt gccgtgaggt gttgggttaa gtcccgcaac 1080

gagcgcaacc cctactgcca gttactaaca ggtaaagctt gaggactctg gcggaactgc 1140

cgatgacaaa tcggaggaag gtggggatga cgtcaagtca tcatggccct tatgtccagg 1200

gctacacacg tgctacaatg gctgctacaa agcgaggcga gactgtgaag gtgagcaaac 1260

cgcaaaaaag cagccgtagt tcggattgaa gtctgaaact cgacttcatg aagttggaat 1320

cgctagtaat cgcgcatcag cacggcgcgg tgaatacgtt cccgggcctt gtacacaccg 1380

cccgtcacac catccgagtt gagggtaccc gaagtcgctt gtctaacccg caagggagga 1440

cggtgccgaa ggtatgcttg gtgaggaggg tgaagtcgta ac 1482

<210> 1947
<211> 1480
<212> DNA
<213> Treponema sp. oral taxon 235

<400> 1947
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggcaagagag gagcttgctt 60

ctctcctaga gtggcggact ggtgaggaac acgtgggtaa tctaccctta agatggggat 120

agctgctaga aatagcagat aataccgaat acactcaatt tttcataaga ggagttgagg 180

aaagaggcta cggcctcgct taaggatgag cttgcgtccc attagctagt tggtgaggta 240

aaggctcacc aaggcgacga tgggtatccg gcctgagagg gtgaacggac acattgggac 300

tgagatacgg cccaaactcc tacgggaggc agcagctaag aatattccgc aatggacgga 360

agtctgacgg agcgacgccg cgtggatgaa gaaggctgaa aagttgtaaa atccttttgt 420

tgatgaagaa taagggtaag agggaatgct tgcctgatga cggtaatcgg cgaataagcc 480

ccggctaatt acgtgccagc agccgcggta acacgtaagg ggcgagcgtt gttcggaatt 540

attgggcgta aagggcatgt aggcggttat gtaagcctga tgtgaaatgc cggggcttaa 600

ccccggaaca gcattgggta ctgtataact tgaattacgg aagggaaact ggaattccaa 660

gtgtaggggt ggaatctgta gatatttgga agaacaccgg tggcgaaggc gggtttctgg 720

ccgataattg acgctgagat gcgaaagtgt ggggatcgaa caggattaga taccctggta 780

gtccacaccg taaacgatgt acactaggtg ttggggcaag agcttcagtg ccaaagcaaa 840

cgcgataagt gtaccgcctg gggagtatgc ccgcaagggt gaaactcaaa ggaattgacg 900

ggggcccgca caagcggtgg agcatgtggt ttaattcgat ggtacgcgag gaaccttacc 960

tgggtttgac atctagagga atactgtaga gatacggtag cgtagcaata cgccgctaga 1020

caggtgctgc atggctgtcg tcagctcgtg ccgtgaggtg ttgggttaag tcccgcaacg 1080

agcgcaaccc ctactgccag ttactaacag gtaacgcttg aggactctgg cggaactgcc 1140

gatgacaaat cggaggaagg tggggatgac gtcaagtcat catggccctt atgtccaggg 1200

ctacacacgt gctacaatgg ttgctacaaa gcgaagcaag accgtaaggt ggagcaaacc 1260

gcaaaaaagc aatcgtagtt cggattgaag tctgaaactc gacttcatga agttggaatc 1320

gctagtaatc gcgcatcagc acggcgcggt gaatacgttc ccgggccttg tacacaccgc 1380

ccgtcacacc atccgagttg ggggtacccg aagtcgcttg tctaacctgc aaaggggggac 1440

ggtgccgagg gtacgcttgg taaggagggt gaagtcgtaa 1480

<210> 1948
<211> 1461
<212> DNA
<213> Treponema sp. oral taxon 239

<400> 1948
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggcaagagag gagcttgctt 60

ctctcctaga gtggcggact ggtgaggaac acgtgggtaa tctaccctta agatggggat 120

agctgctaga aatagcaggt aataccgaat accctcacgt tcataaaggg atgtgaggaa 180

aggaagctac ggcttcgctc gaggatgagc ctgcgtccca ttagctagtt ggtgaggtaa 240

aggcccacca aggcgacgat gggtatccgg cctgagaggg tgatcggaca cattgggact 300

gagatacggc ccaaactcct acgggaggca gcagctaaga atattccgca atggacggaa 360

gtctgacgga gcgacgccgc gtggatgaag aaggctgaaa agttgtaaaa tccttttgct 420

gatgaagaat aagggtagga gggaatgcct atctgatgac ggtaatcggc gaataagccc 480

cggctaatta cgtgccagca gccgcggtaa cacgtaaggg gcgagcgttg ttcggaatta 540

ttgggcgtaa agggcatgta ggcggttatg taagcctgat gtgaaatact ggggctcaac 600

cccagaactg cattgggtac tgcgtagctt gaattacgga agggaaactg gaattccaag 660

tgtaggggtg gaatctgtag atatttggaa gaacaccggt ggcgaaggcg ggtttctggc 720

cgataattga cgctgagatg cgaaagtgtg gggatcgaac aggattagat accctggtag 780

tccacaccgt aaacgatgta cactaggtgc tggagtggaa gcttcagtgc caaagcaaac 840

gtgataagtg taccgcctgg ggagtatgcc cgcaagggtg aaactcaaag gaattgacgg 900

gggcccgcac aagcggtgga gcatgtggtt taattcgatg gtacgcgagg aaccttacct 960

gggtttgaca tctagtggaa tgttttagag ataagacagt gtagcaatac accgctagac 1020

aggtgctgca tggctgtcgc cagctcgtgc cgtgaggtgt tgggttaagt cccgcaacga 1080

gcgcaacccc tactgccagt tactaacagg taaagcttga ggactctggc ggaactgccg 1140

atgacaaatc ggaggaaggt ggggatgacg tcaagtcatc atggccctta tgtccagggc 1200

tacacacgtg ctacaatggt tgctacaaag cgaagcgatg ctgtgaggct aagcaaaccg 1260

caaaaaagca atcgtagttc ggattgaagt ctgaaactcg acttcatgaa gttggaatcg 1320

ctagtaatcg cgcatcagca cggcgcggtg aatacgttcc cgggccttgt acacaccgcc 1380

cgtcacacca tccgagttga gggtacccga agtcgctcgt ctaacctgca aaggaggacg 1440

gtgccgaagg tacgtttggt a 1461

<210> 1949
<211> 1463
<212> DNA
<213> Treponema sp. oral taxon 247

<400> 1949
aacgaacgct gacggcgcgt cttaagcatg caagtcgaac ggtaagagag gagcctaggt 60

gttctcctag agtggcggac tggtgagtaa cgcgtgggtg acctgcccta aagatgggga 120

tagctagtag aaatattaga taataccgaa tgtgctcatt tacataaagg tagatgagga 180

aaggggggcta cggctccgct ttaggatggg cccgcgtccc attagctcgt tggtgaggta 240

acggcccacc aaggcaacga tgggtatccg gcctgagagg gtgaacggac acattgggac 300

tgagatacgg cccaaactcc tacgggaggc agcagctaag aatcttccgc aatggacgaa 360

agtctgacgg agcgacgccg tgtgaatgaa gaaggccgaa aggttgtaaa attcttttgc 420

agatgaagaa taaggataag agggaatgct tgtccgatga cggtagttat gcgaataagc 480

cccggctaat tacgtgccag cagccgcggt aacacgtaag gggcgagcgt tgttcggaat 540

tattgggcgt aaagggcatg taggcggtta ggtaagcctg atgtgaaatc tacgagctta 600

actcgtaaac tgcattgggt actgcttgac ttgaatcacg gaggggaaac cggaattcca 660

agtgtagggg tggaatctgt agatatttgg aagaacaccg gtggcgaagg cgggtttctg 720

gccgatgatt gacgctgata tgcgaaggtg cggggagcaa acaggattag ataccctggt 780

agtccgcaca gtaaacgatg tacactaggt gttggggcaa gagcttcagt gcctaagcaa 840

acgcaataag tgtaccgcct gggaagtatg cccgcaaggg tgaaactcaa aggaattgac 900

gggggcccac acaagcggtg gagcatgtgg tttaattcga tgatacgcga ggaaccttac 960

ctgggtttga catcaagagc aatactatag agatatggta gcgtagcaat acggctcttg 1020

acaggtgctg catggctgtc gtcagctcgt gccgtgaggt gttgggttaa gtcccgcaac 1080

gagcgcaacc cctactgcca gttactaaca ggtaaagctt gaggactctg gcggaactgc 1140

cgatgacaaa tcggaggaag gtggggatga cgtcaagtca tcatggccct tacgtccagg 1200

gctacacacg tgctacaatg gttgctacaa atcgatgcaa aaccgtgagg tcaagcaaaa 1260

cgcaaaaaag caatcgtagt ccggattgaa gtctgaaact cgacttcatg aagttggaat 1320

cgctagtaat cgcacatcag cacggtgcgg tgaatacgtt cctgggcctt gtacacaccg 1380

cccgtcacac catccgagtc gagggtaccc gaagtcgcca gtctaacctg caaaggggga 1440

cgacgccgaa ggtacgcttg gta 1463

<210> 1950
<211> 1470
<212> DNA
<213> Treponema sp. oral taxon 250

<400> 1950
aacgaacgct ggcggtgcgt cttaagcatg caagtcgaac ggtaagaggg gagcttagct 60

cccttcctag agtggcggac tggtgagtaa cgcgtggatg atctaccttt gagatgggga 120

tagcttctag aaataggaga taataccgaa taaccttatt gcgttttgat gtagtaagaa 180

aaggagcgtc agctccgctt aaagatgagt ctgcgtccca ttagctagtt ggtaaggtaa 240

aggcctacca aggcgacgat gggtacccgg cctgagaggg tgaacgggca cattgggact 300

gagatacggc ccaaactcct acgggaggca gcagctgaga atcttccgca atggacgaaa 360

gtctgatgga gcgacaccgc gtgaacgatg aaggccggaa ggttgtaaag ttcttttgca 420

gacaaagaat aaggatagaa ggaaatgact atctgatgac ggtagttatg cgaataagcc 480

ccggctaatt acgtgccagc agccgcggta atacgtaagg ggcgagcgtt gttcggaatt 540

attgggcgta aagggcatgt aggcggttag gtaagcctga tgtgaaatgt atgagcttaa 600

ctcataaact gcattgggta ctgcttgact tgaatcatgg aggggaaact ggaattccaa 660

gtgtaggggt ggaatctgta gatatttgga agaacaccgg tggcgaaggc gggtttctag 720

ccaatgattg acgctaaggt gcgaaggtgc ggggagcaaa caggattaga taccctggta 780

gtccgcacag taaacgatgt acactaggtg ttggggtaag actcagtgcc gaaagcaaac 840

gcaataagtg taccgcctgg ggagtatgcc cgcaagggtg aaactcaaag gaattgacgg 900

gggcccacac aagcggtgga gcatgtggtt taattcgatg atacgcgagg aaccttacct 960

gggtttgaca tcaagaggga tactgtagag atatggtagc gtagcaatac gactcttgac 1020

aggtgctgca tggctgtcgt cagctcgtgc cgtgaggtgt tgggttaagt cccgcaacga 1080

gcgcaacccc tactgccagt tactaacagg taaagcttga ggactctggc ggaactgccg 1140

gtgataaacc ggaggaaggt ggggatgacg tcaagtcatc atggccctta tgtccagggc 1200

tacacacgtg ctacaatggt tgttacaaag tgaagcgaag ccgcgaggtt aagcgaatgg 1260

caaaaaagca atcgtagtcc agattggaat ctgaaacctg attccatgaa gctggaatcg 1320

ctagtaatcg catatcagca cgatgcggtg aatacgttcc tgggccttgt acacaccgcc 1380

cgtcacacca tccgagtcga aggtacccga agacgctagt ctaaccgtaa ggaggacggt 1440

ggcgaaggta cgtttggtaa ggagggtgaa 1470

<210> 1951
<211> 1461
<212> DNA
<213> Treponema sp. oral taxon 251

<400> 1951
aacgaacgct ggcggtgcgt cttaagcatg caagtcgaac ggtaagaaga gagcttgctc 60

ttttcctaga gtggcggact ggtgagtaac gcgtggatga tctaccttta agatggggat 120

agcttctaga aataggagat aataccgaat aaccttatcg tgttatgacg tgataagaaa 180

atggagcgtt agctccgctt gaagatgagt ctgcgtccca ttagctagtt ggtagggtaa 240

aggcttacca aggcgatgat gggtatccgg cctgagaggg tgaacggaca cattgggact 300

gagacacggc ccaaactcct acgggaggca gcagctgaga atcttccgca atggacgaaa 360

gtctgacgga gcgacaccgc gtgaacgatg aaggccggaa ggttgtaaag ttcttttgca 420

gacaaagaat aaggatagaa ggaaatgact atctgatgac ggtagttatg cgaataagcc 480

ccggctaatt acgtgccagc agccgcggta atacgtaagg ggcgagcgtt gttcggaatt 540

attgggcgta aagggcatgt aggcggttag gtaagcctga tgtgaaatgt atgagcttaa 600

ctcataaact gcattgggta ctgcttgact tgaatcatgg aggggaaact ggaattccaa 660

gtgtaggggt ggaatctgta gatatttgga agaacaccgg tggcgaaggc gggtttctag 720

ccaatgattg acgctaaggt gcgaaggtgc ggggagcaaa caggattaga taccctggta 780

gtccgcacag taaacgatgt acactaggtg ttggggtaag actcagtgcc aaagcaaacg 840

caataagtgt accgcctggg gagtatgcct gcaagggtga aactcaaagg aattgacggg 900

ggcccacaca agcggtggag catgtggttt aattcgatga tacgcgagga accttacctg 960

ggtttgacat caagagggat gctatagaga tatggtagcg tagtaatacg tctcttgaca 1020

ggtgctgcat ggctgtcgtc agctcgtgcc gtgaggtgtt gggttaagtc ccgcaacgag 1080

cgcaacccct actgccagtt actaacaggt aaagctgagg actcaggcgg aactgccggt 1140

gataaaccgg aggaaggtgg ggatgacgtc aagtcatcat ggcccttatg tccagggcta 1200

cacacgtgct acaatggttg ttacaaagtg aagcgaagcc gcgaggttga gcgaatcgca 1260

aaaaagcaat cgtagtccgg attggaatct gaaacctgat tccatgaagc tggaatcgct 1320

agtaatcgca tatcagcacg atgcggtgaa tacgttcctg ggccttgtac acaccgcccg 1380

tcacaccatc cgagtcgaag gtacccgaag acgctagtct aaccgtaagg aggacggtgg 1440

cgaaggtatg tttggtaagg a 1461

<210> 1952
<211> 1382
<212> DNA
<213> Treponema sp. oral taxon 254

<400> 1952
aacgaacgct ggcggtgcgt cttaagcatg caagtcgaac ggcaagaaag tgcttgcact 60

ttcctagagt ggcggactgg tgagtaacgc gtgggtgatc tacctttaag atggggatag 120

cttttagaaa taagagataa taccgaatgt gcttgcgatg ctttggcgtt gcaaggaaag 180

gagcgtttgc tcgcttaaag atgagcctgc gtcccattag ctagttggtg aggtaatggc 240

ccaccaaggc gatgatgggt atccgacctg agagggtgat cggacacatt gggactgaga 300

tacggcccaa actcctacgg gatgcagcag ctgagaatct tccgcaatgg acgaaagtct 360

gacggagcga caccgcgtga atgatgaagg ccgaaaggtt gtaaaattct tttgcagaca 420

aagaataagt gtaggaggaa atgcctacat gatgacggta gttatgcgaa taagccccgg 480

ctaattacgt gcggggcgag cgttttcgga attattgggc gtaaagggca tgtaggcggt 540

ttaagcctgt gtgaatctac gagcttaact cgtaaatgca ttgggtactg cttgaatcag 600

aggggaactg gaattccaag tgtaggggtg gaatctgtag atatttggaa gaacaccggt 660

ggcgaaggcg ggtttctagc atgattgacg ctatgcgaag gtgggggagc aaacaggatt 720

agataccctg gtagtccgca cagtcatgta cactagtggg ggtaagactc agtgggcaaa 780

cgcataagtg taccgcctgg ggagtatgcc cgcaaggtga aactcaaagg aattgacggg 840

ggcccacaca agcggtggag catgtggttt aattcgatgt acgcgaggaa ccttacctgg 900

gtttgacata aggattatag agatatggta gcgtagatac gctttacagg tgctgcatgg 960

ctgtcgtcag ctcgtgccgt gaggtgttgg gtaagtcccg caacgagcgc aaccctactg 1020

ccagttacta acaggtaaag tgaggactcg gcggaactgc cggtgataaa ccggaggaag 1080

gtggggatga cgtcaagtca tcatggccct tatgtccagg gctacacacg tgctacaatg 1140

gttgttacaa agtgaagcga agccgcgagg tgagcgaatg caaaagcaat cgtagtcgat 1200

tggaatctga aacctgattc atgaagctgg aatcgctagt aatcgctatc agcacgatgc 1260

ggtgaatacg ttcctgggcc ttgtacacac cgcccgtcac accatccgag tcgaggtacc 1320

caagagctag tctaacgagg gacggtggcg aaggtacgtg gtaaggaggg tgaagtcgta 1380

ac 1382

<210> 1953
<211> 1456
<212> DNA
<213> Treponema sp. oral taxon 265

<400> 1953
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggtaagaagg agcttgcttc 60

ttcctagagt ggcggactgg tgagtatcgc gtggatgacg tacccttttg acggggatag 120

ccgatagaaa tatcagataa taccggataa tctcttttgg ggtaaagacg aaagaggaaa 180

gcagcttcgg ctgcgcagga ggaacggtcc gcgtcctatc agctagtcgg cagggtaaag 240

gcctgccgag gcgacgacgg gtatccggcc tgagagggtg gacggacaca ttgggactga 300

gatacggccc agactcctac gggaggcagc agctaagaat attccgcaat ggacgaaagt 360

ctgacggagc gacgccgcgt ggacgatgaa ggccggaggg ttgtaaagtc cttttatccg 420

tgaagaagaa gcgtaagagg aaatgcttgc gtggtgacgg tagcggatga ataagcaccg 480

gctaattacg tgccagcagc cgcggtaaca cgtaaggtgc gagcgttgtt cggaattatt 540

gggcgtaaag ggcatgcagg cggtcaggca agcccggcgt gaaaggcggg ggctcaactc 600

ccgaactgcg ctgggaactg cagggcttga gtttctgaag ggtagccgga attccacgtg 660

taggggtgaa atctgtagat atgtggaaga acaccaatgg cgaaggcagg ctactggcag 720

aagactgacg ctgaggtgcg aaggtgcggg gagcaaacag gattagatac cctggtagtc 780

cgcacagtca acgatgtgca ctagatgtct gtccacgagg atgggtgtca aagcaaacgc 840

gataagtgca ccgcctgggg agtatgcccg caagggtgaa actcaaagga attgacgggg 900

gcccgcacaa gcggtggagc atgtggttta attcgatggt acgcgaggaa ccttacctgg 960

gtttgacata cacagtgatt atgtagagat atataagcgc agcaatgcga ctgtgaacag 1020

gtgctgcatg gctgtcgtca gctcgtgccg tgaggtgttg ggttaagtcc cgcaacgagc 1080

gcaaccccta ctgccagtta ccagcatgta atgatgggga ctctggcgga actgcctgcg 1140

acaagcagga ggaaggcggg gatgacgtca agtcatcatg gcccttatgt ccagggctac 1200

acacgtgcta caatggttgg gacaaagcgg agcgagtgcg agagtatgag cagaacgcag 1260

aaagccgatc gtagtccgga ttggagtctg aaactcgact ccatgaagtt ggaatcgcta 1320

gtaatcgcat atcagcacga tgcggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatcc gagtggagag tacccgaagc cggcagtcta accgcaaggg ggacgctgtc 1440

gaaggtatgc ttcgtg 1456

<210> 1954
<211> 1522
<212> DNA
<213> Treponema sp. oral taxon 270

<400> 1954
gagtttgatc ctggctcaga acgaacgctg gcggcgcgtc ttaagcatgc aagtcgaatg 60

gcaagattgg tgcttgcact gatcctagaa tggcggactg gtgagtaacg cgtgggtgac 120

gtacccttg gacggggata gctgctagaa atagcagata ataccggata aggtggcctg 180

tgtcagaggc aggtcaggaa aggaacattt gttccgccga aggaacggct cgcgagctat 240

tagctagttg gtgaggtaac ggcccaccaa ggcgatgata gctacccggc ctaagagggt 300

gaacgggcac attgggactg agatacggcc cagactccta cgggaggcag cagctaagaa 360

tattccgcaa tggacgaaag tctgacggag cgacgccgcg tggatgatga aggtcggaag 420

attgtaaaat ccttttatga ctgaagaata agtatggtga gagaaacgcc gtatggtgac 480

agtaggtcat gaataagcaa cggctaatta cgtgccagca gccgcggtaa cacgtaagtt 540

gcgagcgttg ttcggaatta ttgggcgtaa agggcatgca ggcggaattg caagcttggt 600

gtgaaatacc ggggcttaac tccggaatag cattgagaac tgcaaaacta gagtcactga 660

ggggcaatca gaattccagg tgtaggggtg aaatctgtag atatctggaa gaataccaat 720

ggcgaaggca ggttaccagc agatgactga cgctgaggtg cgaaggtgcg gggagcaaac 780

aggattagag accctggtag tccgcacagt caactatgtg cactagatgt ctggtcgaca 840

gaccgggtgt cgaagcaaac gcgataagtg caccgcctgg ggagtatgcc cgcaagggtg 900

aaactcaaag gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

gtacgcgagg aaccttacct gggtttgaca tacacaggaa ttatatagag atatgtaagc 1020

gcagcaatgc gcctgtgaac aggtgctgca tggctgtcgt cagctcgtgc cgtgaggtgt 1080

tgggttaagt cccgcaacga gcgcaacccc tgctgccagt tactaacacg taaaggtgag 1140

gactctggcg gaactgccgg tgacaaaccg gaggaaggcg gggatgacgt caagtcatca 1200

tggcccttat gtccagggct acacacgtgc tacaatggga gatacagagt gaagcgaagc 1260

agcgatgcgg agcaaaacgc agaaaacctc tcgtagtccg gattggagtc tgaaactcga 1320

ctccatgaag ttggaatcgc tagtaatcgc acatcagcac ggtgcggtga atacgttccc 1380

gggccttgta cacaccgccc gtcacaccat ccgagtagat tctacccgaa gccggcagtc 1440

taaccgcaag gaggacgctg tcgaaggtag gatttgtgag gggggtgaag tcgtaacaag 1500

gtagtcgtac cggaaggtgc gg 1522

<210> 1955
<211> 1475
<212> DNA
<213> Treponema sp. oral taxon 271

<400> 1955
aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac ggcaaggaag tgcttgcact 60

tccctagagt ggcggactgg tgagtaacac gtgggtaaca tgccttttag ttggggatag 120

ctactagaaa tagtagataa taccgaatac gattttacag ggtaaggctg taaaaggaaa 180

ggagctacgg ctctgctgaa agattggctc gcggcccatt agctagttgg tgaggtaaat 240

gcttaccaag gcaatgatgg gtatccggcc tgagagggtg aacggacaca ttgggactga 300

gatacggccc agactcctac gggaggcagc agctaagaat gttccgcaat ggagggaact 360

ctgacggagc gacgccgcgt ggatgaagaa ggtcgaaaga ttgtaaagtt cttttgagat 420

ggaagaataa gtattgcagg gaatggcagt atggtgacag tacattttga ataagaggcg 480

gctaattacg tgccagcagc cgcggtaaca cgtaagcctc gagcgttgtt cggaattatt 540

gggcgtaaag ggcatgtagg cggtcataaa agcttggtgt gaaatctatg ggcttaaccc 600

ataaactgcg ttgagaactg tatgacttga gttactgaag ggaaactaga attccaggtg 660

taggggtgga atctgtagat atctggaaga ataccaatgg cgaaggcaag tttctggcag 720

ataactgacg ctgaggtgcg aaggtgcggg gagcaaacag gattagatac cctggtagtc 780

cgcacagtaa actatgtaca ctaggtgtct gacataagtc tgggtgccaa agcaaacgcg 840

ataagtgtac cgcctgggga gtatgcccgc aagggtgaaa ctcaaaggaa ttgacggggg 900

cccgcacaag cggtggagca tgtggtttaa ttcgatggta cgcgaggaac cttacctggg 960

tttgacatag tacttaatag agtagagata ctttagcgta gcaatacgaa gtactacagg 1020

tgctgcatgg ctgtcgtcag ctcgtgccgt gaggtgttgg gttaagtccc gcaacgagcg 1080

caacccctac tgccagttac taacaggaaa gctgaggact ctggcggaac tgccggtgac 1140

aaaccggagg aaggtgggga tgacgtcaag tcatcatggc ccttatgtcc agggctacac 1200

acgtgctaca atggtagaaa cagagtgaag cgaagcggcg acgtggagca aaacgcaaaa 1260

aagctatcgt agttcggatt ggagtctgaa actcgactcc atgaagttgg aatcgctagt 1320

aatcgcacat cagcacggtg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

caccatccga gtagaggata cccgaagccg gtagtctaac cgcaaggagg acgctgtcga 1440

aggtatgctt tgtaaggagg gtgaagtcgt aacaa 1475

<210> 1956
<211> 1381
<212> DNA
<213> Treponema sp. oral taxon 508

<400> 1956
aacgaacgct ggcggtgcgt cttaagcatg caagtcgaac ggcaagaaag tgcttgcact 60

ttcctagagt ggcggactgg tgagtaacgc gtgggtgatc tacctttaag atggggatag 120

cttttagaaa taagagataa taccgaatgt gcttacggtg ttttgacatt gtaaggaaag 180

gagcgtttgc tccgcttaaa gatgagcctg cgtcccatta gctagttggt gaggtaaagg 240

ctcaccaagg cgatgatggg tatccggcct gagagggtga ccgacacatt gggactgaga 300

tacggcccaa actcctacgg gaggcagcag ctgagaatct tccgcaatgg acgaaagtct 360

gacggagcga caccgcgtga atgatgaagg ccgaaaggtt gtaaaattct tttgcagaca 420

aagaataagg atagtaggaa ataactgtct gatgacggta gttacgcgaa taagccccgg 480

ctaattacgt gcggggcgag cgttttcgga attattgggc gtaaagggca tgtaggcggt 540

ttaagcctgt gtgaatctac gagcttaact cgtaaatgca ttgggtactg cttgaatcag 600

aggggaactg gaattccaag tgtaggggtg gaatctgtag atatttggaa gaacaccggt 660

ggcgaaggcg ggtttctagc atgattgacg ctatgcgaag gtgggggagc aaacaggatt 720

agataccctg gtagtccgca cagtcatgta cactagtggg ggtaagactc agtgggcaaa 780

cgcataagtg taccgcctgg ggagtatgcc cgcaaggtga aactcaaagg aattgacggg 840

ggcccacaca agcggtggag catgtggttt aattcgatgt acgcgaggaa ccttacctgg 900

gtttgacata aggattatag agatatggta gcgtagatac gctttacagg tgctgcatgg 960

ctgtcgtcag ctcgtgccgt gaggtgttgg gtaagtcccg caacgagcgc aaccctactg 1020

ccagttacta acaggtaaag tgaggactcg gcggaactgc cggtgataaa ccggaggaag 1080

gtggggatga cgtcaagtca tcatggccct tatgtccagg gctacacacg tgctacaatg 1140

gttgttacaa agtgaagcga accgcgaggt gagcgaatgc aaaagcaatc gtagtcgatt 1200

ggaatctgaa acctgattca tgaagctgga atcgctagta atcgctatca gcacgatgcg 1260

gtgaatacgt tcctgggcct tgtacacacc gcccgtcaca ccatccgagt cgaggtaccc 1320

aagagctagt ctaacgaggg acggtggcga aggtacgtgg taaggagggt gaagtcgtaa 1380

c 1381

<210> 1957
<211> 1383
<212> DNA
<213> Treponema sp. oral taxon 518

<400> 1957
aacgaacgct ggcggtgcgt tttaagcatg caagtcgaac ggcaggaagg tgcttgcact 60

ttcctagagt ggcggactgg tgagtaacgc gtaggtgatc tacctttaag actgggacag 120

cctttagaaa taaggggtaa taccggatgt gcttattatg ttttgacgta gtaagggaag 180

gagcgtttgc tccgcttaga gatgagcctg cgtcccatta gctagttggt aaggtaacgg 240

cctaccaagg cgatgatggg tatccgacct gagagggtga tcggacacat tgggactgag 300

atacggccca aactcctacg ggaggcagca gctgagaatc ttccgcaatg gacgaaagtc 360

tgacggagcg acaccgcgtg aatgatgaag gccgaaaggt tgtaaagttc ttttgcagac 420

aaagaataag gatagaagga aatgtctatt tgatgacggt agttatgcga ataagccccg 480

gctaattacg tgcggggcga gcgttttcgg aattattggg cgtaaagggc atgtaggcgg 540

tttaagcctg tgtgaatcta cgagcttaac tcgtaaatgc attgggtact gcttgaatca 600

gaggggaact ggaattccaa gtgtaggggt ggaatctgta gatatttgga agaacaccgg 660

tggcgaaggc gggtttctag catgattgac gctatgcgaa ggtgggggag caaacaggat 720

tagataccct ggtagtccgc acagtcatgt acactagtgg gggtaagact cagtgggcaa 780

acgcataagt gtaccgcctg gggagtatgc ccgcaaggtg aaactcaaag gaattgacgg 840

gggcccacac aagcggtgga gcatgtggtt taattcgatg tacgcgagga accttacctg 900

ggtttgacat aaggattata gagatatggt agcgtagata cgctttacag gtgctgcatg 960

gctgtcgtca gctcgtgccg tgaggtgttg ggtaagtccc gcaacgagcg caaccctact 1020

gccagttact aacaggtaaa gtgaggactc ggcggaactg ccggtgataa accggaggaa 1080

ggtggggatg acgtcaagtc atcatggccc ttatgtccag ggctacacac gtgctacaat 1140

ggttgttaca aagtgaagcg aagccgcgag gtgagcgaat gcaaaagcaa tcgtagtcga 1200

ttggaatctg aaacctgatt catgaagctg gaatcgctag taatcgctat cagcacgatg 1260

cggtgaatac gttcctgggc cttgtacaca ccgcccgtca caccatccga gtcgaggtac 1320

ccaagagcta gtctaacgag ggacggtggc gaaggtacgt ggtaaggagg gtgaagtcgt 1380

aac 1383

<210> 1958
<211> 1405
<212> DNA
<213> Treponema sp. oral taxon G85

<400> 1958
aacgaacgct ggcggcgcgt cttaagcatg caagtcggac ggcaagaagg ggctcgcccc 60

ttcctagagt ggcggactgg tgagtaacgc gtggacgacg cgcccacccg acggggacag 120

ccggtagaaa taccggataa taccggatga tctcttttgg aataaaggcg aaagaggaaa 180

gcggctccgg ccgcgcgggt ggagcggtcc gcgtcctatc agctagtcgg cggggtgaag 240

gcctgccgag gcgacgacgg gtatccggcc tgagagggtg gacggacaca ttgggactga 300

gatacggccc agactcctac gggaggcagc agctaagaat attccgcaat ggggggaacc 360

ccgacggagc gacgccgcgt ggacgacgaa ggccggaagg ttgtaaagtc ctttttccg 420

cgaggaataa ggccgggagg gaatgcccgg ccggtgacgg tagcggagga ataagcaccg 480

gctaattacg tgctaacacg taaggtgcga gcgttgttcg gaattattgg gcgtaaaggg 540

catgcaggcg gtcgcaagcc cggcgtgaaa ggggggctaa ctcccatgcg ctgggaactg 600

aggcttgagt ttctgaaggg agcggaattc cacgtgtagg ggtgaaatct gtagatatgt 660

ggaagaacac caatggcgaa ggcaggtcgg cgaagactga cgctgaggtg cgaaggtgcg 720

gggagcaaac aggattagat ccctggtagt ccgcacagtc aacgatgtgc actagatgtc 780

tgtccaagga tgggtgtcaa agcaaacgcg ataagtgcac cgcctgggga gtatgcccgc 840

aagggtgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 900

ttcgatggta cgcgaggaac cttacctggg tttgacatac acagattatt agagatatta 960

agcgcagcaa tgctctgtga caggtgctgc atggctgtcg tcagctcgtg ccgtgaggtg 1020

ttgggttaag tcccgcaacg agcgcaaccc ctactgcagt taccagcgta gggggactct 1080

ggcggaactg cctgcgacaa gcaggaggaa ggggggatga cgtcaagtca tcatggccct 1140

tatgtccagg gcacacacgt gctacaatgg ttgggacaag cgagcgagtg cgagagtaag 1200

cagaacgcag aaaccgatcg tagtccggat tggagtctga aactcgactc catgaagttg 1260

gaatcgctag taatcgcaat cagcacgtgc ggtgaatacg ttcccgggcc ttgtacacac 1320

cgcccgtcac accatccgag tgggggtacc cgaagccggc agtctaaccg caagggggac 1380

gctgtcgaag gtatgcttcg tgagg 1405

<210> 1959
<211> 1543
<212> DNA
<213> Treponema sp. ovine footrot

<400> 1959
agagtttgat catggctcag aacgaacgct ggcggcgcgt cttaagcatg caagtcgaac 60

ggcaagagag gagcttgctt ctctcctaga gtggcggact ggtgaggaac acgtgggtaa 120

tctaccctta agatggggat agctgctaga aatagcaggt aataccgaat atactcagtg 180

cttcataagg ggtattgagg aaaggaagct acggcttcgc ttgaggatga gcttgcgtcc 240

cattagctag ttggtgaggt aaaggcccac caaggcgacg atgggtatcc ggcctgagag 300

ggtgatcrga cacattggga ctgagatacg gcccaaactc ctacgggagg cagcagctaa 360

gaatattccg caatggacgg aagtctgacg gagcgacgcc gcgtggatga agaaggctga 420

aaagttgtaa aatccttttg ttgatgaaga ataagggtga gagggaatgc tcatctgatg 480

acggtaatcg acgaataagc cccggctaat tacgtgccag cagccgcggt aacacgtaag 540

gggcgagcgt tgttcggaat tattgggcgt aaagggcatg taggcggtta tgtaagcctg 600

atgtgaaatc ctggggctta accccagaat agcattgggt actgtgtaac ttgaattacg 660

gaagggaaac tggaattcca agtgtagggg tggaatctgt agatatttgg aagaacaccg 720

gtggcgaagg cgggtttctg gccgataatt gacgctgaga tgcgaaagtg tggggatcga 780

acaggattag ataccctggt agtccacacc gtaaacgatg tacactaggt gttggggcaa 840

gagcttcagt gccaaagcaa acgcgataag tgtaccgcct ggggagtatg cccgcaaggg 900

tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg tttaattcga 960

tggtacgcga ggaaccttac ctgggtttga catctagtag aaggtcttag agataaggcc 1020

gggtagcaat accctgctag acaggtgctg catggctgtc gtcagctcgt gccgtgaggt 1080

gttgggttaa gtcccgcaat gagcgcaacc cctactgcca gttactaaca ggtaaagctt 1140

gaggactctg gcggaactgc cgatgacaaa tcggaggaag gtggggatga cgtcaagtca 1200

tcatggccct tatgtccagg gctacacacg tgctacaatg gttgctacaa agcgaagcaa 1260

gaccgtaagg tggagcaagc cgcaaaaaag caatcgtagt tcggattgaa gtctgaaact 1320

cgacttcatg aagttggaat cgctagtaat cgcgcatcag cacggcgcgg tgaatacgtt 1380

cccgggcctt gtacacaccg cccgtcacac catccgagtt gggggtaccc gaagtcgctt 1440

gtctaacctg caaaggagga cggtgccgaa ggtacgcttg gtaaggaggg tgaagtcgta 1500

acaaggtagc cgtaccggaa ggtgcggctg gatcacctcc tta 1543

<210> 1960
<211> 1548
<212> DNA
<213> Treponema vincentii

<400> 1960
tggagagttt gatcctggct cagaacgaac gctggcggcg cgtcttaagc atgcaagtcg 60

aacggcaaga gagaagcttg cttctctcct agagtggcgg actggtgagg aacacgtggg 120

taatctaccc ttaagatggg gatagctgct agaaatagca ggtaataccg aatagtctca 180

atggttcata agaagtattg aggaaaggaa gctacggctt cgcttgagga tgagcttgcg 240

tcccattagc tagttggtga ggtaaaggcc caccaaggcg acgatgggta tccggcctga 300

gagggtgatc ggacacattg ggactgagat acggcccaaa ctcctacggg aggcagcagc 360

taagaatatt ccgcaatgga cggaagtctg acggagcgac gccgcgtgga tgaagaaggc 420

tgaaaagttg taaaatcctt ttgttgatga agaataaggg tgagagggaa tgctcatctg 480

atgacggtaa tcgacgaata agccccggct aattacgtgc cagcagccgc ggtaacacgt 540

aaggggcgag cgttgttcgg aattattggg cgtaaagggc atgtaggcgg ttatgtaagc 600

ctggtgtgaa atcctggggc ttaaccctag aatagcattg ggtactgtat aacttgaatt 660

acggaaggga aactggaatt ccaagtgtag gggtggaatc tgtagatatt tggaagaaca 720

ccggtggcga aggcgggttt ctggccgata attgacgctg agatgcgaaa gtgtggggat 780

cgaacaggat tagataccct ggtagtccac actgtaaacg atgtacacta ggtgttgggg 840

caagagcttc agtgccaaag caaacgcgat aagtgtaccg cctggggagt atgcccgcaa 900

gggtgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgatggtacg cgaggaacct tacctgggtt tgacatctag tagacagtct tagagataag 1020

gcttggtagc aataccctgc tagacaggtg ctgcatggct gtcgtcagct cgtgccgtga 1080

ggtgttgggt taagtcccgc aacgagcgca acccctactg ccagttacta acaggtaaag 1140

cttgaggact ctggcggaac tgccgatgac aaatcggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttatgtcc agggctacac acgtgctaca atggttgcta caaagcgaag 1260

cgagaccgta aggtggagca aaccgcaaaa aagcaatcgt agttcggatt gaagtctgaa 1320

actcgacttc atgaagttgg aatcgctagt aatcgcgcat cagcacggcg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatccga gttgggggta cccgaagtcg 1440

cttgtctaac ctgcaaagga ggacggtgcc gaaggtacgc ttggtgagga gggtgaagtc 1500

gtaacaaggt agccgtaccg gaaggtgcgg ctggatcacc tcctttct 1548

<210> 1961
<211> 1530
<212> DNA
<213> Tropheryma whipplei

<400> 1961
ttattatgga gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc 60

aagtcgaacg gaaatcaggg agcttgctcc ctgtgattag tggcgaacgg gtgagtaaca 120

cgtgagcaac ctgcccctaa ctttgggata acttcgggaa accggggcta ataccaaata 180

cgacccatga gggcatcctc tgtgggtgga aagaatttcg gttggggatg ggctcgcggc 240

ctatcagctt gttggtgggg taacggccta ccaaggcatc gacgggtagc cggcctgaga 300

gggtgatcgg ccacactggg actgagacac ggcccagact cctacgggag gcagcagtgg 360

ggaatattgc acaatgggcg caagcctgat gcagcaacgc cgcgtggggg aagaaggcct 420

tcgggttgta aacctctttt ggcagggaag aagcgaaagt gacggtacct gcagaaaaag 480

cgccggctaa ctacgtgcca gcagccgcgg taatacgtag ggcgcgagcg ttgtccggaa 540

ttattgggcg taaagagctc gtaggcggtt tgtcacgtct gccgtgaaaa tccgaggctc 600

aacctcggac ctgcggtggg tacgggcagg ctagagtgcg ataggggaga gcggaattcc 660

tggtgtagcg gtgaaatgcg cagatatcag gaggaacacc gatggcgaag gcagctctct 720

gggtcgctac tgacgctgag gagcgaaagc gtggggagcg aacaggatta gataccctgg 780

tagtccacgc cgtaaacgtt gggcgctaga cgtgggggtg gttccaccgc ttccgtgtcg 840

cagctaacgc attaagcgcc ccgcctgggg agtacggccg caaggctaaa actcaaggga 900

attgacgggg gcccgcacaa gcggcggagc atgcggatta attcaatgca acgcgaagaa 960

ccttaccaag gcttgatata taccggaaag gcgtagagat acgccccccg caaggtcggt 1020

atacaggtgg tgcacggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa ccctcgtcct gtgttgccag cgcgtaatgg cggggactca caggagactg 1140

ccggggtcaa ctcggaggaa ggtggggatg acgtcaaatc atcatgccct tcggtcttgg 1200

gcttcacgcg tgctacaatg gctggtacag agggttgcaa tatcgcaagg tggagcgaat 1260

ctcaaaaagc cagtctcagt tcggattggg gtctgcaact cgaccccatg aagtcggagt 1320

cgctagtaat cgcagatcag caatgctgcg gtgaatacgt tcccgggcct tgtacacacc 1380

gcccgtcaag tcatgaaagc tggtaacacc cgaagccggt gacttaacct tttttggaga 1440

gagccgtcga aggtgggatt ggtgattggg actaagtcgt aacaaggtag ccgtaccgga 1500

aggtgcggct ggatcacctc ctttctaagg 1530

<210> 1962
<211> 1323
<212> DNA
<213> Trueperella pyogenes

<220>
<221> modified_base
<222> (1119)..(1119)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1154)..(1154)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1237)..(1237)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1276)..(1276)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1279)..(1279)
<223> a, c, t, g, unknown or other

<400> 1962
ggcgtgctta acacatgcaa gtcgaacgat gaagccgggg ctttttgttt tggtggatta 60

gtggcgaacg ggtgagtaat acgtgagtaa cctgcccttg tctttgggat aagcctggga 120

aactgggtct aataccggat attctgcttt tgccgcatgg tgggggttgg aaagattttt 180

tggatgggga tgggctcacg gcctatcagc ttgttggtgg ggtgatggcc taccaaggcg 240

tcgacgggta gccggcctga gagggtgacc ggccacattg ggactgagat acggcccaga 300

ctcctacggg aggcagcagt ggggaatatt gcacaatgga cgcaagtctg atgcagcgac 360

gccgcgtggg ggatgaaggc tttcgggttg taaactcctt tcagtacaga agaagcattt 420

ttgtgacggt atgtgcagaa gaagcgccgg ctaactacgt gccagcagcc gcggtaatac 480

gtagggcgcg agcgttgtcc ggaattattg ggcgtaaaga gctcgtaggc ggtttgttgc 540

gcctgctgtg aaagaccggg gcttaacttc ggggttgcag tgggtacggg cagactagag 600

tgtggtaggg gtaattggaa ttcctggtgt agcggtggaa tgcgcagata tcaggaggaa 660

caccgatggc gaaggcaggt tactgggcca ttactgacgc tgaggagcga aagcgtgggt 720

agcgaacagg attagatacc ctggtagtcc acgctgtaaa cgttgggcac taggtgtggg 780

gcctttcca cgggttctgc gccgtagcta acgctttaag tgccccgcct ggggagtacg 840

gccgcaaggt taaaactcaa aggaattgac gggggcccgc acaagcggcg gagcatgcgg 900

attaattcga tgcaacgcga agaaccttac caaggcttga catacactgc gatgtgccag 960

agatggtgca gccttcgggg tggtgtacag gtggtgcatg gttgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tcctgtgttg ccagcatgtt 1080

gtggtgggga ctcacgggag actgccgggg ttaactcgna ggaaggtggg gatgacgtca 1140

aatcatcatg cccnttatgt cttgggcttc acgcatgcta caatggccgg tacagagggt 1200

tgcgagcctg tgagggtgag ctaatccctt aaagctngtc tcagttcgga ttggggtctg 1260

caactcgacc ccatgnagnc ggagtcgcta gtaatcgcag atcagcaacg ctgcggtgaa 1320

tac 1323

<210> 1963
<211> 1486
<212> DNA
<213> Tsukamurella paurometabola

<400> 1963
cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac ggtaaggccc 60

tttcgggggt acacgagtgg cgaacgggtg agtaacacgt gggtgacctg ccctgtactt 120

tgggataagc ctgggaaact gggtctaata ccggatatga ccttctcctg catgggggtt 180

ggtggaaagc ttttgcggta caggatgggc ccgcggccta tcagcttgtt ggtggggtaa 240

tggcctacca aggcgacgac gggtagccgg cctgagaggg cgaccggcca cactgggact 300

gagacacggc ccagactcct acgggaggca gcagtgggga atattgcaca atgggcgcaa 360

gcctgatgca gcgacgccgc gtgagggatg acggccttcg ggttgtaaac ctctttcagt 420

agggacgaag cgcaagtgac ggtacctaca gaagaagcac cggccaacta cgtgccagca 480

gccgcggtaa tacgtagggt gcaagcgttg tccggaatta ctgggcgtaa agagctcgta 540

ggcggtttgt cacgtcgtct gtgaaaaccc gaggcttaac ctcgggcctg caggcgatac 600

gggcagactt gagtactgta ggggagactg gaattcctgg tgtagcggtg gaatgcgcag 660

atatcaggag gaacaccggt ggcgaaggcg ggtctctggg cagtaactga cgctgaggag 720

cgaaagcgtg ggtagcgaac aggattagat accctggtag tccacgccgt aaacggtggg 780

tactaggtgt gggtttcctt ccacgggatc cgtgccgtag ctaacgcatt aagtaccccg 840

cctggggagt acggccgcaa ggctaaaact caaaggaatt gacgggggcc cgcacaagcg 900

gcggagcatg tggattaatt cgatgcaacg cgaagaacct tacctgggtt tgacatatac 960

accatcgccg cagagatgtg gtttgccttg tgccttctat acaggtggtg catggctgtc 1020

gtcagctcgt gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttgtctcat 1080

gttgccagca cgtaatggtg gggactcgtg agagactgcc ggggtcaact cggaggaagg 1140

tggggatgac gtcaagtcat catgcccctt atgtccaggg cttcacacat gctacaatgg 1200

cgcgtacaga gggctgcgat accgtgaggt ggagcgaatc ccttaaagcg cgtctcagtt 1260

cggattgggg tctgcaactc gaccccatga agtcggagtc gctagtaatc gcagatcagc 1320

aacgctgcgg tgaatacgtt cccgggcctt gtacacaccg cccgtcacgt catgaaagtc 1380

ggtaacaccc gaagccggtg gcctaaccct tgtggaggga gctgtcgaag gtgggattgg 1440

cgattgggac gaagtcgtaa caaggtagcc gtaccggaag gtgcgg 1486

<210> 1964
<211> 1417
<212> DNA
<213> Tsukamurella tyrosinosolvens

<400> 1964
ggctcaggac gaacgctggc ggcgtgctta acacatgcaa gtcgaacggt aaggcccttt 60

cgggggtaca cgagtggcga acgggtgagt aacacgtggg tgacctgccc tgtacttcgg 120

gataagcctg ggaaactggg tctaataccg gatatgacct tctcctgcat gggggttggt 180

ggaaagtttt tgcggtacag gatgggcccg cggcctatca gcttgttggt ggggtaatgg 240

cctaccaagg cgacgacggg tagccggcct gagagggcga ccggccacac tgggactgag 300

acacggccca gactcctacg ggaggcagca gtggggaata ttgcacaatg ggcgaaagcc 360

tgatgcagcg acgccgcgtg agggatgacg gccttcgggt tgtaaacctc tttcagtagg 420

gacgaagcgc aagtgacggt acctacagaa gaagcaccgg ccaactacgt gccagcagcc 480

gcggtaatac gtagggtgcg agcgttgtcc ggatttactg ggcgtaaaga gctcgtaggc 540

ggtttgtccg tcgtctgtga aaacccgagg cttaacctcg ggcctgcagg cgatacgggc 600

agacttgagt actgtagggg agactggaat tcctggtgta gcggtggaat gcgcagatat 660

caggaggaac accggtggcg aaggcgggtc tctgggcagt aactgacgct gaggagcgaa 720

agcgtgggta gcgaacagga ttagataccc tggtagtcca cgccgtaaac ggtgggtact 780

aggtgtgggt ttccttccac gggatccgtg ccgtagctaa cgcattaagt accccgcctg 840

gggagtacgg ccgcaaggct aaaactcaaa ggaattgacg gggcccgca caagcggcgg 900

agcatgtgga ttaattcgat gcaacgcgaa gaaccttacc tgggtttgac atatagagga 960

tcgccggaga gattcggttt gccttgtgcc ttctatacag gtggtgcatg gctgtcgtca 1020

gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg tctcatgttg 1080

ccagcacgta atggtgggga ctcgtgagag actgccgggg tcaactcgga ggaaggtggg 1140

gatgacgtca agtcatcatg ccccttatgt ccagggcttc acacatgcta caatggcgcg 1200

tacagagggc tgcgataccg tgaggtggag cgaatccctt aaagcgcgtc tcagttcgga 1260

ttggggtctg caactcgacc ccatgaagtc ggagtcgcta gtaatcgcag atcagcaacg 1320

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacgtcatg aaagtcggta 1380

acacccgaag ccggggccta acccccttgtg ggaggga 1417

<210> 1965
<211> 1371
<212> DNA
<213> Turicibacter sanguinis

<220>

<221> modified_base
<222> (50)..(50)
<223> a, c, t, g, unknown or other

<400> 1965
tcgagcgaac cacttcggtg gtgagcggcg aacgggtgag taacacgtan gttatctgcc 60

catcagacgg ggacaacgat tggaaacgat cgctaatacc ggataggacg aaagtttaaa 120

ggtgcttcgg caccactgat ggatgagcct gcggcgcatt agctagttgg tagggtaaag 180

gcctaccaag gcgacgatgc gtagccgacc tgagagggtg aacggccaca ctgggactga 240

gacacggccc agactcctac gggaggcagc agtagggaat cttcggcaat gggcgaaagc 300

ctgaccgagc aacgccgcgt gaatgatgaa ggccttcggg ttgtaaaatt ctgttataag 360

ggaagaatgg ctctagtagg aaatggctag agtgtgacgg taccttatga gaaagccacg 420

gctaactacg tgccagcagc cgcggtaata cgtaggtggc gagcgttatc cggaattatt 480

gggcgtaaag agcgcgcagg tggttgatta agtctgatgt gaaagcccac ggcttaaccg 540

tggagggtca ttggaaactg gtcaacttga gtgcagaaga gggaagtgga attccatgtg 600

tagcggtgaa atgcgtagag atatggagga acaccagtgg cgaaggcggc ttcctggtct 660

gtaactgaca ctgaggcgcg aaagcgtggg gagcaaacag gattagatac cctggtagtc 720

cacgccgtaa acgatgagtg ctaagtgttg ggggtcgaac ctcagtgctg aagttaacgc 780

attaagcact ccgcctgggg agtacggtcg caagactgaa actcaaagga attgacgggg 840

acccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg 900

tcttgacata ccagtgaccg tcctagagat aggattttcc cttcggggac aatggataca 960

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1020

cgcaacccct gtcgttagtt gccagcattc agttggggac tctaacgaga ctgccagtga 1080

caaactggag gaaggtgggg atgacgtcaa atcatcatgc cccttatgac ctgggctaca 1140

cacgtgctac aatggttggt acaaagagaa gcgaagcggt gacgtggagc aaacctcata 1200

aagccaatct cagttcggat tgtaggctgc aactcgccta catgaagttg gaatcgctag 1260

taatcgcgaa tcagcatgtc gcggtgaata cgttcccggg tcttgtacac accgcccgtc 1320

acaccacgag agtttacaac acccgaagtc agtggcctaa ccgcaaggag g 1371

<210> 1966
<211> 1561
<212> DNA
<213> Ureaplasma parvum

<400> 1966
tgttctttga aaactaaata gaatccgtca attttaaaga gtttgatcct ggctcaggat 60

taacgctggc ggcatgccta atacatgcaa atcgaacgaa gccttttagg cttagtggtg 120

aacgggtgag taacacgtat ccaatctacc cttaagttgg ggataactag tcgaaagatt 180

agctaatacc gaataataac atcaatatcg catgagaaga tgtagaaagt cgctctttgt 240

ggcgacgctt ttggatgagg gtgcgacgta tcagatagtt ggtgaggtaa tggctcacca 300

agtcaatgac gcgtagctgt actgagaggt agaacagcca caatgggact gagacacggc 360

ccatactcct acgggaggca gcagtaggga atttttcaca atgggcgcaa gccttatgaa 420

gcaatgccgc gtgaacgatg aaggtcttat agattgtaaa gttcttttat atgggaagaa 480

acgctaaaat aggaaatgat tttagtttga ctgtaccatt tgaataagta tcggctaact 540

atgtgccagc agccgcggta atacatagga tgcaagcgtt atccggattt actgggcgta 600

aaacgagcgc aggcgggttt gtaagtttgg tattaaatct agatgcttaa cgtctagctg 660

tatcaaaaac tgtaaaccta gagtgtagta gggagttggg gaactccatg tggagcggta 720

aaatgcgtag atatatggaa gaacaccggt ggcgaaggcg ccaacttgga ctatcactga 780

cgcttaggct cgaaagtgtg gggagcaaat aggattagat accctagtag tccacaccgt 840

aaacgatcat cattaaatgt cggcccgaat gggtcggtgt tgtagctaac gcattaaatg 900

atgtgcctgg gtagtacatt cgcaagaatg aaactcaaac ggaattgacg gggacccgca 960

caagtggtgg agcatgttgc ttaatttgac aatacacgta gaaccttacc taggtttgac 1020

atctattgcg atgctataga aatatagttg aggttaacaa tatgacaggt ggtgcatggt 1080

tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg caacgagcgc aacccctttc 1140

gttagttact tttctagcga tactgctacc gcaaggtaga ggaaggtggg gatgacgtca 1200

aatcatcatg ccccttatat ctagggctgc aaacgtgcta caatggctaa tacaaactgc 1260

tgcaaaatcg taagatgaag cgaaacagaa aaagttagtc tcagttcgga tagagggctg 1320

caattcgtcc tcttgaagtt ggaatcacta gtaatcgcga atcagacatg tcgcggtgaa 1380

tacgttctcg ggtcttgtac acaccgcccg tcaaactatg ggagctggta atatctaaaa 1440

ccgcaaagct aacctttttgg aggcatgcgt ctagggtagg atcggtgact ggagttaagt 1500

cgtaacaagg tatccctacg agaacgtggg gatggatcac ctcctttctt cggagtaaat 1560

t 1561

<210> 1967
<211> 1517
<212> DNA
<213> Ureaplasma urealyticum

<400> 1967
caattttaaa gagtttgatc ctggctcagg attaacgctg gcggcatgcc taatacatgc 60

aaatcgaacg aagcctttta ggcttagtgg tgaacgggtg agtaacacgt atccaaccta 120

cccttaagtt ggggataact agtcgaaaga ttagctaata ccgaataata acatcaatat 180

cgcatgagaa gatgtagaaa gtcgcgtttg cgacgctttt ggatgggggt gcgacgtatc 240

agatagttgg tgaggtaatg gctcaccaag tcaatgacgc gtagctgtac tgagaggtag 300

aacagccaca atgggactga gacacggccc atactcctac gggaggcagc agtagggaat 360

ttttcacaat gggcgcaagc cttatgaagc aatgccgcgt gaacgatgaa ggtcttatag 420

attgtaaagt tcttttatat gggaagaaac gctaagatag gaaatgattt tagtttgact 480

gtaccatttg aataagtatc ggctaactat gtgccagcag ccgcggtaat acataggatg 540

caagcgttat ccggatttac tgggcgtaaa acgagcgcag gcgggtttgt aagtttggta 600

ttaaatctag atgcttaacg tctagctgta tcaaaaactg taaacctaga gtgtagtagg 660

gagttgggga actccatgtg gagcggtaaa atgcgtagat atatggaaga acaccggtgg 720

cgaaggcgcc aacttggact atcactgacg cttaggctcg aaagtgtggg gagcaaatag 780

gattagatac cctagtagtc cacaccgtaa acgatcatca ttaaatgtcg gctcgaacga 840

gtcggtgttg tagctaacgc attaaatgat gtgcctgggt agtacattcg caagaatgaa 900

actcaaacgg aattgacggg gacccgcaca agtggtggag catgttgctt aatttgacaa 960

tacacgtaga accttaccta ggtttgacat ctattgcgac gctatagaaa tatagttgag 1020

gttaacaata tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa ccccttttcgt tagttgcttt tctagcgata ctgctaccgc 1140

aaggtagagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatatct agggctgcaa 1200

acgtgctaca atggctaata caaactgctg caaaatcgta agatgaagcg aaacagaaaa 1260

agttagtctc agttcggata gagggctgca attcgccctc ttgaagttgg aatcactagt 1320

aatcgcgaat cagacatgtc gcggtgaata cgttctcggg tcttgtacac accgcccgtc 1380

aaactatggg agctggtaat atctaaaacc gcaaagctaa ccttttggag gcatgcgtct 1440

agggtaggat cggtgactgg agttaagtcg taacaaggta tccctacgag aacgtgggga 1500

tggatcacct cctttct 1517

<210> 1968
<211> 958
<212> DNA
<213> Ureibacillus composti

<220>
<221> modified_base
<222> (15)..(15)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (90)..(90)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (97)..(97)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (170)..(170)
<223> a, c, t, g, unknown or other

<400> 1968
acggctaact acgtnccagc agccgcggta atacgtaggt ggcaagcgtt gtccggaatt 60

attgggcgta aagcgcgcgc aggcggtctn ttaagtntga tgtgaaagcc cccggctcaa 120

ccggggaggg tcattggaaa ctgggagact tgagtgcagg agagggaagn ggaattccat 180

gtgtagcggt gaaatgcgta gagatatgga ggaacaccag tggcgaaggc ggcttcctgg 240

cctgtaactg acgctgaggc gcgaaagcgt ggggagcaaa caggattaga taccctggta 300

gtccacgccg taaacgatga gtgctaggtg ttaggggttt tccgcccctt agtgctgcag 360

ctaacgcatt aagcactccg cctggggagt acggtcgcaa gactgaaact caaaggaatt 420

gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg cgaagaacct 480

taccaggtct tgacatcccg ctgaccgcca tggagacatg gctttccctt cggggacagc 540

ggtgacaggt ggtgcatggt tgtcgtcagc tcgtgtcgtg agatgttggg ttaagtcccg 600

caacgagcgc aacccttgtc cttagttgcc atcattcagt tgggcactct aaggagactg 660

ccgtacaaat acggaggaag gtggggatga cgtcaaatca tcatgcccct tatgacctgg 720

gctacacacg tgctacaatg ggtggtacaa agggcagcaa acccgcgagg gggagcgaat 780

cccaaaaagc cactctcagt tcggattgca ggctgcaact cgcctgcatg aagccggaat 840

cgctagtaat cgcggatcag catgccgcgg tgaatacgtt cccgggcctt gtacacaccg 900

cccgtcacac cacgagagtc tgtaacaccc gaagtcggtg aggtaaccct ccgggagc 958

<210> 1969
<211> 1405
<212> DNA
<213> Ureibacillus suwonensis

<220>
<221> modified_base
<222> (9)..(10)
<223> a, c, t, g, unknown or other

<400> 1969
gcggaccann ttagaaagct tgctttttag attggttagc ggcggacggg tgagtaacac 60

gtgggtaacc tgccctatag accgggataa ctcgcggaaa cgcgtgctaa taccggataa 120

cacaccgaag cgcatgcttc ggggttgaaa gatggttctg ctatcactat aggatgggcc 180

cgcggcgcat tagctagttg gtggggtaac ggcctaccaa ggcgacgatg cgtagccgac 240

ctgagagggt gatcggccac actgggactg agacacggcc cagactccta cgggaggcag 300

cagtagggaa tcttccacaa tgggcgaaag cctgatggag caacgccgcg tgagcgaaga 360

aggtcttcgg atcgtaaagc tctgttgtaa gggaagaaca agcgcagcag tcactggctg 420

cgccctgacg gtaccttact agaaagccac ggctaactac gtgccagcag ccgcggtaat 480

acgtaggtgg caagcgttgt ccggaattat tgggcgtaaa gcgcgcgcag gcggtctctt 540

aagtctgatg tgaaagcccc cggctcaacc ggggagggtc attggaaact gggagacttg 600

agtgcaggag agggaaggga attccatgtg tagcggtgaa atgcgtagag atatggagga 660

acaccagtgg cgaaggcggc ttcctggcct gtaactgacg ctgaggcgcg aaagcgtggg 720

gagcaaacag gattagatac cctggtagtc cacgccgtaa acgatgagtg ctaggtgtta 780

gggggtttcc gccccttagt gctgcagcta acgcattaag cactccgcct ggggagtacg 840

gtcgcaagac tgaaactcaa aggaattgac gggggcccgc acaagcggtg gagcatgtgg 900

tttaattcga agcaacgcga agaaccttac caggtcttga catcccgctg accgccatgg 960

acacatggcg ttcccatggg ggacagcggt gacaggtggt gcatggttgt cgtcagctcg 1020

tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccttgtcctt agttgccatc 1080

attcagttgg gcactctaag gagactgccg tacaaatacg gaggaaggtg gggatgacgt 1140

caaatcatca tgccccttat gacctgggct acacacgtgc tacaatgggt ggtacaaagg 1200

gcagcaaacc cgcgaggggg agcgaatccc aaaaagccac tctcagttcg gattgcaggc 1260

tgcaactcgc ctgcatgaag ccggaatcgc tagtaatcgc ggatcagcat gccgcggtga 1320

atacgttccc gggccttgta cacaccgccc gtcacaccac gagagtctgt aacacccgaa 1380

gtcggtgagg taaccctccg ggagc 1405

<210> 1970
<211> 1489
<212> DNA
<213> Ureibacillus terrenus

<220>
<221> modified_base
<222> (382)..(382)
<223> a, c, t, g, unknown or other

<400> 1970
tggcggcgtg cctaatacat gcaagtcgag cggacctcat aggaagcttg ctttttatga 60

ggttagcggc ggacgggtga gtaacacgtg ggtaacctgc cctatagacc gggataactc 120

gcggaaacgc gtgctaatac cggataacac agcggagcgc atgctccggt gttgaaaggt 180

ggttctgcta ccgctatagg atgggcccgc ggcgcattag ctagttggtg gggtaacggc 240

ctaccaaggc gacgatgcgt agccgacctg agagggtgat cggccacact gggactgaga 300

cacggcccag actcctacgg gaggcagcag tagggaatct tccacaatgg gcgaaagcct 360

gatggagcaa cgccgcgtga gngaagaagg tcttcggatc gtaaagctct gttgtaaggg 420

aagaacaagt gcggtagtaa ctgaccgcac cctgacggta ccttacgaga aagccacggc 480

taactacgtg ccagcagccg cggtaatacg taggtggcga gcgttgtccg gaattattgg 540

gcgtaaagcg cgcgcaggcg gtctcttaag tctgatgtga aagcccccgg ctcaaccggg 600

gagggtcatt ggaaactggg agacttgagt gcaggagagg gaagcggaat tccatgtgta 660

gcggtgaaat gcgtagagat atggaggaac accagtggcg aaggcggctt cctggcctgt 720

aactgacgct gaagcgcgaa agcgtgggga ccaaacagga ttagataccc tggtagtcca 780

cgccgtaaac gatgagtgct aagtgttagg gggcttgccc cttagtgctg cagctaacgc 840

attaagcact ccgcctgggg agtacggtcg caagactgaa actcaaagga attgacgggg 900

gcccgcacaa gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg 960

tcttgacatc ccgctgaccg ccatggagac atggccttcc cttcggggac agcggtgaca 1020

ggtggtgcat ggttgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt gtccttagtt gccatcattc agttgggcac tctaaggaga ctgccgtaca 1140

aatacggagg aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac 1200

acgtgctaca atgggcggta caaagggctg cgaacccgcg aggggagcg aatcccaaaa 1260

agccgctctc agttcggatt gcaggctgca actcgcctgc atgaagccgg aatcgctagt 1320

aatcgcggat cagcatgccg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca 1380

caccacgaga gtctgtaaca cccgaagtcg gtgaggtaac ccttccggga gccagccgcc 1440

gaaggtggga cagatgattg gggtgaagtc gtaacaaggt agccgtatc 1489

<210> 1971
<211> 1402
<212> DNA
<213> Ureibacillus thermophilus

<220>
<221> modified_base
<222> (30)..(30)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1393)..(1393)
<223> a, c, t, g, unknown or other

<400> 1971
cggaccaatt aagaagcttg ctttttgatn tggttagcgg cggacgggtg agtaacacgt 60

gggtaacctg ccctatagac tgggataact cgcggaaacg tgagctaata ccggataaca 120

catcaaagtg catgctttga tgttgaaaga tggttctgct atcactatag gatgggcccg 180

cggcgcatta gctagttggt ggggtaacgg cctaccaagg cgacgatgcg tagccgacct 240

gagagggtga tcggccacac tgggactgag acacggccca gactcctacg ggaggcagca 300

gtagggaatc ttccacaatg ggcgaaagcc tgatggagca acgccgcgtg agcgaagaag 360

gtcttcggat cgtaaagctc tgttgtaagg gaagaacaag cgcagcagta actggctgcg 420

ccctgacggt accttactag aaagccacgg ctaatacgtg ccagcagccg cggtaatagt 480

aggtggcaag cgttgtccgg aattattggg cgtaaagcgc gcgcaggcgg tttcttaagt 540

ctgatgtgaa agcccccggc tcaaccgggg agggtcattg gaaactggga gacttgagtg 600

caggagaggg aagtggaatt ccatgtgtag cggtgaaatg cgtagagata tggaggaaca 660

ccagtggcga aggcggcttc ctggcctgta actgacgctg aggcgcgaaa gcgtggggag 720

caaacaggat tagatacctg gtagtccacg ccgtaaacga tgagtgctag gtgttagggg 780

gtttccaccc cttagtgctg cagctaacgc attaagcact ccgcctgggg agtacgtcgc 840

aagactgaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 900

ttcgaagcaa cgcgaagaac cttaccaggt cttgacatcc cgctgaccgc catggagaca 960

tggctttccc ttcggggaca gcggtgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1020

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctg tccttagttg ccatcattca 1080

gttgggcact ctaaggagac tgccgtacaa atacggagga aggtggggat gacgtcaaat 1140

catcatgccc cttatgacct gggctacaca cgtgctacaa tgggcagtac aaagggctgc 1200

gaacccgcga gggggagcga atcccaaaaa gctgctctca gttcggattg caggctgcaa 1260

ctcgcctgca tgaagccgga atcgctagta atcgcagatc agcatgctgc ggtgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcac accacgagag tctgtaacac ccgaagtcgg 1380

tggggtaacc ctncgggagc ca 1402

<210> 1972
<211> 1540
<212> DNA
<213> Ureibacillus thermosphaericus

<400> 1972
tagagtttga tcatggctca ggacgaacgc tggcggcgtg cctaatacat gcaagtcgag 60

cgaaccaatt gaaagcctag ctttcatgag gttagcggcg gacgggtgag taacacgtgg 120

gtaacctgcc ctatagactg ggataactcg cggaaacgcg tgctaatacc ggataacaca 180

tcaaagtgca tgctttgatg ttgaaagatg gttctgctat cactatagga tgggcccgcg 240

gcgcattagc ttgttggtgg ggtaacggcc taccaaggcg acgatgcgta gccgacctga 300

gagggtgatc ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt 360

agggaatctt ccacaatggg cgaaagcctg atggagcaac gccgcgtgag cgaagaaggt 420

cttcggatcg taaagctctg ttgtaaggga agaacaagtg cagtagtaac tggctgcacc 480

ttgacggtac cttactagaa agccacggct aactacgtgc cagcagccgc ggtaatacgt 540

aggtggcaag cgttgtccgg aattattggg cgtaaagcgc gcgcaggcgg tctcttaagt 600

ctgatgtgaa agcccccggc ttaaccgggg agggtcattg gaaactggga gacttgagtg 660

caggagaggg aagcggaatt ccatgtgtag cggtgaaatg cgtagagata tggaggaaca 720

ccagtggcga aggcggcttc ctggcctgta actgacgctg aggcgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgagtgcta agtgttaggg 840

ggtttccacc ccttagtgct gcagctaacg cattaagcac tccgcctggg gagtacggtc 900

gcaagactga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgaagc aacgcgaaga accttaccag gtcttgacat cccgctgacc gctatggaga 1020

catagccttc ccttcgggga cagcggtgac aggtggtgca tggttgtcgt cagctcgtgt 1080

cgtgagatgt tgggttaagt cccgcaacga gcgcaaccct tgtccttagt tgccatcatt 1140

cagttgggca ctctaaggag actgccgtac aaatacggag gaaggtgggg atgacgtcaa 1200

atcatcatgc cccttatgac ctgggctaca cacgtgctac aatggacggt acaaacggtc 1260

gcgaagtcgc gagacggagc caatccgaaa aaaccgttct cagttcggat tgcaggctgc 1320

aactcgcctg catgaagccg gaatcgctag taatcgcgga tcagcatgcc gcggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccacgag agtctgtaac acccgaagtc 1440

ggtgaggtaa ccctttcggg agccagccgc cgaaggtggg acagatgatt ggggtgaagt 1500

cgtaacaagg tagccgtatc ggaaggtgcg gctggatcac 1540

<210> 1973
<211> 1469
<212> DNA
<213> Vagococcus fluvialis

<400> 1973
acgaacgctg gcggcgtgcc taatacatgc aagtcgaacg ctttgatttt caccggagct 60

tgctccaccg aaaatcaaag agtggcggac gggtgagtaa cacgtgggca acctgcccaa 120

cagaggggga taacacttgg aaacaggtgc taataccgca taatttgttt tcccgcatgg 180

gagaataata aaagacgctt cggtgtcact gttggatggg cccgcgctgc attagttagt 240

tggtggggta atggcctacc aagaccgtga tgcatagccg acctgagagg gtgatcggcc 300

acactgggac tgagacacgg cccagactcc tacgggaggc agcagtaggg aatcttcggc 360

aatggacgaa agtctgaccg agcaacgccg cgtgagtgaa gaaggttttc ggatcgtaaa 420

actctgttgt tagagaagaa caagtgggag agtaactgtt cccaccttga cggtatctaa 480

ccagaaagcc acggctaact acgtgccagc agccgcggta atacgtaggt ggcaagcgtt 540

gtccggattt attgggcgta aagcgagcgc aggcggtttc ttaagtctga tgtgaaagcc 600

ctcggctcaa ccgaggaagg tcattggaaa ctggggaact tgaatgcaga agaggagagt 660

ggaattccat gtgtagcggt gaaatgcgta gatatatgga ggaacaccag tggcgaaggc 720

gactctctgg tctgtaattg acgctgaggc tcgaaagcgt ggggagcaaa caggattaga 780

taccctggta gtccacgccg taaacgatga gtgctaagtg ttggagggtt tccgcccttc 840

agtgctgcag ttaacgcatt aagcactccg cctggggagt acggccgcaa ggctgaaact 900

caaaggaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt cgaagcaacg 960

cgaagaacct taccaggtct tgacatcctt tgaccactct agagatagag ctttcccttc 1020

ggggacaaag tgacaggtgg tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt 1080

aagtcccgca acgagcgcaa cccttattgt tagttgccat cattcagttg ggcactctag 1140

cgagactgcc ggtgacaaac cggaggaagg tggggatgac gtcaaatcat catgcccctt 1200

atgacctggg ctacacacgt gctacaatgg acggtacaat gagtcgcgag accgcgaggt 1260

ttagctaatc tcttaaagcc gttctcagtt cggattgtag gctgcaactc gcctacatga 1320

agccggaatc gctagtaatc gtggatcagc acgccacggt gaatacgttc ccgggccttg 1380

tacacaccgc ccgtcacacc acgagagttt gtaacaccca aagtcggtga ggtaaccttt 1440

tggagccagc cgcctaaggt gggatagat 1469

<210> 1974
<211> 1389
<212> DNA
<213> Veillonella atypica

<220>
<221> modified_base
<222> (530)..(530)
<223> a, c, t, g, unknown or other

<400> 1974
gcgatggaag cttgcttcta tcaatcttag tggcgaacgg gtgagtaacg cgtaatcaac 60

ctgcccttca gaggggggaca acagttggaa acgactgcta ataccgcata cgatccaatc 120

tcggcatcga gactggatga aaggtggcct ctatttataa gctatcactg aaggagggga 180

ttgcgtctga ttagctagtt ggaggggtaa cggcccacca aggcgatgat cagtagccgg 240

tctgagagga tgaacggcca cattgggact gagacacggc ccagactcct acgggaggca 300

gcagtgggga atcttccgca atggacgaaa gtctgacgga gcaacgccgc gtgagtgatg 360

acggccttcg ggttgtaaag ctctgttaat cgggacgaat ggttcttgtg cgaatagtgc 420

gaggatttga cggtaccgga atagaaagcc acggctaact acgtgccagc agccgcggta 480

atagtaggtg gcaagcgttg tccggaatta ttgggcgtaa gcgcgcaggn gagtctgtct 540

taaaagttcg gggcttaacc ccgtgatggg atggaaactg cgatctagag tatcggagag 600

gaaagtggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaagaa caccagtggc 660

gaaggcgact ttctggacga aaactgacgc tgaggcgcga aagccagggg agcgaacggg 720

attagatacc ccggtagtcc tggccgtaaa cgatgggtac tagtgtagag gtatcgaccc 780

cttctgtgcc ggagttaacg caataagtac cccgcctggg gagtacgacc gcaaggttga 840

aactcaaagg aattgagggg gcccgcacaa gcggtggagt atgtggttta attcgacgca 900

acgcgaagaa cttaccaggt ctgacattga tggacagaac tagagatagt tcttcttctt 960

cggaagccag aaaacaggtg gtgcacggtt gtcgtcagct cgtgtcgtga gatgttgggt 1020

taagtcccgc aacgagcgca acccctatct tatgttgcca gcacttcggg tgggaactca 1080

tgagagactg ccgcagacaa tgcggaggaa ggcggggatg acgtcaaatc atcatgcccc 1140

ttatgacctg ggctacacac gtactacaat gggagttaat agacggaagc gaaaccgcga 1200

ggtggagcaa acccgagaaa cactctctca gttcggatcg taggctgcaa ctcgcctacg 1260

tgaagtcgga atcgctagta atcgcaggtc agcatactgc ggtgaatacg ttcccgggcc 1320

ttgtacacac cgcccgtcac accacgaaag tcggaagtgc ccaaagccgg tggggtaacc 1380

ttcgggagc 1389

<210> 1975
<211> 1005
<212> DNA
<213> Veillonella dispar

<220>
<221> modified_base
<222> (820)..(820)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base

<222> (855)..(855)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (938)..(938)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (992)..(992)
<223> a, c, t, g, unknown or other

<400> 1975
tcgaacgaag agcgatggaa gcttgcttct atcaatctta gtggcgaacg ggtgagtaac 60

gcgtaatcaa cctgcccttc agaggggggac aacagttgga aacgactgct aataccgcat 120

acgatctaac ctcggcatcg aggatggatg aaaggtggcc tctatttata agctatcact 180

gaaggagggg attgcgtctg attagctagt tggaggggta acggcccacc aaggcgatga 240

tcagtagccg gtctgagagg atgaacggcc acattgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtgggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg 360

cgtgagtgat gacggccttc gggttgtaaa gctctgttaa tcgggacgaa aggccttctt 420

gcgaatagtt agaaggattg acggtaccgg aatagaaagc cacggctaac tacgtgccag 480

cagccgcggt aatacgtagg tggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg 540

caggcggatt ggtcagtctg tcttaaaagt tcggggctta accccgtgat gggatggaaa 600

ctgccaatct agagtatcgg agaggaaagt ggaattccta gtgtagcggt gaaatgcgta 660

gatattagga agaacaccag tggcgaaggc gactttctgg acgaaaactg acgctgaggc 720

gcgaaagcca ggggagcgaa cgggattaga taccccggta gtcctggccg taaacgatgg 780

gtactaggtg taggaggtat cgacccccttc tgtgccggan ttaacgcaat aagtaccccg 840

cctggggagt acgancgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg 900

gtggagtatg tggtttaatt cgacgcaacg cgaagaanct taccaggtct tgacattgat 960

ggacagaact agagatagtt cctcttcttc gnaagccaga aaaca 1005

<210> 1976
<211> 1296
<212> DNA
<213> Veillonella genomosp. P1 oral clone MB5_P17

<400> 1976
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta 60

acgcgtaatc aacctgccct tcagaggggg acaacagttg gaaacgactg ctaataccgc 120

atacggaaag tcactgaagg aggggattgc gtctgattag ctagttggag gggtaacggc 180

ccaccaaggc gatgatcagt agccggtctg agaggatgaa cggccacatt gggactgaga 240

cacggcccag actcctacgg gaggcagcag ttgggaatct tccgcaatgg acgaaagtct 300

gacggagcaa cgccgcgtga gtgatgacgg ccttcgggtt gtaaagctct gttaatcggg 360

acgatgacgg taccggaata gaaagccacg gctaactacg tgccagcagc cgcggtaata 420

cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggattggtc 480

agtctgtctt aaaagttcgg ggcttaaccc cgtgatggga tggaaactgc caatctagag 540

tatcggagag gaaagtggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaagaa 600

caccagtggc gaaggcgact ttctggacga actgacgctg aggcgcgaaa gccaggggag 660

cgaacgggat tagatacccc ggtagtcctg gccgtaaacg atgggtacta ggtgtaggag 720

cttctatgcc ggagttaacg caataagtac cccgcctggg gagtacgacc gcaaggttga 780

aactcaaagg aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc 840

aacgcgaaga accttaccag gtcttgacat taacaggtgg tgcacggttg tcgtcagctc 900

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatctt atgttgccag 960

cacgtgggaa ctcatgagag actgccgcag acaatgcgga ggaaggcggg gatgacgtca 1020

aatcatcatg ccccttatga cctgggctac acacgtacta caatgggagt tagacggaag 1080

cgaaaccgcg aggtggagca gacccgagac tctctcagtt cggatgtagg ctgcaactcg 1140

cctacggaag tcggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc 1200

gggccttgta cacaccgccc gtcacaccac gaaagtcgga agtgcccaaa gccggtgggt 1260

agccagccgt ctaaggtaaa gtcgatgatt ggggtg 1296

<210> 1977
<211> 1409
<212> DNA
<213> Veillonella montpellierensis

<400> 1977
gagcacggga gcttgctcct atgaatctta gtggcgaacg ggtgagtaac gcgtaatcaa 60

cctgccctac aatgggggac aacagttgga aacgactgct aataccgcat acgacctacg 120

gttggcatca atcgtaggtg aaaggtggcc tctacatgta agctatcgtt gtaggagggg 180

attgcgtctg attagctagt tggaggggta acggcccacc aaggcgatga tcagtagccg 240

gtctgagagg atgaacggcc acattgggac tgagacacgg cccaaactcc tacgggaggc 300

agcagtgggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg cgtgagtgat 360

gacggtcttc ggattgtaaa gctctgttaa tcgggacgaa tggtttgtgt gcaaatagtg 420

catagacatg acggtaccgg aatagaaagc cacggctaac tacgtgccag cagccgcggt 480

aatacgtagg tggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg caggcggact 540

agccagtcag tcttaaaagt tcggggctta accccgtgat gggattgaaa ctactagtct 600

agagtatcgg agaggaaagt ggaattccta gtgtagcggt gaaatgcgta gatattagga 660

agaacaccag tggcgaaggc gactttctgg acgaacactg acgctgaggc gcgaaagcca 720

ggggagcgaa cgggattaga taccccggta gtcctggccg taaacgatgg gtactaagtg 780

tgggaggtat cgacccttc cgtgctgcag ttaacgcaat aagtaccccg cctggggagt 840

acggtcgcaa gactgaaact caaaggaatt gacgggggcc cgcacaagcg gtggagtatg 900

tggtttaatt cgacgcaacg cgaagaacct taccaggtct tgacattgat ggacagaact 960

agagatagtt tttcttcttc ggaagccaga aaacaggtgg tgcacggttg tcgtcagctc 1020

gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa cccctatctt atgttgccag 1080

cacgtaatgg tgggaactca tgagagactg ccgcagacaa tgcggaggaa ggcggggatg 1140

acgtcaaatc atcatgcccc ttatgacctg ggctacacac gtactacaat gggagttaat 1200

aaagagaagc gaaaccgcga ggtggagcga acctcacaaa cactctctca gttcggattg 1260

caggctgcaa ctcgcctgca tgaagtcgga atcgctagta atcgcaggtc agcatactgc 1320

ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accacgaaag tcggaagtac 1380

ccaaagccgg tggggtaacc ttcgggagc 1409

<210> 1978
<211> 1564
<212> DNA
<213> Veillonella parvula

<400> 1978
ttggagagtt tgatcctggc tcaggacgaa cgctggcggc gtgcttaaca catgcaagtc 60

gaacgaagag cgatggaagc ttgcttctat caatcttagt ggcgaacggg tgagtaacgc 120

gtaatcaacc tgcccttcag agggggacaa cagttggaaa cgactgctaa taccgcatac 180

gatctaatct cggcatcgag gatagatgaa aggtggcctc tacatgtaag ctatcactga 240

aggaggggat tgcgtctgat tagctagttg gaggggtaac ggcccaccaa ggcgatgatc 300

agtagccggt ctgagaggat gaacggccac attgggactg agacacggcc cagactccta 360

cgggaggcag cagtggggaa tcttccgcaa tggacgaaag tctgacggag caacgccgcg 420

tgagtgatga cggccttcgg gttgtaaagc tctgttaatc gggacgaaag gccttcttgc 480

gaatagtgag aaggattgac ggtaccggaa tagaaagcca cggctaacta cgtgccagca 540

gccgcggtaa tacgtaggtg gcaagcgttg tccggaatta ttgggcgtaa agcgcgcgca 600

ggcggatcag gtcagtctgt cttaaaagtt cggggcttaa ccccgtgatg ggatggaaac 660

tgccaatcta gagtatcgga gaggaaagtg gaattcctag tgtagcggtg aaatgcgtag 720

atattaggaa gaacaccagt ggcgaaggcg actttctgga cgaaaactga cgctgaggcg 780

cgaaagccag gggagcgaac gggattagat accccggtag tcctggccgt aaacgatggg 840

tactaggtgt aggaggtatc gaccccttct gtgccggagt taacgcaata agtaccccgc 900

ctggggagta cgaccgcaag gttgaaactc aaaggaattg acgggggccc gcacaagcgg 960

tggagtatgt ggtttaattc gacgcaacgc gaagaacctt accaggtctt gacattgatg 1020

gacagaacca gagatggttc ctcttcttcg gaagccagaa aacaggtggt gcacggttgt 1080

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac ccctatctta 1140

tgttgccagc actttgggtg gggaactcat gagagactgc cgcagacaat gcggaggaag 1200

gcggggatga cgtcaaatca tcatgcccct tatgacctgg gctacacacg tactacaatg 1260

ggagttaata gacggaagcg agatcgcgag atggagcaaa cccgagaaac actctctcag 1320

ttcggatcgt aggctgcaac tcgcctacgt gaagtcggaa tcgctagtaa tcgcaggtca 1380

gcatactgcg gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccacgaaagt 1440

cggaagtgcc caaagccggt ggggtaacct tcgggagcca gccgtctaag gtaaagtcga 1500

tgattggggt gaagtcgtaa caaggtagcc gtatcggaag gtgcggctgg atcacctcct 1560

ttct 1564

<210> 1979
<211> 1000
<212> DNA
<213> Veillonella sp. 3_1_44

<220>
<221> modified_base
<222> (992)..(994)
<223> a, c, t, g, unknown or other

<400> 1979
tcgaacgaag agcgatggaa gcttgcttct atcaatctta gtggcgaacg ggtgagtaac 60

gcgtaatcaa cctgcccttc agaggggac aacagttgga aacgactgct aataccgcat 120

acgatctaat ctcggcatcg aggatagatg aaaggtggcc tctacatgta agctatcact 180

gaaggagggg attgcgtctg attagctagt tggaggggta acggcccacc aaggcgatga 240

tcagtagccg gtctgagagg atgaacggcc acattgggac tgagacacgg cccagactcc 300

tacgggaggc agcagtgggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg 360

cgtgagtgat gacggccttc gggttgtaaa gctctgttaa tcgggacgaa aggccttctt 420

gcgaatagtg agaaggattg acggtaccgg aatagaaagc cacggctaac tacgtgccag 480

cagccgcggt aatacgtagg tggcaagcgt tgtccggaat tattgggcgt aaagcgcgcg 540

caggcggata ggtcagtctg tcttaaaagt tcggggctta accccgtgat gggatggaaa 600

ctgccaatct agagtatcgg agaggaaagt ggaattccta gtgtagcggt gaaatgcgta 660

gatattagga agaacaccag tggcgaaggc gactttctgg acgaaaactg acgctgaggc 720

gcgaaagcca ggggagcgaa cgggattaga taccccggta gtcctggccg taaacgatgg 780

gtactaggtg taggaggtat cgacccccttc tgtgccggag ttaacgcaat aagtaccccg 840

cctggggagt acgaccgcaa ggttgaaact caaaggaatt gacgggggcc cgcacaagcg 900

gtggagtatg tggtttaatt cgacgcaacg cgaagaaccc ttaccaggtc ttgacattga 960

tggacagaac tagagatagt tcctcttctt cnnnagccag 1000

<210> 1980
<211> 1354
<212> DNA
<213> Veillonella sp. 6_1_27

<400> 1980
agcgatggaa gcttgcttct atcaatctta gtggcgaacg ggtgagtaac gcgtaatcaa 60

cctgcccttc agaggggac aacagttgga aacgactgct aataccgcat acgatctaac 120

ctcggcatcg aggaaagatg aaaggtggcc tctatttata agctatcact gaaggagggg 180

attgcgtctg attagctagt tggaggggta acggcccacc aaggcgatga tcagtagccg 240

gtctgagagg atgaacggcc acattgggac tgagacacgg cccagactcc tacgggaggc 300

agcagtgggg aatcttccgc aatggacgaa agtctgacgg agcaacgccg cgtgagtgat 360

gacggccttc gggttgtaaa gctctgttaa tcgggacgaa aggccttctt gcgaacagtt 420

agaaggattg acggtaccgg aatagaaagc cacggctaac tacgtgccag cagccgcggt 480

aatagtaggt ggcaagcgtt gtccggaatt attgggcgta aagcgcgcgc aggcggatca 540

gtagtctgtt taaaagttcg gggcttaacc ccgtgatggg atggaaactg ctgatctaga 600

gtatcggaga ggaaagtgga attcctagtg tagcggtgaa atgcgtagat attaggaaga 660

acaccagtgg cgaaggcgac tttctggacg aaaactgacg tgaggcgcga aagccagggg 720

agcgaacggg attagatacc ccggtagtcc tggccgtaaa cgatgggtac taggtgtagg 780

aggtatcgac cccttctgtg ccggagttaa cgcaataagt accccgcctg gggagtacga 840

ccgcaaggtt gaaactcaag atagggggcc cgccagggga ggttatgagg aaactacagg 900

ttgacttcgc ggtacagaac cagagatggt tcttcttctt cggaagccag aaaacaggtg 960

gtgcacggtt gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca 1020

acccctatct tatgttgcca gcactttggg tgggaactca tgagagactg ccgcagacaa 1080

tgcggaggaa ggcggggatg acgtcaaatc atcatgcccc ttatgacctg ggctacacac 1140

gtactacaat gggagttaat agacggaagc gagatcgcga gatggagcaa acccgagaaa 1200

cactctctca gttcggatcg taggctgcaa ctcgcctacg tgaagtcgga atcgctagta 1260

atcgcaggtc agcatactgc ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac 1320

accacgaaag tcggaagtgc ccaaagccgg tggg 1354

<210> 1981
<211> 1264
<212> DNA
<213> Veillonella sp. ACP1

<400> 1981
ggcggcgtgc ttaacacatg caagtcgaac gagtggcgaa cgggtgagta acgcgtaatc 60

aacctgccct tcagaggggg acaacagttg gaaacgactg ctaataccgc atacggaaag 120

tcactgaagg aggggattgc gtctgattag ctagttggag gggtaacggc ccaccaaggc 180

gatgatcagt agccggtctg agaggatgaa cggccacatt gggactgaga cacggcccag 240

actcctacgg gaggcagcag tggggaatct tccgcaatgg acgaaagtct gacggagcaa 300

cgccgcgtga gtgatgacgg ccttcgggtt gtaaagctct gttaatcggg acgatgacgg 360

taccggaata gaaagccacg gctaactacg tgccagcagc cgcggtaata cgtaggtggc 420

aagcgttgtc cggaattatt gggcgtaaag cgcgcgcagg cggattggtc agtctgtctt 480

aaaagttcgg ggcttaaccc cgtgatggga tggaaactgc caatctagag tatcggagag 540

gaaagtggaa ttcctagtgt agcggtgaaa tgcgtagata ttaggaagaa caccagtggc 600

gaaggcgact ttctggacga actgacgctg aggcgcgaaa gccaggggag cgaacgggat 660

tagatacccc ggtagtcctg gccgtaaacg atgggtacta ggtgtaggag cttctgtgcc 720

ggagttaacg caataagtac cccgcctggg gagtacgacc gcaaggttga aactcaaagg 780

aattgacggg ggcccgcaca agcggtggag tatgtggttt aattcgacgc aacgcgaaga 840

accttaccag gtcttgacat taacaggtgg tgcacggttg tcgtcagctc gtgtcgtgag 900

atgttgggtt aagtcccgca acgagcgcaa cccctatctt atgttgccag cacgtgggaa 960

ctcatgagag actgccgcag acaatgcgga ggaaggcggg gatgacgtca aatcatcatg 1020

ccccttatga cctgggctac acacgtacta caatgggagt tagacggaag cgaaaccgcg 1080

aggtggagca aacccgagac tctctcagtt cggacgtagg ctgcaactcg cctacggaag 1140

tcggaatcgc tagtaatcgc aggtcagcat actgcggtga atacgttccc gggccttgta 1200

cacaccgccc gtcacaccac gaaagtcgga agtgcccaaa gccggtgggt agccagccgt 1260

ctaa 1264

<210> 1982
<211> 1209
<212> DNA
<213> Veillonella sp. AS16

<400> 1982
agtggcgaac gggtgagtaa cgcgtaatca acctgccctt cagaggggga caacagttgg 60

aaacgactgc taataccgca tacggaaagt cactgaagga ggggattgcg tctgatcagc 120

tagttggagg ggtaacggcc caccaaggcg atgatcagta gccggtctga gaggatgaac 180

ggccacattg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatctt 240

ccgcaatgga cgaaagtctg acggagcaac gccgcgtgag tgatgacggc cttcgggttg 300

taaagctctg ttaatcggga cgatgacggt accggaatag aaagccacgg ctaactacgt 360

gccagcagcc gcggtaatac gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc 420

gcgcgcaggc ggatcagtca gtctgtctta aaagttcggg gcttaacccc gtgaggggat 480

ggaaactgct gatctagagt atcggagagg aaagtggaat tcctagtgta gcggtgaaat 540

gcgtagatat taggaagaac accagtggcg aaggcgactt tctggacgaa ctgacgctga 600

ggcgcgaaag ccaggggagc gaacgggatt agataccccg gtagtcctgg ccgtaaacga 660

tgggtactag gtgtaggagc ttctgtgccg gagttaacgc aataagtacc ccgcctgggg 720

agtacgaccg caaggttgaa actcaaagga attgacgggg gcccgcacaa gcggtggagt 780

atgtggttta attcgacgca acgcgaagaa ccttaccagg tcttgacatt aacaggtggt 840

gcacggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 900

ccttatctta tgttgccagc acgtggggac tcatgagaga ctgccgcaga caatgcggag 960

gaaggcgggg atgacgtcaa atcatcatgc cccttatgac ctgggctaca cacgtactac 1020

aatgggagtt agacggaagc gaagccgcga ggtggagcga acccgagact ctctcagttc 1080

ggacgtaggc tgcaactcgc ctacggaagt cggaatcgct agtaatcgca ggtcagcata 1140

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg aaagtcggaa 1200

gtacccaaa 1209

<210> 1983
<211> 844
<212> DNA
<213> Veillonella sp. BS32b

<220>
<221> modified_base
<222> (45)..(45)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (50)..(50)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (656)..(656)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (663)..(663)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (713)..(713)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (782)..(782)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (788)..(788)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (815)..(816)
<223> a, c, t, g, unknown or other

<400> 1983
cgaagagcga tggaagcttg cttctatcaa tcttagtggc gaacnggagn gtaacgcgta 60

atcaacctgc ccttcagagg gggacaacag ttggaaacga ctgctaatac cgcatacgat 120

ccaatctcgg catcgagact ggatgaaagg tggcctctat ttataagcta tcactgaagg 180

aggggattgc gtctgattag ctagttggag gggtaacggc ccaccaaggc gatgatcagt 240

agccggtctg agaggatgaa cggccacatt gggactgaga cacggcccag actcctacgg 300

gaggcagcag tggggaatct tccgcaatgg acgaaagtct gacggagcaa cgccgcgtga 360

gtgatgacgg ccttcgggtt gtaaagctct gttaatcggg acgaatggtt cttgtgcgaa 420

tagtgcgagg atttgacggt accggaatag aaagccacgg ctaactacgt gccagcagcc 480

gcggtaatac gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc 540

ggattggtca gtctgtctta aaagttcggg gcttaacccc gtgatgggat ggaaactgcc 600

aatctagagt atcggagagg aaagtggaat tcctagtgta gcggtgaaat gcgtanatat 660

tangaagaac accagtggcg aaggcgactt tctggacgaa aactgacgct gangcgcgaa 720

agccagggga gcgaacggga ttagataccc cggtagtcct ggccgtaaac gatgggtact 780

angtgtanga ggtatcgacc ccttctgtgc cgganntaac gcaataagta ccccgcctgg 840

ggag 844

<210> 1984
<211> 1015
<212> DNA
<213> Veillonella sp. ICM51a

<220>
<221> modified_base
<222> (709)..(709)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (979)..(979)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (996)..(998)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1008)..(1008)
<223> a, c, t, g, unknown or other

<400> 1984
gagcgatgga agcttgcttc tatcaatctt agtggcgaac gggtgagtaa cgcgtaatca 60

acctgccctt cagaggggga caacagttgg aaacgactgc taataccgca tacgatccaa 120

tctcggcatc gagactggat gaaaggtggc ctctatttat aagctatcac tgaaggaggg 180

gattgcgtct gattagctag ttggaggggt aacggcccac caaggcgatg atcagtagcc 240

ggtctgagag gatgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg 300

cagcagtggg gaatcttccg caatggacga aagtctgacg gagcaacgcc gcgtgagtga 360

tgacggcctt cgggttgtaa agctctgtta atcgggacga atggttcttg tgcaaatagt 420

gcgaggattt gacggtaccg gaatagaaag ccacggctaa ctacgtgcca gcagccgcgg 480

taatacgtag gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggcggat 540

tggtcagtct gtcttaaaag ttcggggctt aaccccgtga tgggatggaa actgccaatc 600

tagagtatcg gagaggaaag tggaattcct agtgtagcgg tgaaatgcgt agatattagg 660

aagaacacca gtggcgaagg cgactttctg gacgaaaact gacgctgang cgcgaaagcc 720

aggggagcga acgggattag ataccccggt agtcctggcc gtaaacgatg ggtactaggt 780

gtaggaggta tcgacccctt ctgtgccgga gttaacgcaa taagtacccc gcctggggag 840

tacgaccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc ggtggagtat 900

gtggtttaat tcgacgcaac gcgaagaacc ttaccaggtc ttgacattga tggacagaac 960

tagagatagt tcctcttcnt cggaagccag aaaacnnngg tgcacggntg tcgtc 1015

<210> 1985
<211> 971
<212> DNA
<213> Veillonella sp. MSA12

<220>
<221> modified_base
<222> (591)..(591)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (703)..(703)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (772)..(772)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (869)..(869)
<223> a, c, t, g, unknown or other

<400> 1985
tggaagcttg cttctatcaa tcttagtggc gaacgggtga gtaacgcgta atcaacctgc 60

ccttcagagg gggacaacag ttggaaacga ctgctaatac cgcatacgat ctgacctcgg 120

catcgaggat ggatgaaagg tggcctctat ttataagcta tcactgaagg aggggattgc 180

gtctgattag ctagttggag gggtaacggc ccaccaaggc gatgatcagt agccggtctg 240

agaggatgaa cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag 300

tggggaatct tccgcaatgg acgaaagtct gacggagcaa cgccgcgtga gtgatgacgg 360

ccttcgggtt gtaaagctct gttaatcggg acgaaaggcc ttcttgcgaa tagttagaag 420

gattgacggt accggaatag aaagccacgg ctaactacgt gccagcagcc gcggtaatac 480

gtaggtggca agcgttgtcc ggaattattg ggcgtaaagc gcgcgcaggc ggattggtca 540

gtctgtctta aaagttcggg gcttaacccc gtgatgggat ggaaactgcc natctagagt 600

atcggagagg aaagtggaat tcctagtgta gcggtgaaat gcgtagatat taggaagaac 660

accagtggcg aaggcgactt tctggacgaa aactgacgct gangcgcgaa agccagggga 720

gcgaacggga ttagataccc cggtagtcct ggccgtaaac gatgggtact angtgtagga 780

ggtatcgacc ccttctgtgc cggagttaac gcaataagta ccccgcctgg ggagtacgac 840

cgcaaggttg aaactcaaag gaattgacng gggcccgcac aagcggtgga gtatgtggtt 900

taattcgacg caacgcgaag aaccttacca ggtcttgaca ttgatggaca gaactagaga 960

tagttcctct t 971

<210> 1986
<211> 1344
<212> DNA
<213> Veillonella sp. NVG 100cf

<400> 1986
cgcgtaatca acctgccctt cagaggggga caacagttgg aaacgactgc taataccgca 60

tacgatccaa cctcggcatc gaggatggat gaaaggtggc ctctatttat aagctatcac 120

tgaaggaggg gattgcgtct gattagctag ttggaggggt aacggcccac caaggcaatg 180

atcagtagcc ggtctgagag gatgaacggc cacattggga ctgagacacg gcccagactc 240

ctacgggagg cagcagtggg gaatcttccg caatggacga aagtctgacg gagcaacgcc 300

gcgtgagtga tgacggcctt cgggttgtaa agctctgtta atcgggacga aaggtcctct 360

tgcgaatagt tagaggaatt gacggtaccg gaatagaaag ccacggctaa ctacgtgcca 420

gcagccgcgg taatacgtag gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc 480

gcaggcggat cagtcagtct gtcttaaaag ttcggggctt aaccccgtga tgggatggaa 540

actgctgatc tagagtatcg gagaggaaag tggaattcct agtgtagcgg tgaaatgcgt 600

agatattagg aagaacacca gtggcgaagg cgactttctg gacgaaaact gacgctgagg 660

cgcgaaagcc aggggagcga acgggattag ataccccggt agtcctggcc gtaaacgatg 720

ggtactaggt gtaggaggta tcgacccctt ctgtgccgga gttaacgcaa taagtacccc 780

gcctggggag tacgaccgca aggttgaaac tcaaaggaat tgacgggggc ccgcacaagc 840

ggtggagtat gtggtttaat tcgacgcaac gcgaagaacc ttaccaggtc ttgacattga 900

tggacagaac tagagatagt tcctcttctt cggaagccag aaaacaggtg gtgcacggtt 960

gtcgtcagct cgtgtcgtga gatgttgggt taagtcccgc aacgagcgca acccctatct 1020

tatgttgcca gcacgtaatg gtgggaactc atgagagact gccgcagaca atgcggagga 1080

aggcggggat gacgtcaaat catcatgccc cttatgacct gggctacaca cgtactacaa 1140

tgggagttaa tagacggaag cgagatcgcg agatggagca aacccgagaa acactctctc 1200

agttcggatc gtaggctgca actcgcctac gtgaagtcgg aatcgctagt aatcgcaggt 1260

cagcatactg cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccacgaaa 1320

gtcggaagtg cccaaagccg gtgg 1344

<210> 1987
<211> 1441
<212> DNA
<213> Veillonella sp. OK11

<220>
<221> modified_base
<222> (9)..(9)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (150)..(150)
<223> a, c, t, g, unknown or other

<400> 1987
tcgcgtctnc catgcagtcg aaacgaagag cgatggtaag cttgcttcta tcaatcttag 60

tggcgaacgg gtgagtaacg cgtaatcaac cctgcccttc agagggggac aacagttgga 120

aacgactgct aataccgcat acgatccaan ctcggcatcg aggatggatg aaaggtggcc 180

tctatttata agctatcact gaaggagggg attgcgtctg attagctagt tggaggggta 240

acggcccacc aaggcaatga tcagtagccg gtctgagagg atgaacggcc acattgggac 300

tgagacacgg cccagactcc tacgggaggc agcagtgggg aatcttccgc aatggacgaa 360

agtctgacgg agcaacgccg cgtgagtgat gacggccttc gggttgtaaa gctctgttaa 420

tcgggacgaa aggtcttctt gcgaatagtt agaagaattg acggtaccgg aatagaaagc 480

cacggctaac tacgtgccag cagccgcggt aatacgtagg tggcaagcgt tgtccggaat 540

tattgggcgt aaagcgcgcg caggcggatc agtcagtctg tcttaaaagt tcggggctta 600

accccgtgat gggatggaaa ctgctgatct agagtatcgg agaggaaagt ggaattccta 660

gtgtagcggt gaaatgcgta gatattagga agaacaccag tggcgaaggc gactttctgg 720

acgaaaactg acgctgaggc gcgaaagcca ggggagcgaa cgggattaga taccccggta 780

gtcctggccg taaacgatgg gtactaggtg taggaggtat cgacccttc tgtgccggag 840

ttaacgcaat aagtaccccg cctggggagt acgaccgcaa ggttgaaact caaaggaatt 900

gacgggggcc cgcacaagcg gtggagtatg tggtttaatt cgacgcaacg cgaagaacct 960

taccaggtct tgacattgat ggacagaact agagatagtt cctcttcttc ggaagccaga 1020

aaacaggtgg tgcacggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca 1080

acgagcgcaa cccctatctt atgttgccag cacgtaatgg tgggaactca tgagagactg 1140

ccgcagacaa tgcggaggaa ggcggggatg acgtcaaatc atcatgcccc ttatgacctg 1200

ggctacacac gtactacaat gggagttaat agacggaagc gagatcgcga gatggagcaa 1260

acccgagaaa cactctctca gttcggatcg taggctgcaa ctcgcctacg tgaagtcgga 1320

atcgctagta atcgcaggtc agcatactgc ggtgaatacg ttcccgggcc ttgtacacac 1380

cgcccgtcac accacgaaag tcggaagtgc ccaaagccgg tggggtaacc ttcggagccg 1440

c 1441

<210> 1988
<211> 1364
<212> DNA
<213> Veillonella sp. oral clone ASCA08

<220>
<221> modified_base
<222> (12)..(12)

<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (445)..(445)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (728)..(728)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (815)..(815)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1340)..(1340)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1344)..(1344)
<223> a, c, t, g, unknown or other

<400> 1988
ggagtttgat tntggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagtggcgaa cgggtgagta acgcgtaatc aacctgccct tcagaggggg ataacaacgg 120

gaaaccgttg ctaataccgc gtacggaaag tcgctgaagg aggggattgc gtctgattag 180

ctagttggag gggtaacggc ccaccaaggc aatgatcagt agccggtctg agaggatgaa 240

cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag tggggaatct 300

tccgcaatgg acgaaagtct gacggagcaa cgccgcgtga gtgatgaagg tcttcggatt 360

gtaaagctct gttaatcggg acgatgacgg taccggaata gaaagccacg gctaactacg 420

tgccagcagc cgcggtaata cgtangtggc aagcgttgtc cgaaattatt gggcgtaaag 480

cgcgcgcagc cggcctatcc agtctgtctt aaaagttcgg ggctcaaccc cgtgatggga 540

tggaaactag taggctagag tatcggagag gaaagcggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaagaa caccagtggc gaaggcggct ttctggacga actgacgctg 660

aggcgcgaaa gcaaggcgag cgaacgggat tagatacccc ggtagtcctt gccgtaaacg 720

atgggtanta ggtgtaggag cttctgtgcc ggagttaacg caataatacc ccgcctgggg 780

agtacggtcg caaggctgaa actcaaagga attgncgggg gcccgcacaa gcggtggagt 840

acgtggttta attcgacgca acgcgaagaa ccttaccagg tcttgacatt aacaggtggt 900

gcacggctgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac 960

ccctatctta tgttgccagc acgtgggaac tcatgagaga ctgccgcaga caatgcggag 1020

gaaggagggg atgacgtcaa gtcatcatgc cccttatgac ctgggctaca cacgtactac 1080

aatgggcttt agaggggagc gaagccgcga ggtggagcaa accccagagc tctcagttcg 1140

gaagtaggct gcaactcgcc tacggaagtc ggaatcgcta gtaatcacag gtcagcatac 1200

tgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacacaacga aagtcggaag 1260

tacccaaagc cggtgggtag ccagccgtct aaggtaaagt cgatgattgg ggtgaagtcg 1320

taacaaggta gccgtatcgn aagntgcggc tggaacacct cctt 1364

<210> 1989
<211> 1323
<212> DNA
<213> Veillonella sp. oral clone ASCB03

<220>
<221> modified_base
<222> (667)..(667)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (676)..(676)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (714)..(714)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (720)..(720)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (792)..(792)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (803)..(803)
<223> a, c, t, g, unknown or other

<400> 1989
ggagtttgat tctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagtggcgaa cgggtgagta acgcgtaatc aacctgccct tcagaggggg ataacaacgg 120

gaaaccgttg ctaataccgc gtacggaaag tcgctgaagg aggggattgc gtctgattag 180

ctagttggag gggtaacggc ccaccaaggc aatgatcagt agccggtctg agaggatgaa 240

cggccacatt gggactgaga cacggcccaa actcctacgg gaggcagcag tggggaatct 300

tccgcaatgg acgaaagtct gacggaacaa cgccgcgtga gtgatgaagg tctgcggatt 360

gtaaagctct gttaatcggg acgatgacgg taccggaata gaaagccacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag 480

cgcgcgcagg cggcctatcc agtctgtctt aaaagttcgg ggctcaaccc cgtgatggga 540

tggaaactac taggctagag tatcggagag gaaagcggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaagaa caccagtggc gaaggcggct ttctggacga actgacgctg 660

aggcgcnaaa gccagnggag cgaacgggat tagatacccc ggtagtcctg gccntaaacn 720

atgggtacta ggtgtaggag cttctgtgcc ggagttaacg caataagtac cccgcctggg 780

gagtacggtc gnaaggctga aantcaaagg aattgacggg ggcccgcaca agcggtggag 840

tatgtggttt aattcgacgc aacgcgaaga accttaccag gtcttgacat taacaggtgg 900

tgcacggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctatctt atgttgccag cacgtgggaa ctcatgagag actgccgcag acaatgcgga 1020

ggaaggcggg gatgacgtca agtcatcatg ccccttatga cctgggctac acacgtacta 1080

caatgggctt tagagggaag cgaagccgcg aggtggagca aaccccagag ctctcagttc 1140

ggacgtaggc tgcaactcgc ctacggaagt cggaatcgct agtaatcgca ggtcagcata 1200

ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg tcacaccacg aaagtcggaa 1260

gtacccaaag ccggtgggta gccagccgtc taaggtaaag tcgatgattg gggtgaagtc 1320

gta 1323

<210> 1990
<211> 1363
<212> DNA
<213> Veillonella sp. oral clone ASCG01

<220>
<221> modified_base
<222> (360)..(360)
<223> a, c, t, g, unknown or other

<400> 1990
ggagtttgat tatggctcag gactaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagtggcgaa cgggtgagta acgcgtaatc aacctgccct tcagaggggg acaacagttg 120

gaaacgactg ctaataccgc atacggaaag tcactgaagg aggggattgc gtctgattag 180

ctagttggag gggtaacggc ccaccaaggc aatgatcagt agccggtctg agaggatgaa 240

cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatct 300

tccgcaatgg acgaaagtct gacggtgcaa cgccgcgtga gtgatgacgg ccttcgggtn 360

gtaaagctct gttaatcggg acgatgacgg taccggaata gaaagccacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag 480

cgcgcgcagg cggatcagtc agtctgtctt aaaagttcgg ggcttaaccc cgtgatggga 540

tggaaactgc tgatctagag tatcggagag gaaagtggaa ttcctagtgt agcggtgaaa 600

tgcgtagata ttaggaagaa caccagtggc gaaggcgact ttctggacga actgacgctg 660

aggcgcgaaa gccaggggag cgaacgggat tagataccc ggtagtcctg gccgtaaacg 720

atgggtacta ggtgtaggag cttctgtgcc ggagttaacg caataagtac cccgcctggg 780

gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag 840

tatgtggttt aattcgacgc aacgcgaaga accttaccgg gtcttgacat taacaggtgg 900

tgcacggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctatctt atgttgccag cacgtgggaa ctcatgagag actgccgcag acaatgcgga 1020

ggaaggagag gatgacgtca aatcatcatg ccccttatga cctgggctac acacgtacta 1080

caatgggagt tagacggaag cgagatcgcg agatggagca aacccgagac tctctcagtt 1140

cggacgtagg ctgcaactcg cctacggaag tcggaatcgc tagtaatcgc aggtcagcat 1200

actgcggtga atacgttccc gggccttgta cacaccgccc gtcacaccac gaaagtcgga 1260

agtgcccaaa gccggtgggt agccagccgt ctaaggtaaa gtcgatgatt ggggtgaagt 1320

cgtaacaagg tagccgtatc ggaaggtgcg gctggaacac ctc 1363

<210> 1991
<211> 1296
<212> DNA
<213> Veillonella sp. oral clone ASCG02

<220>
<221> modified_base
<222> (1102)..(1102)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1143)..(1143)
<223> a, c, t, g, unknown or other

<400> 1991
ggagtttgat tctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gagtggcgaa cgggtgagta acgcgtaatc aacctgccct tcagaggggg acaacagttg 120

gaaacgactg ctaataccgc atacggaaag tcactgaagg aggggattgc gtctgattag 180

ctagttggag gggtaacggc ccaccaaggc aatgatcagt agccggtctg agaggatgaa 240

cggccacatt gggactgaga cacggcccag actcctacgg gaggcagcag tggggaatct 300

tccgcaatgg acgaaagtct gacggagcaa cgccgcgtga gtgatgacgg ccttcgggtt 360

gtaaagctct gttaatcggg acgatgacgg taccggaata gaaagccacg gctaactacg 420

tgccagcagc cgcggtaata cgtaggtggc aagcgttgtc cggaattatt gggcgtaaag 480

cgcgcgcagg cggatcagtt agtctgtctt aaaagttcgg ggcttaaccc cgttgatggg 540

atggaaactg ctgatctaga gtatcggaga ggaaagtgga attcctagtg tagcggtgaa 600

attcgtagat attaggaaga acaccagtgg cgaaggcgac tttctggacg aactgacgct 660

gaggcgcgaa agccagggga gcgaacggga ttagataccc cggtagtcct ggccgtaaac 720

gatgggtact aggtgtagga gcttctgtgc cggagttaac gcaataagta ccccgcctgg 780

ggagtacgac cgcaaggttg aaactcaaag gaattgacgg gggcccgcac aagcggtgga 840

gtatgtggtt taattcgacg caacgcgaag aaccttacca ggtcttgaca tcacaggtgg 900

tgcacggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 960

cccctatctt atgttgccag cacgtgggaa ctcatgagag actgccgcag acaatgcgga 1020

ggaaggcggg gatgacgtca aatcatcatg ccccttatga cctgggctac tcacgtacta 1080

caatgggata gacggaagcg anatcgcgag atggagcaaa cccgagactc tctcagttcg 1140

gangtaggct gcaactcgcc tacggaagtc ggaatcgcta gtaatcgcag gtcagcatac 1200

tgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga aagtcggaag 1260

tgcccaaagc cggtgggtag ccagccgtct aaggta 1296

<210> 1992
<211> 1464
<212> DNA
<213> Veillonella sp. oral clone OH1A

<220>
<221> modified_base
<222> (2)..(2)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (7)..(7)
<223> a, c, t, g, unknown or other

<400> 1992
antcgancga agagcgatgg aagcttgctt ctatcagtct tagtggcgaa cgggtgagta 60

acgcgtaatc aacctgccct tcagaggggg acaacagttg gaaacgactg ctaataccgc 120

atacgatcta acctcggcat tcaggataga tgaaaggtgg cctctatttt taagctatca 180

ctgaaggagg ggattgcgtc tgatatgcga tagtgagggg ggacggggcc ccccggcgga 240

tgaccagtgc cggtttgaga ggatgaacgg ccaccattgg actgagacac ggcccagact 300

cctacgggag gcagcagtgg ggaatcttcc gcaatggacg aaagtctgac ggagcaacgc 360

cgcgtgagtg atgacggcct tcgggtttaa agcttcgtta atcgggaaga aagggcctct 420

gcgcgaacag tgagaaggat tgacggtacc ggaatagaaa gccacggcta actacgtgcc 480

agcagccgcg gtaatacgta ggtggcaagc gttgtccgga attattgggc gtaaagcgcg 540

cgcaggcgga tcagtcagtc tgtcttaaaa gttcggggct taaccccgtg atgggatgga 600

aactgctgat ctagagtatc ggagaggaaa gtggaattcc tagtgtagcg gtgaaatgcg 660

tagatattag gaagaacacc agtggcgaag gcgactttct ggacgaaaac tgacgctgag 720

gcgcgaaagc caggggagcg aacgggatta gataccccgg tagtcctggc cgtaaacgat 780

gggtactagg tgtaggaggt atcgacccct tctgtgccgg agttaacgca ataagtaccc 840

cgcctgggga gtacgaccgc aaggttgaaa ctcaaaggaa ttgacggggg cccgcacaag 900

cggtggagta tgtggtttaa ttcgacgcaa cgcgaagaac cttaccaggt cttgacattg 960

agtgaaaggg caagagattg tccccttatc ttcggataac acgaaaacag gtggtgcatg 1020

gttgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaaccccta 1080

tcttatgttg ccagcacttc gggtgggaac tcatgagaga ctgccgcaga caatgcagag 1140

gaaggcgggg atgacgtcaa atcatcatgc cccttatgac ctgggctaca cacgtactac 1200

aatgggagtt aatagacgga agcgagatcg cgagatggag caaacccgag aaacactctt 1260

tcagttcgga tggtaggctg caactcgcct acgtgaagtc ggaatcgcta gtaatcgcag 1320

gtcagcatac tgcggtgaat acgttcccgg gccttgtaca caccgcccgt cacaccacga 1380

aagtcggaag tgcccaaagc cggtggggta accttcggga gccagccgtc taaggtaaag 1440

tcgatgattg gggaaaagtc gtaa 1464

<210> 1993
<211> 976
<212> DNA
<213> Veillonella sp. oral taxon 158

<220>
<221> modified_base
<222> (543)..(543)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (875)..(875)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (897)..(897)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (918)..(918)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (925)..(925)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (936)..(936)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (961)..(961)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (968)..(968)
<223> a, c, t, g, unknown or other

<400> 1993
gagcgatgga agcttgcttc tatcaatctt agtggcgaac gggtgagtaa cgcgtaatca 60

acctgccctt cagaggggga caacagttgg aaacgactgc taataccgca tacgatccaa 120

cctcggcatc gaggatggat gaaaggtggc ctctatttat aagctatcac tgaaggaggg 180

gattgcgtct gattagctag ttggaggggt aacggcccac caaggcaatg atcagtagcc 240

ggtctgagag gatgaacggc cacattggga ctgagacacg gcccagactc ctacgggagg 300

cagcagtggg gaatcttccg caatggacga aagtctgacg gagcaacgcc gcgtgagtga 360

tgacggcctt cgggttgtaa agctctgtta atcgggacga aaggtcctct tgcgaatagt 420

tagaggaatt gacggtaccg gaatagaaag ccacggctaa ctacgtgcca gcagccgcgg 480

taatacgtag gtggcaagcg ttgtccggaa ttattgggcg taaagcgcgc gcaggcggat 540

canttagtct gtcttaaaag ttcggggctt aaccccgtga tgggatggaa actgctgatc 600

tagagtatcg gagaggaaag tggaattcct agtgtagcgg tgaaatgcgt agatattagg 660

aagaacacca gtggcgaagg cgactttctg gacgaaaact gacgctgagg cgcgaaagcc 720

aggggagcga acgggattag ataccccggt agtcctggcc gtaaacgatg ggtactaggt 780

gtaggaggta tcgacccctt ctgtgccgga gttaacgcaa taagtacccc gcctggggag 840

tacgaccgca aggttgaaac tcaaaggaat tgacnggggc ccgcacaagc ggtggantat 900

gtggtttaat tcgacgcnac gcgangaacc ttaccnggtc ttgacattga tggacagaac 960

nagagatngt tcctct 976

<210> 1994
<211> 1229
<212> DNA
<213> Veillonellaceae bacterium oral taxon 131

<400> 1994
gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac gagacggatt gggagcttgc 60

tcctgacaag tcgagtggca aacgggtgag taacgcgtag acaacctgcc gcaaagatgg 120

ggacaacagc ccgaaagggc tgctaatacc gaatgttgcg cccctcccgc atgggagggg 180

cgccaaagat ggcctctgcc tgcaagccat cgctttgcga tgggtcctgc gccttattag 240

ccagttggcg gggcaacggc ccaccaaggc gacgatcagt agccggtcct gagaggatgg 300

acggccacat tgggactgag acacggccca gactcctacg ggaggcagca gtggggaatc 360

ttccgcaatg ggcgaaagcc tgacggagca acgccgcgtg ggtgaagaag gtcttcggat 420

gcgtaaagcc ctgttgcccg ggacgaacgc ccccggcgcg aacagcgccg gggggtgacg 480

gtaccgggcg aggaagccac ggccaactac gtgccagcag ccgcggtaat acgtaggtgg 540

cgagcgttgt ccggaatcat tgggcgtaaa gggagcgcag gcgggcatgc aagtccatct 600

taaaagcgcg gggcccaacc ccgcgagggg atggaaactg catgccttga gtgcaggaga 660

ggaaagcgga attcccagtg tagcggtgaa atgcgtagat attgggagga acaccagtgg 720

cgaaggcggc tttctggact gcaactgacg ctgaggctcg aaagccaggg gagcgaacgg 780

gattagatac cccggtagtc ctggccgtaa acgatgaatg ctaggtgtgg ggggtatcga 840

cccctcccgt gccggagtca acgcaataag cattccgcct ggggagtacg gccgcaaggc 900

tgagactcaa aggaattgac gggggcccgc acaagcggtg gagtatgtgg ttcaattcga 960

cgcatggcga aggaacctta ccagggcctt gacattgagt gacacgggcc ggagacggcc 1020

cccctcccct cgggggacac ggaaaacagg gtggtgcagt ggctgtcgtc agcctcgttg 1080

tcgtgagatg tggggtcaag atcccgccac cgagcgccac cccccgttcc ctcgttggcc 1140

agcgacgcac agggcgggga acccaaggga agaccgccgc cggactacgc cgaggaaggc 1200

gggggacgac gttcagttat tcatgcccc 1229

<210> 1995
<211> 1511
<212> DNA
<213> Veillonellaceae bacterium oral taxon 155

<400> 1995
gagtttgatc ctggctcagg acgaacgctg gcggcgtgct taacacatgc aagtcgaacg 60

gagctgattt atttcggtaa atcgcttagt ggcaaacggg tgagtaacgc gtaggcaacc 120

tgccctcagg atggggacaa cggctcgaaa gagccgctaa taccgaatga cgtaactctt 180

ccacatggaa gagatactaa agatgggtca aaccatcgcc taaggatggg cctgcgtctg 240

attagccagt tggtgaggta acggctcacc aaagcgacga tcagtagccg gtctgagagg 300

atgaacggcc acaatgggac tgagacacgg cccatactcc tacgggaggc agcagtgggg 360

aatcttccgc aatgggcgaa agcctgacgg agcaacgccg cgtgagtgaa gaaggtcttc 420

ggatcgtaaa gctctgttgt cggggacgaa agagtagacg aggaaatgcg tctactaaga 480

cggtacccga cgaggaagcc acggctaact acgtgccagc agccgcggta atacgtaggc 540

ggcaagcgtt gtccggaatt attgggcgta aagggagcgc aggtgggacg gtaagtccgt 600

cttaaaaggc aggggctcag cccctgtaag ggatggaaac tatcgatctt gagtgccgga 660

gaggaaagcg gaattcccag tgtagcggtg aaatgcgtag atattgggaa gaacaccagt 720

ggcgaaggcg gctttctgga cggcaactga cactgaggct cgaaagccag gggagcgaac 780

gggattagat accccggtag tcctggccgt aaacgatgga tactaggtgt aggaggtatc 840

gacccctcct gtgccggagt taacgcaata agtatcccgc ctggggagta cggtcgcaag 900

actgaaactc aaaggaattg acgggggccc gcacaagcgg tggagtatgt ggtttaattc 960

gacgcaacgc gaagaacctt accagggctt gacattgagt gaaagggcaa gagattgtcc 1020

ccttatcttc ggataacacg aaaacaggtg gtgcatggct gtcgtcagct cgtgtcgtga 1080

gatgttgggt taagtcccgc aacgagcgca acccctatat tctgttgcca acaggtaaag 1140

ctgggaactc aggatagact gccgcggaga acgcggagga aggcggggat gacgtcaagt 1200

catcatgccc catatgacct gggctacaca cgtactacaa tgggatgtac agagggcagc 1260

gaaagagcga tctggagcga accccagaaa acatctccca gttcggattg caggctgaaa 1320

cccgcctgca tgaagatgga atcgctagta atcgcaggtc agcatactgc ggtgaatacg 1380

ttcccgggcc ttgtacacac cgcccgtcac accacggaag tcattcacac ccgaagccgg 1440

tgaaagccgt cgaaggtggg ggcgatgact ggggtgaagt cgtaacaagg tagccgtatc 1500

ggaaggtgcg g 1511

<210> 1996
<211> 1547
<212> DNA
<213> Vibrio cholerae

<400> 1996

tttaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgagcg gcagcacaga ggaacttgtt ccttgggtgg cgagcggcgg acgggtgagt 120

aatgcctggg aaattgcccg gtagaggggg ataaccattg gaaacgatgg ctaataccgc 180

ataacctcgc aagagcaaag caggggacct tcgggccttg cgctaccgga tatgcccagg 240

tgggattagc tagttggtga ggtaagggct caccaaggcg acgatcccta gctggtctga 300

gaggatgatc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgta tgaagaaggc 420

cttcgggttg taaagtactt tcagtaggga ggaaggtggt taagctaata ccttaatyat 480

ttgacgttac ctacagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc atgcaggtgg tttgttaagt 600

cagatgtgaa agccctgggc tcaacctagg aatcgcattt gaaactgaca agctagagta 660

ctgtagaggg gggtagaatt tcaggtgtag cggtgaaatg cgtagagatc tgaaggaata 720

ccggtggcga aggcggcccc ctggacagat actgacactc agatgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gccgtaaacg atgtctactt ggaggttgtg 840

mcctagaggt cgtggctttc ggagctaacg cgttaagtag accgcctggg gagtacggtc 900

gcaagattaa aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgatgc aacgcgaaga accttaccta ctcttgacat ccagagaatc tagcggagac 1020

gctggagtgc cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg 1080

tgaaatgttg ggttaagtcc cgcaacgagc gcaaccctta tccttgtttg ccagcacgta 1140

atggtgggaa ctccagggag actgccggtg ataaaccgga ggaaggtggg gacgacgtca 1200

agtcatcatg gcccttacga gtagggctac acacgtgcta caatggcgta tacagagggc 1260

agcgataccg cgaggtggag cgaatctcac aaagtacgtc gtagtccgga ttggagtctg 1320

caactcgact ccatgaagtc ggaatcgcta gtaatcgcaa atcagaatgt tgcggtgaat 1380

acgttcccgg gccttgtaca caccgcccgt cacaccatgg gagtgggctg caaaagaagc 1440

aggtagttta accttcggga ggacgcttgc cactttgtgg ttcatgactg gggtgaagtc 1500

gtaacaaggt agcgctaggg gaacctggcg ctggatcacc tccttac 1547

<210> 1997
<211> 1537
<212> DNA
<213> Vibrio fluvialis

<220>
<221> modified_base
<222> (11)..(12)
<223> a, c, t, g, unknown or other

<400> 1997
agagtttgat nntggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggcagcgaca gagaaacttg tttctcgggc ggcgagcggc ggacgggtga gtaatgcctg 120

ggaaattgcc ctgatgtggg ggataaccat tggaaacgat ggctaatacc gcatgatagc 180

ttcggctcaa agaggggac cttcgggcct ctcgcgtcag gatatgccca ggtgggatta 240

gctagttggt gaggtaaggg ctcaccaagg cgacgatccc tagctggtct gagaggatga 300

tcagccacac tggaactgag acacggtcca gactcctacg ggaggcagca gtggggaata 360

ttgcacaatg ggcgcaagcc tgatgcagcc atgccgcgtg tatgaagaag gccttcgggt 420

tgtaaagtac tttcagcagt gaggaaggag gtatcgttaa tagcggtatc ttttgacgtt 480

agctgcagaa gaagcaccgg ctaactccgt gccagcagcc gcggtaatac ggagggtgcg 540

agcgttaatc ggaattactg ggcgtaaagc gcatgcaggt ggtttgttaa gtcagatgtg 600

aaagcccggg gctcaacctc ggaattgcat ttgaaactgg caggctagag tactgtagag 660

gggggtagaa tttcaggtgt agcggtgaaa tgcgtagaga tctgaaggaa taccggtggc 720

gaaggcggcc ccctggacag atactgacac tcagatgcga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccgtaaa cgatgtctac ttggaggttg tggccttgag 840

ccgtggcttt cggagctaac gcgttaagta gaccgcctgg ggagtacggt cgcaagatta 900

aaactcaaat gaattgacgg gggcccgcac aagcggtgga gcatgtggtt taattcgatg 960

caacgcgaag aaccttacct actcttgaca tccagagaac ttagcagaga tgctttggtg 1020

ccttcgggaa ctctgagaca ggtgctgcat ggctgtcgtc agctcgtgtt gtgaaatgtt 1080

gggttaagtc ccgcaacgag cgcaaccctt atccttgttt gccagcgagt aatgtcggga 1140

actccaggga gactgccggt gataaaccgg aggaaggtgg ggacgacgtc aagtcatcat 1200

ggcccttacg agtagggcta cacacgtgct acaatggcgc atacagaggg cggccaactt 1260

gcgaaagtga gcgaatccca aaaagtgcgt cgtagtccgg attggagtct gcaactcgac 1320

tccatgaagt cggaatcgct agtaatcgtg aatcagaatg tcacggtgaa tacgttcccg 1380

ggccttgtac acaccgcccg tcacaccatg ggagtgggct gcaaaagaag caggtagttt 1440

aaccttcggg aggacgcttg ccactttgtg gttcatgact ggggtgaagt cgtaacaagg 1500

tagcgctagg ggaacctggc gctggatcac ctccttt 1537

<210> 1998
<211> 1554
<212> DNA
<213> Vibrio furnissii

<400> 1998
taaattgaag agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca 60

agtcgagcgg cagcgacaac attgaacctt cgggggattt gttgggcggc gagcggcgga 120

cgggtgagta atgtctggga aattgccctg atgtgggggga taaccattgg aaacgatggc 180

taataccgca tgatagcttc ggctcaaaga gggggacctt cgggcctctc gcgtcaggat 240

atgcccaggt gggattagct agttggtgag gtaagggctc accaaggcga cgatccctag 300

ctggtctgag aggatgatca gccacactgg aactgagaca cggtccagac tcctacggga 360

ggcagcagtg gggaatattg cacaatgggc gcaagcctga tgcagccatg ccgcgtgtat 420

gaagaaggcc ttcgggttgt aaagtacttt cagcagtgag gaaggggata tcgttaatag 480

cggtattctt tgacgttagc tgcagaagaa gcaccggcta actccgtgcc agcagccgcg 540

gtaatacgga gggtgcgagc gttaatcgga attactgggc gtaaagcgca tgcaggtggt 600

ttgttaagtc agatgtgaaa gcccggggct caacctcgga attgcatttg aaactggcag 660

gctagagtac tgtagagggg ggtagaattt caggtgtagc ggtgaaatgc gtagagatct 720

gaaggaatac cggtggcgaa ggcggccccc tggacagata ctgacactca gatgcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgtctacttg 840

gaggttgtgg ccttgagccg tggctttcgg agctaacgcg ttaagtagac cgcctgggga 900

gtacggtcgc aagattaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca 960

tgtggtttaa ttcgatgcaa cgcgaagaac cttacctact cttgacatcc agagaactta 1020

gcagagatgc tttggtgcct tcgggaactc tgagacaggt gctgcatggc tgtcgtcagc 1080

tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc aacccttatc cttgtttgcc 1140

agcgagtaat gtcgggaact ccagggagac tgccggtgat aaaccggagg aaggtgggga 1200

cgacgtcaag tcatcatggc ccttacgagt agggctacac acgtgctaca atggcgcata 1260

cagagggcag ccaacttgcg aaagtgagcg aatcccaaaa agtgcgtcgt agtccggatt 1320

ggagtctgca actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca 1380

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggctgca 1440

aaagaagcag gtagtttaac cttcgggagg acgcttgcca ctttgtggtt catgactggg 1500

gtgaagtcgt aacaaggtag cgctagggga acctggcgct ggatcacctc ctta 1554

<210> 1999
<211> 1536
<212> DNA
<213> Vibrio mimicus

<400> 1999
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggcagcacag aggaacttgt tccttgggtg gcgagcggcg gacgggtgag taatgcctgg 120

gaaattgccc ggtagagggg gataaccatt ggaaacgatg gctaataccg cataacctcg 180

caagagcaaa gcaggggacc ttcgggcctt gtgctaccgg atatgcccag gtgggattag 240

ctagttggtg aggtaagggc tcaccaaggc gacgatccct agctggtctg agaggatgat 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt atgaagaagg ccttcgggtt 420

gtaaagtact ttcagtaggg aggaaggtgg ttaagttaat accttaatca tttgacgtta 480

cctacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg catgcaggtg gtttgttaag tcagatgtga 600

aagccctggg ctcaacctag gaattgcatt tgaaactgac aagctagagt actgtagagg 660

ggggtagaat ttcaggtgta gcggtgaaat gcgtagagat ctgaaggaat accggtggcg 720

aaggcggccc cctggacaga tactgacact cagatgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgtctact tggaggttgt gacctagagt 840

cgtggctttc ggagctaacg cgttaagtag accgcctggg gagtacggtc gcaagattaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat ccagagaatc tagcggagac gctggagtgc 1020

cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tccttgtttg ccagcacgta atggtgggaa 1140

ctccagggag actgccggtg ataaaccgga ggaaggtggg gacgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcgta tacagagggc agcgataccg 1260

cgaggtggag cgaatctcac aaagtacgtc gtagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgcaa atcagaatgt tgcggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggctg caaaagaagc aggtagttta 1440

accttcggga ggacgcttgc cactttgtgg ttcatgactg gggtgaagtc gtaacaaggt 1500

agcgctaggg gaacctggcg ctggatcacc tcctta 1536

<210> 2000
<211> 1554
<212> DNA
<213> Vibrio parahaemolyticus

<400> 2000
taaattgaag agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca 60

agtcgagcgg aaacgagtta tctgaacctt cggggaacga tatcggcgtc gagcggcgga 120

cgggtgagta atgcctagga aattgccctg atgtgggggа taaccattgg aaacgatggc 180

taataccgca tgatgcctac gggccaaaga gggggacctt cgggcctctc gcgtcaggat 240

atgcctaggt gggattagct agttggtgag gtaagggctc accaaggcga cgatccctag 300

ctggtctgag aggatgatca gccacactgg aactgagaca cggtccagac tcctacggga 360

ggcagcagtg gggaatattg cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt 420

gaagaaggcc ttcgggttgt aaagcacttt cagtcgtgag gaaggtagtg tagttaatag 480

ctgcattatt tgacgttagc gacagaagaa gcaccggcta actccgtgcc agcagccgcg 540

gtaatacgga gggtgcgagc gttaatcgga attactgggc gtaaagcgca tgcaggtggt 600

ttgttaagtc agatgtgaaa gcccggggct caacctcgga attgcatttg aaactggcag 660

actagagtac tgtagagggg ggtagaattt caggtgtagc ggtgaaatgc gtagagatct 720

gaaggaatac cggtggcgaa ggcggccccc tggacagata ctgacactca gatgcgaaag 780

cgtggggagc aaacaggatt agataccctg gtagtccacg ccgtaaacga tgtctacttg 840

gaggttgtgg ccttgagccg tggctttcgg agctaacgcg ttaagtagac cgcctgggga 900

gtacggtcgc aagattaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca 960

tgtggtttaa ttcgatgcaa cgcgaagaac cttacctact cttgacatcc agagaacttt 1020

ccagagatgg attggtgcct tcgggaactc tgagacaggt gctgcatggc tgtcgtcagc 1080

tcgtgttgtg aaatgttggg ttaagtcccg caacgagcgc aacccttatc cttgtttgcc 1140

agcgagtaat gtcgggaact ccagggagac tgccggtgat aaaccggagg aaggtgggga 1200

cgacgtcaag tcatcatggc ccttacgagt agggctacac acgtgctaca atggcgcata 1260

cagagggcgg ccaacttgcg aaagtgagcg aatcccaaaa agtgcgtcgt agtccggatt 1320

ggagtctgca actcgactcc atgaagtcgg aatcgctagt aatcgtggat cagaatgcca 1380

cggtgaatac gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggctgca 1440

aaagaagtag gtagtttaac cttcgggggg acgcttacca ctttgtggtt catgactggg 1500

gtgaagtcgt aacaaggtag cgctagggga acctggcgct ggatcacctc ctta 1554

<210> 2001
<211> 1536
<212> DNA
<213> Vibrio sp. RC341

<400> 2001
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggcagcacag aggaacttgt tccttgggtg gcgagcggcg gacgggtgag taatgcctgg 120

gaaattgccc ggtagagggg gataaccatt ggaaacgatg gctaataccg cataacctcg 180

caagagcaaa gcaggggacc ttcgggcctt gcgctaccgg atatgcccag gtgggattag 240

ctagttggtg aggtaagggc tcaccaaggc gacgatccct agctggtctg agaggatgat 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt atgaagaagg ccttcgggtt 420

gtaaagtact ttcagtaggg aggaaggtgg ttaagctaat accttaatca tttgacgtta 480

cctacagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg catgcaggtg gtttgttaag tcagatgtga 600

aagccctggg ctcaacctag gaatcgcatt tgaaactgac aagctagagt actgtagagg 660

ggggtagaat ttcaggtgta gcggtgaaat gcgtagagat ctgaaggaat accggtggcg 720

aaggcggccc cctggacaga tactgacact cagatgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgtctact tggaggttgt gacctagagt 840

cgtggctttc ggagctaacg cgttaagtag accgcctggg gagtacggtc gcaagattaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat ccagagaatc tagcggagac gctggagtgc 1020

cttcgggaac tctgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tccttgtttg ccagcacgta atggtgggaa 1140

ctccagggag actgccggtg ataaaccgga ggaaggtggg gacgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcgta tacagagggc agcgataccg 1260

cgaggtggag cgaatctcac aaagtacgtc gtagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgcaa atcagaatgt tgcggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggctg caaaagaagc aggtagttta 1440

accttcggga ggacgcttgc cactttgtgg ttcatgactg gggtgaagtc gtaacaaggt 1500

agcgctaggg gaacctggcg ctggatcacc tcctta 1536

<210> 2002
<211> 1542
<212> DNA
<213> Vibrio vulnificus

<400> 2002
aattgaagag tttgatcatg gctcagattg aacgctggcg gcaggcctaa cacatgcaag 60

tcgagcggca gcacagagaa acttgtttct cgggtggcaa gcggcggacg ggtgagtaat 120

gcctgggaaa ttgccctgat gtgggggata accattggaa acgatggcta ataccgcatg 180

atgcctacgg gccaaagagg gggaccttcg ggcctctcgc gtcaggatat gcccaggtgg 240

gattagctag ttggtgaggt aagggctcac caaggcgacg atccctagct ggtctgagaa 300

gatgatcagc cacactggaa ctgagacacg gtccagactt ctacgggagg cagcagtggg 360

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtgtga agaaggcctt 420

cgggttgtaa agcactttca gttgtgagga aggtggtgtc gttaatagcg gcatcatttg 480

acgttagcaa cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 540

gtgcgagcgt taatcggaat tactgggcgt aaagcgcatg caggtggttt gttaagtcag 600

atgtgaaagc ccggggctca acctcggaac tgcatttgaa actggcagac tagagtactg 660

tagaggggg tagaatttca ggtgtagcgg tgaaatgcgt agagatctga aggaataccg 720

gtggcgaagg cggccccctg gacagatact gacactcaga tgcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgct gtaaacgatg tctacttgga ggttgtggcc 840

ttgagccgtg gctttcggag ctaacgcgtt aagtagaccg cctggggagt acggtcgcaa 900

gattaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgatgcaacg cgaagaacct tacctactct tgacatccag agaagccagc ggagacgcag 1020

gtgtgccttc gggaactctg agacaggtgc tgcatggctg tcgtcagctc gtgttgtgaa 1080

atgttgggtt aagtcccgca acgagcgcaa cccttatcct tgtttgccag cgagtaatgt 1140

cgggaactcc agggagactg ccggtgataa accggaggaa ggtggggacg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcgcataca gagggcggcc 1260

aacttgcgaa agtgagcgaa tcccaaaaag tgcgtcgtag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgtggatca gaatgccacg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggctgcaaa agaagtgggt 1440

agtttaacct tcgggaggac gctcaccact ttgtggttca tgactggggt gaagtcgtaa 1500

caaggtagcg ctaggggaac ctggcgctgg atcacctcct ta 1542

<210> 2003
<211> 1467
<212> DNA
<213> Victivallaceae bacterium NML 080035

<400> 2003
tcagaacgaa cgctggcggc atggattagg catgcaagtt gaacgaacca cttcggtgga 60

gagtagcgga agggtgagga acgcgtgagt aatctgcccc ctagttggga ataacagttg 120

gaaacgactg ctaataccga atgtggcttc aatcctgcat gggatggagg ctaaagattt 180

atcgctaggg gatgagctcg cgtcccatta ggtagttggt gaggtaacgg cccaccaagc 240

cgacgatggg tagctggtct gagaggatgg tcagccacac tgggactgag acactgccca 300

gactcctacg ggaggctgca gtcgagaatc ttgggcaatg cgcgaaagcg tgacccagca 360

atgccgcgtg tgtgatgaag gccttcgggt cgtaaagcac tgtctcccgt gacgaaattt 420

gacggtagcg gggaaggaag ccacggctaa ctacgtgcca gcagccgcgg taatacgtag 480

gtggcgagcg ttgttcggat ttattgggcg taaagggtct gtaggaggtt cgttaaatac 540

gaggtgaaat cccgaagctc aacttcggaa ctgccttgta gactgacgga ctagagtacc 600

ggagaggtaa gcggaatacc aggtgtagcg gtggaatgcg tagatatctg gtagaacacc 660

aatagcgaag gcagcttgct ggacggaaac tgactctgaa agacgaaagc atggggagca 720

aacaggatta gataccctgg tagtccatgc cgtaaacgtt gtcaacttga tgtgggggga 780

tttagtcctc tccgtatcga agctaacgcg ataagttgac cgcctgggga ctacggccgc 840

aaggctaaaa ctcaaaggaa ttgacggggg cccgcacaag cggtggagca tgtggcttaa 900

ttcgaggcaa cgcgaagaac cttacctggt cttgaaatat atcggaccgc ctgtgaaagc 960

aggcttccct tcggggctga tatacaggtg ctgcatggct gtcgtcagct cgtgccgtga 1020

ggtgttcggt taagtccggc aacgagcgca acccgtgtca ctagttgcca tcaagtaatg 1080

ttggggactc tagtgagact gcctgtgtta agcaggagga aggcgcggat gacgtcaagt 1140

cagtatggcc cttacgacca gggctgcaca cgtgctacaa tgggggggtac aatgggatgc 1200

aatgtcgcga ggcggagcaa atccacaaaa cctctcttag ttcagattgc agtctgcaac 1260

tcgactgcat gaagttggaa tcgctagtaa aggcgtatca gctacgacgc cttgaatacg 1320

ttcccgggcc ttgtacacac cgcccgtcac atcatgggag ttgactgcac ccgaaatcgg 1380

tgatctaacc tgcaaaggaa gaagccgcct aaggtgtggt cgatgactgg gatgaagtcg 1440

taacaaggta gccgtagggg aacctgc 1467

<210> 2004
<211> 1332
<212> DNA
<213> Victivallis vadensis

<400> 2004

cttcgggagt gagtagcgaa agggtgagga acgcgtgagt aatctgccca taagttggga 60

acaacagttg gaaacgactg ctaataccga atgtggctat tgacccgcat gggtttttgg 120

ctaaagattt atcgcttatg gatgagctcg cgtcccatta gctagttggt gaggtaacgg 180

cccaccaagg ctacgatggg tagctggtct gagaggatgg tcagccacac tgggactgag 240

acactgccca gactcctacg ggaggctgca gtcgagaatc ttgggcaatg cgcgaaagcg 300

tgacccagca atgccgcgtg catgatgaag gccctcgggt cgtaaaatgc tgtctcccgt 360

gacgaataat gacggtagcg gggaaggaag ccacggctaa ctactgccag cagcgcggta 420

atacgtaggt ggcgagcgtt gttcggattt attgggcgta aagggtctgt aggaggtttg 480

ttaaatacga ggtgaaatcc gggggctcac ttccgaattg ccttgtagac tgatgaacta 540

gagtactgga gaggtaagcg gaataccagg tgtagcggtg gaatgcgtag atatctggta 600

gaacaccaat agcgaaggca gcttgctgga cagaaactga ctctgaaaga cgaaagcatg 660

gggagcaaac aggattagat accctggtag tccatgccgt aaacgttgtc aacttgatgt 720

gggcggattt agtcctgtcc gtatcgaagc taacgcgata agttgaccgc ctgggaacta 780

cggccgcaag gctaaaactc aaaggaattg acgggggccc gcacaagcgg tggagcatgt 840

ggcttaattc gaggcaacgc gaagaacctt acctgggctt gaaatatacc ggaccggctg 900

tgaaagcagt cttctcttcg gagctggtat acaggtgctg catggctgtc gtcagctcgt 960

gccgtgagtt gctcggttaa gtccggcaac gagcgcaacc cgtgtcatta gttgccaaca 1020

ggtaatgctg gggactctaa tgagactgcc tgtgttaagc aggaggaagg cgcggatgac 1080

gtcaagtcag tatggccctt acgcccaggg ctgcacacgt gctacaatgg ggggtacaat 1140

gagaagcgaa gtcgcgaggc ggagcaaatc tacaaaacct ctcttagttc agattgcagt 1200

ctgcaactcg actgcatgaa gttggaatcg ctagtaaatg cgtatcagct acgacgcatt 1260

gaatacgttc ccgggccttg tacacaccgc ccgtcacatc atgggagttg attgcacccg 1320

aaatcggtga tc 1332

<210> 2005
<211> 1506
<212> DNA
<213> Virgibacillus proomii

<400> 2005
gcggcgtgcc taatacatgc aagtcgagcg cgggaagcaa gcagaacccc ttcgggggtg 60

acgcatgtgg aacgagcggc ggacgggtga gtaacacgtg ggcaacctgc ctgtaagact 120

gggataactc cgggaaaccg gggctaatac cggataatac gttttcttgc ataaggagac 180

gttaaaaggc ggcgcaagct gtcacttaca gatgggcccg cggcgcatta gctagttggt 240

ggggtaaaag cctaccaagg cgacgatgcg tagccgacct gagagggtga tcggccacac 300

tgggactgag acacrgccca gactcctacg ggaggcagca gtagggaatc ttccgcaatg 360

gacgaaagtc tgacggagca acgccgcgtg agtgaagaag gttttcggat cgtaaaactc 420

tgttgttagg gaagaacaag tgccgttcaa atagggcggc accttgacgg tacctaacca 480

gaaagccccg gctaactacg tgccagcagc cgcggtaata cgtagggggc aagcgttgtc 540

cggaattatt gggcgtaaag cgcgcgcagg cggtctttta agtctgatgt gaaagcccac 600

ggcttaaccg tggagggcca ttggaaactg gaggacttga gtacagaaga ggagagtgga 660

attccacgtg tagcggtgaa atgcgtagag atgtggagga acaccagtgg cgaaggcgac 720

tctctggtct gtaactgacg ctgaggtgcg aaagcgtggg tagcgaacag gattagatac 780

cctggtagtc cacgccgtaa acgatgagtg ctaggtgtta gggggtttcc gccccttagt 840

gctgcagtta acgcattaag cactccgcct ggggagtacg gccgcaaggc tgaaactcaa 900

aagaattgac ggggacccgc acaagcggtg gagcatgtgg tttaattcga agcaacgcga 960

agaaccttac caggtcttga catcctctga cggccctaga gatagggagt tcccttcggg 1020

gacagagtga caggtggtgc atggttgtcg tcagctcgtg tcgtgagatg ttgggttaag 1080

tcccgcaacr agcgcaaccc ttgatcttar ttgccagcat tcagttgggc actctaaggt 1140

gactgccggt gacaaaccgg aggaaggtgg ggatgacgtc aaatcatcat gcccccttatg 1200

acctgggcta cacacgtgct acaatggatg gaacaaaggg cagcgaagcc gtgaggccaa 1260

gcaaatccca caaaaccatt ctcagttcgg attgcaggct gcaactcgcc tgcatgaagc 1320

cggaatcgct agtaatcgcg gatcagcatg ccgcggtgaa tacgttcccg ggtcttgtac 1380

acaccgcccg tcacaccacg agagttggta acacccgaag tcggtgaggt aaccgtaagg 1440

agccagccgc cgaaggtggg accaatgatt ggggtgaagt cgtaacaagg tasccgtatc 1500

ggaagg 1506

<210> 2006
<211> 1483
<212> DNA
<213> Weissella beninensis

<400> 2006
gcctggcggc gtgcctaata catgcaagtc gaacgcattg tcgtggttat gatttgttaa 60

gcttgcttaa cattgattaa tcgccataca atgagtggcg aacgggtgag taacacgtgg 120

gaaacctacc tcttagcagg ggataacatt tggaaacaga tgctaatacc gtataacaaa 180

taaaaccgca tggttttatt ttaaaagatg gttctgctat cactaagaga tggtcccgcg 240

gtgtattagc tagatggtga ggtaatggct caccatggca atgatacata gccgagttga 300

gagactgatc ggccacattg gaactgagac acggtccaaa ctcctacggg aggcagcagt 360

agggaatctt ccacaatggg cgcaagcctg atggagcaac gccgcgtgtg tgatgaaggg 420

tttcggctcg taaaacactg ttataagaga agaacgtcag tgagagtaac tgttcattga 480

gtgacggtat cttatcagaa agggacggct aaatacgtgc cagcagccgc ggtaatacgt 540

atgtcccaag cgttatccgg atttattggg cgtaaagcga gcgcaggcgg ttatttaagt 600

ctgatgtgaa agcctacggc tcaaccgtag aattgcatcg gaaactggat gacttgagtg 660

cagtagagga gagtggaact ccatgtgtag cggtgaaatg cgtagatata tggaagaaca 720

ccagaggcga aggcggctct ctggactgta actgacgctg aggctcgaaa gtgtgggtag 780

caaacaggat tagataccct ggtagtccac accgtaaacg atgaatgcta gttgttagag 840

ggtttccgcc ctttagtgac gcagctaacg cagtaagcat tccgcctggg gagtacgacc 900

gcaaggttga aactcaaagg aattgacggg ggcccgcaca agcggtggag catgtggttt 960

aattcgaagc aacgcgaaga accttaccag gtcttgacat ctttcgctat cttaagagat 1020

taagagttcc cttcggggac ggaatgacag gtggtgcatg gttgtcgtca gctcgtgtcg 1080

tgagatgttg ggttaagtcc cgcaacgagc gcaaccctta ttactagttg ccagcattta 1140

gttgggcact ctagtgagac tgccggtgac aaaccggagg aaggtgggga tgacgtcaaa 1200

tcatcatgcc ccttatgacc tgggctacac acgtgctaca atggatggta caacgagtcg 1260

caaagtcgcg aggctaagct aatctcttaa agccattctc agttcggatt gtagtctgca 1320

actcgactac atgaagtcgg aatcgctagt aatcgcggat cagcacgccg cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatgaga gtttgtaaca cccaaagtcg 1440

gtggggtaac cttttaggag ccagccgcct aaggtgggat aga 1483

<210> 2007
<211> 1529
<212> DNA
<213> Weissella cibaria

<400> 2007
gatgaacgct ggcggcgtgc ctaatacatg caagtcgaac gctttgtggt tcaactgatt 60

tgaagagctt gctcagatat gacgatggac attgcaaaga gtggcgaacg ggtgagtaac 120

acgtgggaaa cctacctctt agcaggggat aacatttgga aacagatgct aataccgtat 180

aacaatagca accgcatggt tgctacttaa aagatggttc tgctatcact aagagatggt 240

cccgcggtgc attagttagt tggtgaggta atggctcacc aagacgatga tgcatagccg 300

agttgagaga ctgatcggcc acaatgggac tgagacacgg cccatactcc tacgggaggc 360

agcagtaggg aatcttccac aatgggcgaa agcctgatgg agcaacgccg cgtgtgtgat 420

gaagggtttc ggctcgtaaa acactgttgt aagagaagaa tgacattgag agtaactgtt 480

caatgtgtga cggtatctta ccagaaagga acggctaaat acgtgccagc agccgcggta 540

atacgtatgt tccaagcgtt atccggattt attgggcgta aagcgagcgc agacggttat 600

ttaagtctga agtgaaagcc ctcagctcaa ctgaggaatt gctttggaaa ctggatgact 660

tgagtgcagt agaggaaagt ggaactccat gtgtagcggt gaaatgcgta gatatatgga 720

agaacaccag tggcgaaggc ggctttctgg actgtaactg acgttgaggc tcgaaagtgt 780

gggtagcaaa caggattaga taccctggta gtccacaccg taaacgatga gtgctaggtg 840

tttgagggtt tccgccctta agtgccgcag ctaacgcatt aagcactccg cctggggagt 900

acgaccgcaa ggttgaaact caaaggaatt gacggggacc cgcacaagcg gtggagcatg 960

tggtttaatt cgaagcaacg cgaagaacct taccaggtct tgacatccct tgacaactcc 1020

agagatggag cgttcccttc ggggacaagg tgacaggtgg tgcatggttg tcrtcagctc 1080

gtgtcgtgag atgttgggtt aagtcccgca acragcgcaa cccttattac tagttgccag 1140

cattyagttg ggcactctag tgagactgcc ggtgacaaac cggaggaagg tggggatgac 1200

gtcaaatcat catgcccctt atgacctggg ctacacacgt gctacaatgg cgtatacaac 1260

gagttgccaa cccgcgaggg tgagctaatc tcttaaagta cgtctcagtt cggattgtag 1320

gctgcaactc gcctacatga agtcggaatc gctagtaatc gcggatcagc acgccgcggt 1380

gaatacgttc ccgggtcttg tacacaccgc ccgtcacacc atgagagttt gtaacaccca 1440

aagccggtgg ggtaaccttc gggagccagc cgtctaaggt gggacagatg attagggtga 1500

agtcgtaaca aggtagccgt aggagaacc 1529

<210> 2008
<211> 992
<212> DNA
<213> Weissella confusa

<220>
<221> modified_base
<222> (954)..(954)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (973)..(973)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (976)..(976)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (983)..(983)
<223> a, c, t, g, unknown or other

<400> 2008
ggttcaactg atttgaagag cttgctcaga tatgacgatg gacattgcaa agagtggcga 60

acgggtgagt aacacgtggg aaacctacct cttagcaggg gataacattt ggaaacagat 120

gctaataccg tataacaatg acaaccgcat ggttgttatt taaaagatgg ttctgctatc 180

actaagagat ggtcccgcgg tgcattagct agttggtaag gtaatggctt accaaggcga 240

tgatgcatag ccgagttgag agactgatcg gccacaatgg gactgagaca cggcccatac 300

tcctacggga ggcagcagta gggaatcttc cacaatgggc gaaagcctga tggagcaacg 360

ccgcgtgtgt gatgaagggt ttcggctcgt aaaacactgt tgtaagagaa gaatgacatt 420

gagagtaact gttcaatgtg tgacggtatc ttaccagaaa ggaacggcta aatacgtgcc 480

agcagccgcg gtaatacgta tgttccaagc gttatccgga tttattgggc gtaaagcgag 540

cgcagacggt tatttaagtc tgaagtgaaa gccctcagct caactgagga attgctttgg 600

aaactggatg acttgagtgc agtagaggaa agtggaactc catgtgtagc ggtgaaatgc 660

gtagatatat ggaagaacac cagtggcgaa ggcggctttc tggactgtaa ctgacgttga 720

ggctcgaaag tgtgggtagc aaacaggatt agataccctg gtagtccaca ccgtaaacga 780

tgagtgctag gtgtttgagg gtttccgccc ttaagtgccg cagctaacgc attaagcact 840

ccgcctgggg agtacgaccg caaggttgaa actcaaagga attgacgggg acccgcacaa 900

gcggtggagc atgtggttta attcgaagca acgcgaagaa ccttaccagg tctngacatc 960

ccttgacact ccnganatgg agngttccct tc 992

<210> 2009
<211> 1496
<212> DNA
<213> Weissella hellenica

<400> 2009
gatgaacgct ggcggcgtgc ctaatacatg caagtcgaac gctttgtgct taattgatat 60

gacgagcttg ctctgatttg atttttttgat ttcaaagagt ggcgaacggg tgagtaacac 120

gtgggtaacc tacctcttag caggggataa catttggaaa caagtgctaa taccgtataa 180

taccaacaac cgcatggttg ttggttgaaa gatggttctg ctatcactaa gagatggacc 240

cgcggtgcat tagctagttg gtaaggtaat ggcttaccaa ggcaatgatg catagccgag 300

ttgagagact gatcggccac aatgggactg agacacggcc catactccta cgggaggcag 360

cagtagggaa tcttccacaa tgggcgcaag cctgatggag caacgccgcg tgtgtgatga 420

agggtttcgg ctcgtaaaac actgttataa gagaagaacg gcactgagag taactgttca 480

gtgtgtgacg gtatcttacc agaaaggaac ggctaaatac gtgccagcag ccgcggtaat 540

acgtatgttc caagcgttat ccggatttat tgggcgtaaa gcgagcgcag acggttattt 600

aagtctgaag tgaaagccct cagctcaact gaggaattgc tttggaaact ggatgacttg 660

agtgcagtag aggaaagtgg aactccatgt gtagcggtga aatgcgtaga tatatggaag 720

aacaccagtg gcgaaggcgg ctttctggac tgtaactgac gttgaggctc gaaagtgtgg 780

gtagcaaaca ggattagata ccctggtagt ccacaccgta aacgatgagt gctagatgtt 840

cgagggtttc cgcccttgag tgtcgcagct aacgcattaa gcactccgcc tggggagtac 900

gaccgcaagg ttgaaactca aaggaattga cggggacccg cacaagcggt ggagcatgtg 960

gtttaattcg aagcaacgcg aagaacctta ccaggtcttg acatcccttg acaacgctag 1020

aaatagcgcg ttcccttcgg ggacaaggtg acaggtggtg catggttgtc gtcagctcgt 1080

gtcgtgagat gttgggttaa gtcccgcaac gagcgcaacc cttattatta gttgccagca 1140

ttcagttggg cactctagtg agactgccgg tgataaaccg gaggaaggtg gggatgacgt 1200

caaatcatca tgccccttat gacctgggct acacacgtgc tacaatggca tatacaacga 1260

gtcgctaacc cgcgagggta cgctaatctc ttaaagtatg tctcagttcg gattgtaggc 1320

tgcaactcgc ctacatgaag tcggaatcgc tagtaatcgc ggatcagaac gccgcggtga 1380

atacgttccc gggtcttgta cacaccgccc gtcacaccat gagagtttgt aacacccaaa 1440

gccggtgggg taacctttta ggagccagcc gtctaaggtg ggacagatga ttaggg 1496

<210> 2010
<211> 1528
<212> DNA
<213> Weissella kandleri

<220>
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (163)..(163)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (273)..(273)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (372)..(372)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (388)..(388)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (440)..(440)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (583)..(583)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (665)..(666)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (802)..(803)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (970)..(970)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1005)..(1005)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1060)..(1060)
<223> a, c, t, g, unknown or other

<220>

<221> modified_base
<222> (1090)..(1090)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1137)..(1137)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1425)..(1425)
<223> a, c, t, g, unknown or other

<220>
<221> modified_base
<222> (1524)..(1524)
<223> a, c, t, g, unknown or other

<400> 2010
nntaaattga gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg cactgtggtt gaaatgagat gagaagcttg cttcaagtca aatgccaaca 120

ttgcagtgag tggcgaacgg gtgagtaaca cgtgggaaac ctnctctta gcaggggata 180

acatctggaa acaggtgcta ataccgtata acaataaaaa ccgcatggtt ttgatttaaa 240

agatggttct gctatcacta agagatggtc ccncggtgca ttagttagtt ggtgaggtaa 300

aggctcacca agacgatgat gcatagccga gttgagagac tgatcggcca caatgggact 360

gagacacggc cnatactcct acgggagnca gcagtaggga atcttccaca atggacgaaa 420

gtctgatgga gcaacgccgn gtgtgtgatg aagggtttcg gctcgtaaaa cactgttgta 480

agagaagaat gacattgaga gtaactgttc aatgtgtgac ggtatcttac cagaaaggaa 540

cggctaaata cgtgccagca gccgcggtaa tacgtatgtt ccnagcgtta tccggattta 600

ttgggcgtaa agcgagcgca gacggttatt taagtctgaa gtgaaagccc tcggcttaac 660

cgagnnattg ctttggaaac tggataactt gagtgcagta gaggaaagtg gaactccatg 720

tgtagcggtg aaatgcgtag atatatggaa gaacaccagt ggcgaaggcg gctttctgga 780

ctgtaactga cgttgaggct cnnaagtgtg ggtagcaaac aggattagat accctggtag 840

tccacaccgt aaacgatgag tgctagctgt tcgagggttt ccgcccttga gtggcgaagc 900

taacgcatta agcactccgc ctggggagta cgaccgcaag gttgaaactc aaaggaattg 960

acggggaccn gcacaagcgg tggagcatgt ggtttaattc gaagnaacgc gaagaacctt 1020

accaggtctt gacatccttt gaccactcca gagatggagn tttcccttcg gggtcaaagt 1080

gacaggtggn gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccncaa 1140

cgagcgcaac ccttattgtt agttgccagc atttagttgg gcactctagc aagactgccg 1200

gtgacaaacc ggaggaaggc ggggatgacg tcaaatcatc atgcccctta tgacctgggc 1260

tacacacgtg ctacaatggc aagtacaacg agcagccaac ccgcgagggt gcgcaaatct 1320

cttaaagctt gtctcagttc ggactgtagg ctgcaactcg cctacacgaa gtcggaatcg 1380

ctagtaatcg cggatcagca cgccgcggtg aatacgttcc cgggncttgt acacaccgcc 1440

cgtcacacca tgagagtttg taacacccaa agtcggtgag gtaaccttta taggggccag 1500

ccgcctaagg tgggacagat gatnaggg 1528

<210> 2011
<211> 1591
<212> DNA
<213> Weissella koreensis

<400> 2011
tttaaattga gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg cattgtggtt gaaatgatat gaagaacttg ttcagatttg attttcaaca 120

ttgcaatgag tggcgaacgg gtgagtaaca cgtgggaaac ctacctctta gcaggggata 180

acatttggaa acaaatgcta ataccgtata ataattaaaa ccgcatggtt ttagtttaaa 240

agatggtctt gctatcacta agagatggtc ccgcggtgta ttagttagtt ggtgaggtaa 300

tggctcacca agacaatgat acatagccga gttgagagac tgaccggcca caatgggact 360

gagacacggc ccatactcct acgggaggca gcagtaggga atcttccaca atggacgaaa 420

gtctgatgga gcaacgccgc gtgtgtgatg aagggtttcg gctcgtaaaa cactgttgta 480

agagaagaat gacattgaga gtaactgttc aatgtgtgac ggtatcttac cagaaaggaa 540

cggctaaata cgtgccagca gccgcggtaa tacgtatgtt ccaagcgtta tccggattta 600

ttgggcgtaa agcgagcgca gacggttatt taagtctgaa gtgaaagccc tcggctcaac 660

cgaggaattg ctttggaaac tggataactt gagtgcagta gaggaaagtg gaactccatg 720

tgtagcggtg aaatgcgtag atatatggaa gaacaccagt ggcgaaggcg gctttctgga 780

ctgtaactga cgttgaggct cgaaagtgtg ggtagcaaac aggattagat accctggtag 840

tccacactgt aaacgatgag tgctagttgt tcgagggttt ccgcccttga gtgacgaagc 900

taacgcatta agcactccgc ctggggagta cgaccgcaag gttgaaactc aaaggaattg 960

acggggaccc gcacaagcgg tggagcatgt ggtttaattc gaagcaacgc gaagaacctt 1020

accaggtctt gacatccttt gaccactcca gagatggagc tttcccttcg gggacaaagt 1080

gacaggtggt gcatggttgt cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa 1140

cgagcgcaac ccttattgtt agttgccagc atttagttgg gcactctagc aagactgccg 1200

gtgacaaacc ggaggaaggc ggggatgacg tcaaatcatc atgcccctta tgacctgggc 1260

tacacacgtg ctacaatggc aagtacaacg agtcgccaac ccgcgagggt gcgcaaatct 1320

cttaaagctt gtctcagttc ggactgtagg ctgcaactcg cctacacgaa gtcggaatcg 1380

ctagtaatcg cggatcagca cgccgcggtg aatacgttcc cgggtcttgt acacaccgcc 1440

cgtcacacca tgagagtttg taacacccaa agtcggtgag gtaacctttt attaggagcc 1500

agccgcctaa ggtgggacag atgattaggg tgaagtcgta acaaggtagc cgtaggagaa 1560

cctgcggctg gatcacctcc tttctaagga a 1591

<210> 2012
<211> 1579

<212> DNA
<213> Weissella paramesenteroides

<400> 2012
tttaaaatga gagtttgatc ctggctcagg atgaacgctg gcggcgtgcc taatacatgc 60

aagtcgaacg ctttgtcttt aactgatatg aagagcttgc tctgatttga ttttatctga 120

caaagagtgg cgaacgggtg agtaacacgt gggtaaccta cctcttagca ggggataaca 180

tttggaaaca agtgctaata ccgtataata ccaacaaccg catggttgtt ggttgaaaga 240

tggttctgct atcactaaga gatggacccg cggtgcatta gctagttggt aaggtaacgg 300

cttaccaagg caatgatgca tagccgagtt gagagactga tcggccacaa tgggactgag 360

acacggccca tactcctacg ggaggcagca gtagggaatc ttccacaatg ggcgcaagcc 420

tgatggagca acgccgcgtg tgtgatgaag ggtttcggct cgtaaaacac tgttataaga 480

gaagaacggc actgagagta actgttcagt gtgtgacggt atcttaccag aaaggaacgg 540

ctaaatacgt gccagcagcc gcggtaatac gtatgttcca agcgttatcc ggatttattg 600

ggcgtaaagc gagcgcagac ggttatttaa gtctgaagtg aaagccctca gctcaactga 660

ggaatggctt tggaaactgg atgacttgag tgcagtagag gaaagtggaa ctccatgtgt 720

agcggtgaaa tgcgtagata tatggaagaa caccagtggc gaaggcggct ttctggactg 780

taactgacgt tgaggctcga aagtgtgggt agcaaacagg attagatacc ctggtagtcc 840

acaccgtaaa cgatgagtgc tagatgttcg agggtttccg cccttgagtg tcgcagctaa 900

cgcattaagc actccgcctg gggagtacga ccgcaaggtt gaaactcaaa ggaattgacg 960

gggacccgca caagcggtgg agcatgtggt ttaattcgaa gcaacgcgaa gaaccttacc 1020

aggtcttgac atcccttgct aatcctagaa ataggacgtt cccttcgggg acaaggtgac 1080

aggtggtgca tggttgtcgt cagctcgtgt cgtgagatgt tgggttaagt cccgcaacga 1140

gcgcaaccct tattattagt tgccagcatt cagttgggca ctctagtgag actgccggtg 1200

acaaaccgga ggaaggtggg gatgacgtca aatcatcatg ccccttatga cctgggctac 1260

acacgtgcta caatggcata tacaacgagt cgccaacccg cgagggtgcg ctaatctctt 1320

aaagtatgtc tcagttcgga ttgtaggctg caactcgcct acatgaagtc ggaatcgcta 1380

gtaatcgcgg atcagcacgc cgcggtgaat acgttcccgg gtcttgtaca caccgcccgt 1440

cacaccatga gagtttgtaa cacccaaagc cggtggggta acctttttagg agccagccgt 1500

ctaaggtggg acagatgatt agggtgaagt cgtaacaagg tagccgtagg agaacctgcg 1560

gctggatcac ctcctttct 1579

<210> 2013
<211> 1234
<212> DNA
<213> Weissella sp. KLDS 7.0701

<400> 2013
agtggcgaac gggtgagtaa cacgtgggaa acctacctct tagcagggga taacatttgg 60

aaacagatgc taataccgta taacaaaagt cactaagaga tggtcccgcg gtgcattagt 120

tagttggtga ggtaatggct caccaagacg atgatgcata gccgagttga gagactgatc 180

ggccacaatg ggactgagac acggcccata ctcctacggg aggcagcagt agggaatctt 240

ccacaatggg cgaaagcctg atggagcaac gccgcgtgtg tgatgaaggg tttcggctcg 300

taaaacactg ttgtaagaga agatgacggt atcttaccag aaaggaacgg ctaaatacgt 360

gccagcagcc gcggtaatac gtatgttcca agcgttatcc ggatttattg ggcgtaaagc 420

gagcgcagac ggttatttaa gtctgaagtg aaagccctca gctcaactga ggaattgctt 480

tggaaactgg atgacttgag tgcagtagag gaaagtggaa ctccatgtgt agcggtgaaa 540

tgcgtagata tatggaagaa caccagtggc gaaggcggct ttctggactg actgacgttg 600

aggctcgaaa gtgtgggtag caaacaggat tagataccct ggtagtccac accgtaaacg 660

atgagtgcta ggtgtttgag cttaagtgcc gcagctaacg cattaagcac tccgcctggg 720

gagtacgacc gcaaggttga aactcaaagg aattgacggg gacccgcaca agcggtggag 780

catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat cgacaggtgg 840

tgcatggttg tcgtcagctc gtgtcgtgag atgttgggtt aagtcccgca acgagcgcaa 900

cccttattac tagttgccag catgggcact ctagtgagac tgccggtgac aaaccggagg 960

aaggtgggga tgacgtcaaa tcatcatgcc ccttatgacc tgggctacac acgtgctaca 1020

atggcgtaca acgagttgcc aacccgcgag ggtgagctaa tctctttacg tctcagttcg 1080

gatgtaggct gcaactcgcc tacagaagtc ggaatcgcta gtaatcgcgg atcagcacgc 1140

cgcggtgaat acgttcccgg gtcttgtaca caccgcccgt cacaccatga gagtttgtaa 1200

cacccaaagc cggtgggtag ccagccgtct aagg 1234

<210> 2014
<211> 1480
<212> DNA
<213> Wolinella succinogenes

<400> 2014
agagtttgat cctggctcag agtgaacgct ggcggcgtgc ctaatacatg caagtcgaac 60

ggtaacaggg tgtagcttgc tatactgctg acgagtggcg cacgggtgag taatgcatag 120

gttatgtgcc ccatagtctg gaatagccac tggaaacggt gattaatacc ggatattccc 180

gagaggggaa agtttttcgc tatgggatca gcctatgtcc tatcagcttg ttggtgaggt 240

aatggctcac caaggctatg acgggtatcc ggcctgagag ggtgatcgga cacactggaa 300

ctgagacacg gtccagactc ctacgggagg cagcagtagg gaatattgct caatgggcga 360

aagcctgaag cagcaacgcc gcgtggagga tgaaggtctt cggattgtaa actccttttc 420

taagagaaga ttatgacggt atcttaggaa taagcaccgg ctaactccgt gccagcagcc 480

gcggtaatac ggagggtgca agcgttactc ggaatcactg ggcgtaaaga gcacgtaggc 540

ggccttgcaa gtcagatgtg aaatccaacg gcttaaccgt tgaactgcat ttgaaactgc 600

aaggctagag tatgggagag gtaggtggaa ttctcggtgt aggggtaaaa tccgtagaga 660

tcgagaggaa tactcattgc gaaggcgacc tgctggaaca ttactgacgc tgaggtgcga 720

aagcgtgggg agcaaacagg attagatacc ctggtagtcc acgccctaaa cgatgaatgc 780

tagttgttgc cctgcttgtc agggcagtaa tgcagttaac acattaagca ttccgcctgg 840

ggagtacggt cgcaagatta aaactcaaag gaatagacgg ggacccgcac aagcggtgga 900

gcatgtggtt taattcgaag atacgcgaag aaccttacct gggcttgaca ttgatagaat 960

cctatagaga tatgggagtg ccagtttact ggagcttgaa aacaggtgct gcacggctgt 1020

cgtcagctcg tgtcgtgaga tgttgggtta agtcccgcaa cgagcgcaac cctcgtcact 1080

agttgctaac ggttcggccg agcactctag tgagactgcc ttcgcaagga ggaggaaggt 1140

gaggacgacg tcaagtcatc atggccctta cgcccagggc tacacacgtg ctacaatggt 1200

gtgtacaaag agaagcaata ccgcgaggtg gagcaaatct ttaaaacaca tctcagttcg 1260

gattgtagtc tgcaactcga ctacatgaag ctggaatcgc tagtaatcgt agatcagcaa 1320

tgctacggtg aatacgttcc cgggtcttgt actcaccgcc cgtcacacca tgggagttgt 1380

attcgcctta agccgggacg ctaaactggc taccgtccac ggcggatgca gcgactgggg 1440

tgaagtcgta acaaggtaac cgtaggtgaa cctgcggttg 1480

<210> 2015
<211> 1491
<212> DNA
<213> Xanthomonadaceae bacterium NML 03-0222

<400> 2015
agtgaacgct ggcggcaggc ctaacacatg caagtcgaac ggcagcgcga gagagcttgc 60

tctcttggcg gcgagtggcg gacgggtgag gaatacgtcg gaatctgcct atttgtgggg 120

gataacgtag ggaaacttac gctaataccg catacgtcct acgggagaaa gcaggggacc 180

ttcgggcctt gcgcagatag atgagccgac gtcggattag ctagttgggg gggtaatggc 240

ccaccaaggc aacgatccgt agctggtctg agaggatgat cagccacact ggaactgaga 300

cacggtccag actcctacgg gaggcagcag tggggaatat tggacaatgg gcgcaagcct 360

gatccagcca tgccgcgtgg gtgaagaagg ccttcgggtt gtaaagccct tttgttggga 420

aagaaaagca tgcggttaat acccgtgtgt catgacggta cccaaagaat aagcaccggc 480

taacttcgtg ccagcagccg cggtaatacg aagggtgcaa gcgttactcg gaattactgg 540

gcgtaaagcg tgcgtaggtg gtttgttaag tcagatgtga aagccctggg ctcaacctgg 600

gaactgcatt tgatactggc aagctagagt gcggtagagg atagcggaat tcctggtgta 660

gcagtgaaat gcgtagagat caggaggaac atccgtggcg aaggcggcta tctgggccag 720

cactgacact gaggcacgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgccctaaac gatgcgaact ggatgttggg ctcaacttgg agttcagtat cgaagctaac 840

gcgttaagtt cgccgcctgg ggagtacggt cgcaagactg aaactcaaag gaattgacgg 900

gggcccgcac aagcggtgga gtatgtggtt taattcgaag caacgcgcag aaccttacct 960

ggccttgaca tgtcgagaac ttggcagaga tgccttggtg ccttcgggaa ctcgaacaca 1020

ggtgctgcat ggctgtcgtc agctcgtgtc gtgagatgtt gggttaagtc ccgcaacgag 1080

cgcaaccctt gtccttagtt gccagcacgt aatggtggga actctaagga gaccgccggt 1140

gacaaaccgg aggaaggtgg ggatgacgtc aagtcatcat ggcccttacg gccagggcta 1200

cacacgtact acaatgggaa ggacagaggg ctgcgaaccc gcgagggcaa gccaatccca 1260

gaaaccttct ctcagtccgg attggagtct gcaactcgac tccatgaagt cggaatcgct 1320

agtaatcgca gatcagcatt gctgcggtga atacgttccc gggccttgta cacaccgccc 1380

gtcacaccat gggagtttgt tgcaccagaa gcaggtagct taaccttcgg gagggcgctt 1440

gccacggtgt ggccgatgac tggggtgaag tcgtaacaag gtagccgtac c 1491

<210> 2016
<211> 1548
<212> DNA
<213> Xanthomonas campestris

<400> 2016
agagtttggt cctggctcag agtgaacgct ggcggcaggc ctaacacatg caagtcgaac 60

ggcagcacag taagagcttg ctcttacggg tggcgagtgg cggacgggtg aggaatacat 120

cggaatctac tctttcgtgg gggataacgt agggaaactt acgctaatac cgcatacgac 180

ctacgggtga aagcggagga ccttcgggct tcgcgcgatt gaatgagccg atgtcggatt 240

agctagttgg cggggtaaag gcccaccaag gcgacgatcc gtagctggtc tgagaggatg 300

atcagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat 360

attggacaat gggcgcaagc ctgatccatc catgccgcgt gggtgaagaa ggccttcggg 420

ttgtaaagcc cttttgttgg gaaagaaaag cagtcggtta tacccgattg ttctgacggt 480

acccaaagaa taagcaccgg ctaacttcgc gccagcagcc gcggtaatac gaagggtgca 540

agcgttactc ggaattactg ggcgtaaagc gtgcgtaggt ggtggtttaa gtctgttgtg 600

aaagccctgg gctcaacctg ggaattgcag tggatactgg gtcactagag tgtggtagag 660

ggtagcggaa ttcccggtgt agcagtgaaa tgcgtagaga tcgggaggaa catccgtggc 720

gaaggcggct acctggacca acactgacac tgaggcgcga aagcgtgggg agcaaacagg 780

attagatacc ctggtagtcc acgccctaaa cgatgcgaac tggatgttgg gtgcaatttg 840

gcacgcagta tcgaagctaa cgcgttaagt tcgccgcctg gggagtacgg tcgcaagact 900

gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agtatgtggt ttaattcgat 960

gcaacgcgaa gaaccttacc tggtcttgac atccacggaa ctttccagag atggattggt 1020

tgccttcggg aaccgtgaga cagtgctgca tggctgtcgt cagctcgtgt cgtgagatgt 1080

tgggttaagt cccgcaagag cgcaaccctt gtccttagtt gccaagccaa cgtaatggtg 1140

ggaactctaa ggagaccggc cgtgacaaac cggaggaagg tggggatgac gtcaaagtca 1200

atcatggcca cttacgtcca gggctacaca cgtactacaa tggtagggta cagagggctg 1260

caaacaccgc gagggtaagc caatcccaga aaccctatct cagtccggat tggagtctgc 1320

aactcgactc catgaagtcg gaatcagcta gtaatcgcag atcagcattg ctgcggtgaa 1380

tacgttcccg ggccttgtac acacacagca ccgtcacaca tgggagtttg ttgcaccaga 1440

agcaggtagc ttaaccttcg ggagggcgct tgccacggtg tggccgatga ctggggtgaa 1500

gtcgtaacaa ggtagccgta tcggaaggtg cggctggatc acctcctt 1548

<210> 2017
<211> 1301
<212> DNA
<213> Xanthomonas sp. kmd_489

<400> 2017
gaatctaccg ttttcgtggg ggataacgta gggaaactta cgctaatacc gcatacgacc 60

ttagggtgaa agcggaggac cttcgggctt cgcgcggata gatgagccga tgtcggatta 120

gctagttggc ggggtaaagg cccaccaagg cgacgatccg tagctggtct gagaggatga 180

tcagccacac tggaactgag acacggtcca gactcctacg ggaggcagca gtggggaata 240

ttggacaatg ggcgcaagcc tgatccagcc atgccgcgtg ggtgaagaag gccttcgggt 300

tgtaaagccc ttttgttggg aaagaaaagc agtcggttaa tacccgattg ttctgacggt 360

acccaaagaa taagcaccgg ctaacttcgt gccagcagcc gcggtaatac gaagggtgca 420

agcgttactc ggaattactg ggcgtaaagc gtgcgtaggt ggttgtttaa gtccgttgtg 480

aaagccctgg gctcaacctg ggaattgcag tggatactgg gcaactagag tgtggtagag 540

gatggcggaa ttcccggtgt agcagtgaaa tgcgtagaga tcgggaggaa catctgtggc 600

gaaggcggcc atctggacca acactgacac tgaggcacga aagcgtgggg agcaaacagg 660

attagatacc ctggtagtcc acgccctaaa cgatgcgaac tggatgttgg gtgcaacttg 720

gcacgcagta tcgaagctaa cgcgttaagt tcgccgcctg gggagtacgg tcgcaagact 780

gaaactcaaa ggaattgacg ggggcccgca caagcggtgg agtatgtggt ttaattcgat 840

gcaacgcgaa gaaccttacc tggtcttgac atccacggaa ctttccagag atggattggt 900

gccttcggga accgtgagac aggtgctgca tggctgtcgt cagctcgtgt cgtgagatgt 960

tgggttaagt cccgcaacga gcgcaaccct tgtccttagt tgccagcacg taatggtggg 1020

aactctaagg agaccgccgg tgacaaaccg gaggaaggtg gggatgacgt caagtcatca 1080

tggcccttac gaccagggct acacacgtac tacaatggtt aggacagagg gctgcaaact 1140

cgcgagagta agccaatccc agaaacctaa tctcagtccg gattggagtc tgcaactcga 1200

ctccatgaag tcggaatcgc tagtaatcgc agatcagcat tgvtgtcggw gaatacgttc 1260

ccggggcgtt tgtacacacc gcccgtcact ccwtacaagt t 1301

<210> 2018
<211> 1471
<212> DNA
<213> Xenophilus aerolatus

<400> 2018
cacatgcaag tcgaacggta acaggtcttc ggatgctgac gagtggcgaa cgggtgagta 60

atacatcgga acgtgcccag tcgtggggga taactacgcg aaagcgtagc taataccgca 120

tacgatctat ggatgaaagc gggggatcgc aagacctcgc gcgattggag cggccgatgg 180

cagattaggt agttggtggg gtaaaggctc accaagccga cgatctgtag ctggtctgag 240

aggacgacca gccacactgg gactgagaca cggcccagac tcctacggga ggcagcagtg 300

gggaattttg gacaatgggc gcaagcctga tccagccatg ccgcgtgcag gatgaaggcc 360

ttcgggttgt aaactgcttt tgtacggaac gaaaagtctc tttctaataa agagggatca 420

tgacggtacc gtaagaataa gcaccggcta actacgtgcc agcagccgcg gtaatacgta 480

gggtgcaagc gttaatcgga attactgggc gtaaagcgtg cgcaggcggt gatgtaagac 540

agttgtgaaa tccccgggct caacctggga actgcatctg tgactgcatc gctggagtgc 600

ggcagagggg gatggaattc cgcgtgtagc agtgaaatgc gtagatatgc ggaggaacac 660

cgatggcgaa ggcaatcccc tgggcctgca ctgacgctca tgcacgaaag cgtggggagc 720

aaacaggatt agataccctg gtagtccacg ccctaaacga tgtcaactgg ttgttgggaa 780

ttcactttct cagtaacgaa gctaacgcgt gaagttgacc gcctggggag tacggccgca 840

aggttgaaac tcaaaggaat tgacggggac ccgcacaagc ggtggatgat gtggtttaat 900

tcgatgcaac gcgaaaaacc ttacccacct ttgacatgta cggaatttgc cagagatggc 960

ttagtgctcg aaagagaacc gtaacacagg tgctgcatgg ctgtcgtcag ctcgtgtcgt 1020

gagatgttgg gttaagtccc gcaacgagcg caacccttgt cattagttgc tacattcagt 1080

tgggcactct aatgagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc 1140

ctcatggccc ttataggtgg ggctacacac gtcatacaat ggctggtaca aagggttgcc 1200

aacccgcgag ggggagctaa tcccataaag ccagtcgtag tccggatcgc agtctgcaac 1260

tcgactgcgt gaagtcggaa tcgctagtaa tcgtggatca gaatgtcacg gtgaatacgt 1320

tcccgggtct tgtacacacc gcccgtcaca ccatgggagc gggttctgcc agaagtagtt 1380

agcctaaccg caaggagggc gattaccacg gcagggttcg tgactggggt gaagtcgtaa 1440

caaggtagcc gtatcggaag gtgcggctgg a 1471

<210> 2019
<211> 1504
<212> DNA
<213> Yersinia aldovae

<400> 2019
gagtttgatc ttggctcaga ttgaacgctg gcggcaggcc taacacatgc aagtcgagcg 60

gcagcgggaa gtagtttact actttgccgg cgagcggcgg acgggtgagt aatgtctggg 120

aaactgcctg atggaggggg ataactactg gaaacggtag ctaataccgc atgacctcgc 180

aagagcaaag tgggggacct tcgggcctca cgccatcgga tgtgcccaga tgggattagc 240

tagtaggtgg ggtaatggct cacctaggcg acgatcccta gctggtctga gaggatgacc 300

agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg cgcaagcctg atgcagccat gccgcgtgtg tgaagaaggc cttcgggttg 420

taaagcactt tcagcgagga ggaaggcaat cgtgttaata gcacggttga ttgacgttac 480

tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg agggtgcaag 540

cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tttgttaagt cagatgtgaa 600

atccccgcgc ttaacgtggg aactgcattt gaaactggca agctagagtc ttgtagaggg 660

gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata ccggtggcga 720

aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag caaacaggat 780

tagataccct ggtagtccac gctgtaaacg atgtcgactt ggaggttgtg cccttgaggc 840

gtggcttccg gagctaacgc gttaagtcga ccgcctgggg agtacggccg caaggttaaa 900

actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta attcgatgca 960

acgcgaagaa ccttacctac tcttgacatc cacagaactt agcagagatg cttcggtgcc 1020

ttcgggaact gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt gaaatgttgg 1080

gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcacgtaa tggtgggaac 1140

tcaagggaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa gtcatcatgg 1200

cccttacgag tagggctaca cacgtgctac aatggcagat acaaagtgaa gcgaactcgc 1260

gagagccagc ggaccacata aagtctgtcg tagtccggat tggagtctgc aactcgactc 1320

catgaagtcg gaatcgctag taatcgtaga tcagaatgct acggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta ggtagcttaa 1440

ccttcgggag ggcgcttacc actttgtgat tcatgactgg ggtgaagtcg taacaaggta 1500

gccg 1504

<210> 2020
<211> 1419
<212> DNA
<213> Yersinia aleksiciae

<400> 2020
cacatgcaag tcgagcggca gcggggagta gtttactact ctgccggcga gcggcggacg 60

ggtgagtaat gtctggggat ctgcctgatg gagggggata actactggaa acggtagcta 120

ataccgcatg acctcgcaag agcaaagtgg gggaccttcg ggcctcacgc catcggatga 180

acccagatgg gattagctag taggtgaggt aatggctcac ctaggcgacg atccctagct 240

ggtctgagag gatgaccagc cacactggaa ctgagacacg gtccagactc ctacgggagg 300

cagcagtggg gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtgtga 360

agaaggcctt cgggttgtaa agcactttca gcgaggagga aggcagtcgt gttaatagca 420

cgattgattg acgttactcg cagaagaagc accggctaac tccgtgccag cagccgcggt 480

aatacggagg gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggttt 540

gttaagtcag atgtgaaatc cccgcgctta acgtgggaac tgcatttgaa actggcaagc 600

tagagtcttg tagaggggg tagaattcca ggtgtagcgg tgaaatgcgt agagatctgg 660

aggaataccg gtggcgaagg cggccccctg gacaaagact gacgctcagg tgcgaaagcg 720

tggggagcaa acaggattag ataccctggt agtccacgct gtaaacgatg tcgacttgga 780

ggttgtgccc ttgaggcgtg gcttccggag ctaacgcgtt aagtcgaccg cctggggagt 840

acggccgcaa ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg 900

tggtttaatt cgatgcaacg cgaagaacct tacctactct tgacatccac ggaatttagc 960

agagatgctt aagtgccttc gggaaccgtg agacaggtgc tgcatggctg tcgtcagctc 1020

gtgttgtgaa atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag 1080

cacgtaatgg tgggaactca agggagactg ccggtgacaa accggaggaa ggtggggatg 1140

acgtcaagtc atcatggccc ttacgagtag ggctacacac gtgctacaat ggcagataca 1200

aagtgaagcg aactcgcgag agcaagcgga ccacataaag tctgtcgtag tccggattgg 1260

agtctgcaac tcgactccat gaagtcggaa tcgctagtaa tcgtagatca gaatgctacg 1320

gtgaatacgt tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa 1380

agaagtaggt agcttaacct tcgggagggc gcttaccac 1419

<210> 2021
<211> 1461
<212> DNA
<213> Yersinia bercovieri

<400> 2021
attgaacgct ggcggcaggc ctaacacatg caagtcgagc ggcagcggga agtagtttac 60

tactttgccg gcgagcggcg gacgggtgag taatgtctgg ggatctgcct gatggagggg 120

gataactact ggaaacggta gctaataccg catgacctcg taagagcaaa gtgggggacc 180

ttcgggcctc acgccatcgg atgaacccag atgggattag ctagtaggtg gggtaatggc 240

tcacctaggc gacgatccct agctggtctg agaggatgac cagccacact ggaactgaga 300

cacggtccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcatcca tgccgcgtgt gtgaagaagg ccttcgggtt gtaaagcact ttcagcgagg 420

aggaaggcag tcgtgttaat agcacgattg attgacgtta ctcgcagaag aagcaccggc 480

taactccgtg ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg 540

gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga aatccccgcg cttaacgtgg 600

gaactgcatt tgaaactggc aagctagagt cttgtagagg ggggtagaat tccaggtgta 660

gcggtgaaat gcgtagagat ctggaggaat accggtggcg aaggcggccc cctggacaaa 720

gactgacgct caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgctgtaaac gatgtcgact tggaggttgt gcccttgagg cgtggcttcc ggagctaacg 840

cgttaagtcg accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg 900

ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta 960

ctcttgacat ccacagaact tagcagagat gcttcagtgc cttcgggaac tgtgagacag 1020

gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctta tcctttgttg ccagcacgta atggtgggaa ctcaagggag actgccggtg 1140

acaaaccgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1200

acacgtgcta caatggcaga tacaaagtga agcgaactcg cgagagcaag cggaccacat 1260

aaagtctgtc gtagtccgga ttggagtctg caactcgact ccatgaagtc ggaatcgcta 1320

gtaatcgtag atcagaatgc tacggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtgggttg caaaagaagt aggtagctta accttcggga gggcgcttac 1440

cactttgtga ttcatgactg g 1461

<210> 2022
<211> 1546
<212> DNA
<213> Yersinia enterocolitica

<400> 2022
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgagcg gcagcgggaa gtagtttact actttgccgg cgagcggcgg acgggtgagt 120

aatgtctggg aaactgcctg atggaggggg ataactactg gaaacggtag ctaataccgc 180

ataacgtctt cggaccaaag tgggggacct tcgggcctca cgccatcgga tgtgcccaga 240

tgggattagc tagtaggtgg ggtaatggct cacctaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt tcagcgagga ggaaggcata aaggttaata acctttgtga 480

ttgacgttac tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tttgttaagt 600

cagatgtgaa atccccgcgc ttaacgtggg aactgcattt gaaactggca agctagagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc cacggaattt agcagagatg 1020

ctttagtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgccag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcacgtga 1140

tggtgggaac tcaaaggaga ctgctggtga taaaccggag gaaggtgggg atgacgtcaa 1200

gtcatcatgg cccttacgag tagggctaca cacgtgctac aatggcagat acaaagtgaa 1260

gcgaactcgc gagagcaagc ggaccacata aagtctgtcg tagtccggat tggagtctgc 1320

aactcgactc catgaagtcg gaatcgctag taatcgtaga tcagaatgct acggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta 1440

ggtagcttaa ccttcgggag ggcgcttacc actttgtgat tcatgactgg ggtgaagtcg 1500

taacaaggta accgtagggg aacctgcggt tggatcacct ccttac 1546

<210> 2023
<211> 1461
<212> DNA
<213> Yersinia frederiksenii

<400> 2023
attgaacgct ggcggcaggc ctaacacatg caagtcgagc ggcagcggaa agtagtttac 60

tactttgccg gcgagcggcg gacgggtgag taatgtctgg gaaactgcct gatggagggg 120

gataactact ggaaacggta gctaataccg catgacctcg caagagcaaa gtgggggacc 180

ttcgggcctc acgccatcgg atgtgcccag atgggattag ctagtaggtg gggtaatggc 240

tcacctaggc gacgatccct agctggtctg agaggatgac cagccacact ggaactgaga 300

cacggtccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcagcca tgccgcgtgt gtgaagaagg ccttcgggtt gtaaagcact ttcagcgagg 420

aggaaggggt tgagtttaat acgctcaatc attgacgtta ctcgcagaag aagcaccggc 480

taactccgtg ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg 540

gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga aatccccgcg cttaacgtgg 600

gaactgcatt tgaaactggc aagctagagt cttgtagagg ggggtagaat tccaggtgta 660

gcggtgaaat gcgtagagat ctggaggaat accggtggcg aaggcggccc cctggacaaa 720

gactgacgct caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgctgtaaac gatgtcgact tggaggttgt gcccttgagg cgtggcttcc ggagctaacg 840

cgttaagtcg accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg 900

ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta 960

ctcttgacat ccacagaact tagcagagat gcttcggtgc cttcgggaac tgtgagacag 1020

gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctta tcctttgttg ccagcacgta atggtgggaa ctcaaaggag actgccggtg 1140

acaaaccgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1200

acacgtgcta caatggcaga tacaaagtga agcgaactcg cgagagcaag cggaccacat 1260

aaagtctgtc gtagtccgga ttggagtctg caactcgact ccatgaagtc ggaatcgcta 1320

gtaatcgtag atcagaatgc tacggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtgggttg caaaagaagt aggtagctta accttcggga gggcgcttac 1440

cactttgtga ttcatgactg g 1461

<210> 2024
<211> 1461
<212> DNA
<213> Yersinia intermedia

<400> 2024
attgaacgct ggcggcaggc ctaacacatg caagtcgagc ggcagcggga agtagtttac 60

tactttgccg gcgagcggcg gacgggtgag taatgtctgg gaaactgcct gatggagggg 120

gataactact ggaaacggta gctaataccg catgacctcg taagagcaaa gtgggggacc 180

ttcgggcctc acgccatcgg atgtgcccag atgggattag ctagtaggtg gggtaatggc 240

tcacctaggc gacgatccct agctggtctg agaggatgac cagccacact ggaactgaga 300

cacggtccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcagcca tgccgcgtgt gtgaagaagg ccttcgggtt gtaaagcact ttcagcgagg 420

aggaaggcag tcgtgttaat agcacgattg attgacgtta ctcgcagaag aagcaccggc 480

taactccgtg ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg 540

gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga aatccccgcg cttaacgtgg 600

gaactgcatt tgaaactggc aagctagagt cttgtagagg ggggtagaat tccaggtgta 660

gcggtgaaat gcgtagagat ctggaggaat accggtggcg aaggcggccc cctggacaaa 720

gactgacgct caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgctgtaaac gatgtcgact tggaggttgt gcccttgagg cgtggcttcc ggagctaacg 840

cgttaagtcg accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg 900

ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta 960

ctcttgacat ccacagaact tagcagagat gctttagtgc cttcgggaac cgtgagacag 1020

gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctta tcctttgttg ccagcacgta atggtgggaa ctcaagggag actgccggtg 1140

acaaaccgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1200

acacgtgcta caatggcaga tacaaagtga agcgaactcg cgagagcaag cggaccacat 1260

aaagtctgtc gtagtccgga ttggagtctg caactcgact ccatgaagtc ggaatcgcta 1320

gtaatcgtag atcagaatgc tacggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtgggttg caaaagaagt aggtagctta accttcggga gggcgcttac 1440

cactttgtga ttcatgactg g 1461

<210> 2025
<211> 1543
<212> DNA
<213> Yersinia kristensenii

<400> 2025
aattgaagag tttgatcatg gctcagattg aacgctggcg gcaggcctaa cacatgcaag 60

tcgagcggca gcgggaagta gtttactact ttgccggcga gcggcggacg ggtgagtaat 120

gtctgggaaa ctgcctgatg gaggggggata actactggaa acggtagcta ataccgcatg 180

acctcgcaag agcaaagtgg gggaccttcg ggcctcacgc catcggatgt gcccagatgg 240

gattagctag taggtggggt aatggctcac ctaggcgacg atccctagct ggtctgagag 300

gatgaccagc cacactggaa ctgagacacg gtccagactc ctacgggagg cagcagtggg 360

gaatattgca caatgggcgc aagcctgatg cagccatgcc gcgtgtgtga agaaggcctt 420

cgggttgtaa agcactttca gcgaggagga agggttcagt gttaatagca ctgagcattg 480

acgttactcg cagaagaagc accggctaac tccgtgccag cagccgcggt aatacggagg 540

gtgcaagcgt taatcggaat tactgggcgt aaagcgcacg caggcggttt gttaagtcag 600

atgtgaaatc cccgcgctta acgtgggaac tgcatttgaa actggcaagc tagagtcttg 660

tagaggggg tagaattcca ggtgtagcgg tgaaatgcgt agagatctgg aggaataccg 720

gtggcgaagg cggccccctg gacaaagact gacgctcagg tgcgaaagcg tggggagcaa 780

acaggattag ataccctggt agtccacgct gtaaacgatg tcgacttgga ggttgtgccc 840

ttgaggcgtg gcttccggag ctaacgcgtt aagtcgaccg cctggggagt acggccgcaa 900

ggttaaaact caaatgaatt gacgggggcc cgcacaagcg gtggagcatg tggtttaatt 960

cgatgcaacg cgaagaacct tacctactct tgacatccac agaacttagc agagatgctt 1020

aggtgccttc gggaactgtg agacaggtgc tgcatggctg tcgtcagctc gtgttgtgaa 1080

atgttgggtt aagtcccgca acgagcgcaa cccttatcct ttgttgccag cacgtaatgg 1140

tgggaactca agggagactg ccggtgacaa accggaggaa ggtggggatg acgtcaagtc 1200

atcatggccc ttacgagtag ggctacacac gtgctacaat ggcagataca aagtgaagcg 1260

aactcgcgag agcaagcgga ccacataaag tctgtcgtag tccggattgg agtctgcaac 1320

tcgactccat gaagtcggaa tcgctagtaa tcgtagatca gaatgctacg gtgaatacgt 1380

tcccgggcct tgtacacacc gcccgtcaca ccatgggagt gggttgcaaa agaagtaggt 1440

agcttaacct tcgggagggc gcttaccact ttgtgattca tgactggggt gaagtcgtaa 1500

caaggtaacc gtaggggaac ctgcggttgg atcacctcct tac 1543

<210> 2026
<211> 1461
<212> DNA
<213> Yersinia mollaretii

<400> 2026
attgaacgct ggcggcaggc ctaacacatg caagtcgagc ggcagcggaa agtagcttgc 60

tactttgccg gcgagcggcg gacgggtgag taatgtctgg gaaactgcct gatggagggg 120

gataactact ggaaacggta gctaataccg catgacctcg caagagcaaa gtgggggacc 180

ttcgggcctc acgccatcgg atgtgcccag atgggattag ctagtaggtg gggtaatggc 240

tcacctaggc gacgatccct agctggtctg agaggatgac cagccacact ggaactgaga 300

cacggtccag actcctacgg gaggcagcag tggggaatat tgcacaatgg gcgcaagcct 360

gatgcatcca tgccgcgtgt gtgaagaagg ccttcgggtt gtaaagcact ttcagcgagg 420

aggaaggcag tcgtgttaat agcacgattg attgacgtta ctcgcagaag aagcaccggc 480

taactccgtg ccagcagccg cggtaatacg gagggtgcaa gcgttaatcg gaattactgg 540

gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga aatccccgcg cttaacgtgg 600

gaactgcatt tgaaactggc aagctagagt cttgtagagg ggggtagaat tccaggtgta 660

gcggtgaaat gcgtagagat ctggaggaat accggtggcg aaggcggccc cctggacaaa 720

gactgacgct caggtgcgaa agcgtgggga gcaaacagga ttagataccc tggtagtcca 780

cgctgtaaac gatgtcgact tggaggttgt gcccttgagg cgtggcttcc ggagctaacg 840

cgttaagtcg accgcctggg gagtacggcc gcaaggttaa aactcaaatg aattgacggg 900

ggcccgcaca agcggtggag catgtggttt aattcgatgc aacgcgaaga accttaccta 960

ctcttgacat ccacagaact tagcagagat gcttcggtgc cttcgggaac tgtgagacag 1020

gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg ggttaagtcc cgcaacgagc 1080

gcaaccctta tcctttgttg ccagcacgta atggtgggaa ctcaagggag actgccggtg 1140

acaaaccgga ggaaggtggg gatgacgtca agtcatcatg gcccttacga gtagggctac 1200

acacgtgcta caatggcaga tacaaagtga agcgaactcg cgagagccag cggaccacat 1260

aaagtctgtc gtagtccgga ttggagtctg caactcgact ccatgaagtc ggaatcgcta 1320

gtaatcgtag atcagaatgc tacggtgaat acgttcccgg gccttgtaca caccgcccgt 1380

cacaccatgg gagtgggttg caaaagaagt aggtagctta accttcggga gggcgcttac 1440

cactttgtga ttcatgactg g 1461

<210> 2027
<211> 1587
<212> DNA
<213> Yersinia pestis

<400> 2027
taaattgaag agtttgatca tggctcagat tgaacgctgg cggcaggcct aacacatgca 60

agtcgagcgg cagcgggaag tagtttacta ctttgccggc gagcggcgga cgggtgagta 120

atgtctgggg atctgcctga tggagggga taactactgg aaacggtagc taataccgca 180

tgacctcgca agagcaaagt gggggacctt agggcctcac gccatcggat gaacccagat 240

gggattagct agtaggtggg gtaatggctc acctaggcga cgatccctag ctggtctgag 300

aggatgacca gccacactgg aactgagaca cggtccagac tcctacggga ggcagcagtg 360

gggaatattg cacaatgggc gcaagcctga tgcagccatg ccgcgtgtgt gaagaaggcc 420

ttcgggttgt aaagcacttt cagcgaggag gaaggggttg agtttaatac gctcaatcat 480

tgacgttact cgcagaagaa gcaccggcta actccgtgcc agcagccgcg gtaatacgga 540

gggtgcaagc gttaatcgga attactgggc gtaaagcgca cgcaggcggt ttgttaagtc 600

agatgtgaaa tccccgcgct taacgtggga actgcatttg aaactggcaa gctagagtct 660

tgtagagggg ggtagaattc caggtgtagc ggtgaaatgc gtagagatct ggaggaatac 720

cggtggcgaa ggcggccccc tggacaaaga ctgacgctca ggtgcgaaag cgtggggagc 780

aaacaggatt agataccctg gtagtccacg ctgtaaacga tgtcgacttg gaggttgtgc 840

ccttgaggcg tggcttccgg agctaacgcg ttaagtcgac cgcctgggga gtacggccgc 900

aaggttaaaa ctcaaatgaa ttgacggggg cccgcacaag cggtggagca tgtggtttaa 960

ttcgatgcaa cgcgaagaac cttacctact cttgacatcc acagaatttg gcagagatgc 1020

taaagtgcct tcgggaactg tgagacaggt gctgcatggc tgtcgtcagc tcgtgttgtg 1080

aaatgttggg ttaagtcccg caacgagcgc aacccttatc ctttgttgcc agcacgtaat 1140

ggtgggaact caagggagac tgccggtgac aaaccggagg aaggtgggga tgacgtcaag 1200

tcatcatggc ccttacgagt agggctacac acgtgctaca atggcagata caaagtgaag 1260

cgaactcgcg agagccagcg gaccacataa agtctgtcgt agtccggatt ggagtctgca 1320

actcgactcc atgaagtcgg aatcgctagt aatcgtagat cagaatgcta cggtgaatac 1380

gttcccgggc cttgtacaca ccgcccgtca caccatggga gtgggttgca aaagaagtag 1440

gtagcttaac cttcgggagg gcgcttacca ctttgtgatt catgactggg gtgaagtcgt 1500

aacaaggtaa ccgtagggga acctgcggtt ggatcacctc cttacctaac gatacgcatt 1560

gcgcagtgcc cacacagatt gtctgat 1587

<210> 2028
<211> 1546
<212> DNA
<213> Yersinia pseudotuberculosis

<400> 2028
ttaaattgaa gagtttgatc atggctcaga ttgaacgctg gcggcaggcc taacacatgc 60

aagtcgagcg gcagcgggaa gtagtttact actttgccgg cgagcggcgg acgggtgagt 120

aatgtctggg gatctgcctg atggaggggg ataactactg gaaacggtag ctaataccgc 180

atgacctcgc aagagcaaag tgggggacct tagggcctca cgccatcgga tgaacccaga 240

tgggattagc tagtaggtgg ggtaatggct cacctaggcg acgatcccta gctggtctga 300

gaggatgacc agccacactg gaactgagac acggtccaga ctcctacggg aggcagcagt 360

ggggaatatt gcacaatggg cgcaagcctg atgcagccat gccgcgtgtg tgaagaaggc 420

cttcgggttg taaagcactt tcagcgagga ggaaggggtt gagtttaata cgctcaatca 480

ttgacgttac tcgcagaaga agcaccggct aactccgtgc cagcagccgc ggtaatacgg 540

agggtgcaag cgttaatcgg aattactggg cgtaaagcgc acgcaggcgg tttgttaagt 600

cagatgtgaa atccccgcgc ttaacgtggg aactgcattt gaaactggca agctagagtc 660

ttgtagaggg gggtagaatt ccaggtgtag cggtgaaatg cgtagagatc tggaggaata 720

ccggtggcga aggcggcccc ctggacaaag actgacgctc aggtgcgaaa gcgtggggag 780

caaacaggat tagataccct ggtagtccac gctgtaaacg atgtcgactt ggaggttgtg 840

cccttgaggc gtggcttccg gagctaacgc gttaagtcga ccgcctgggg agtacggccg 900

caaggttaaa actcaaatga attgacgggg gcccgcacaa gcggtggagc atgtggttta 960

attcgatgca acgcgaagaa ccttacctac tcttgacatc cacggaattt agcagagatg 1020

ctttagtgcc ttcgggaacc gtgagacagg tgctgcatgg ctgtcgtcag ctcgtgttgt 1080

gaaatgttgg gttaagtccc gcaacgagcg caacccttat cctttgttgc cagcacgtaa 1140

tggtgggaac tcaagggaga ctgccggtga caaaccggag gaaggtgggg atgacgtcaa 1200

gtcatcatgg cccttacgag tagggctaca cacgtgctac aatggcagat acaaagtgaa 1260

gcgaactcgc gagagccagc ggaccacata aagtctgtcg tagtccggat tggagtctgc 1320

aactcgactc catgaagtcg gaatcgctag taatcgtaga tcagaatgct acggtgaata 1380

cgttcccggg ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta 1440

ggtagcttaa ccttcgggag ggcgcttacc actttgtgat tcatgactgg ggtgaagtcg 1500

taacaaggta accgtagggg aacctgcggt tggatcacct ccttac 1546

<210> 2029
<211> 1531
<212> DNA
<213> Yersinia rohdei

<400> 2029
agagtttgat catggctcag attgaacgct ggcggcaggc ctaacacatg caagtcgagc 60

ggcagcggga agtagtttac tactttgccg gcgagcggcg gacgggtgag taatgtctgg 120

gaaactgcct gatggagggg gataactact ggaaacggta gctaataccg catgacctcg 180

caagagcaaa gtgggggacc ttcgggcctc acgccatcgg atgtgcccag atgggattag 240

ctagtaggtg gggtaatggc tcacctaggc gacgatccct agctggtctg agaggatgac 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt gtgaagaagg ccttcgggtt 420

gtaaagcact ttcagcgagg aggaaggcca atagcttaat acgctgttgg attgacgtta 480

ctcgcagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gtttgttaag tcagatgtga 600

aatccccgcg cttaacgtgg gaactgcatt tgaaactggc aagctagagt cttgtagagg 660

ggggtagaat tccaggtgta gcggtgaaat gcgtagagat ctggaggaat accggtggcg 720

aaggcggccc cctggacaaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgctgtaaac gatgtcgact tggaggttgt gcccttgagg 840

cgtggcttcc ggagctaacg cgttaagtcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat ccacagaact tagcagagat gcttcggtgc 1020

cttcgggaac tgtgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcacgta atggtgggaa 1140

ctcaagggag actgccggtg acaaaccgga ggaaggtggg gatgacgtca agtcatcatg 1200

gcccttacga gtagggctac acacgtgcta caatggcaga tacaaagtga agcgaactcg 1260

cgagagcaag cggaccacat aaagtctgtc gtagtccgga ttggagtctg caactcgact 1320

ccatgaagtc ggaatcgcta gtaatcgtag atcagaatgc tacggtgaat acgttcccgg 1380

gccttgtaca caccgcccgt cacaccatgg gagtgggttg caaaagaagt aggtagctta 1440

accttcggga gggcgcttac cactttgtga ttcatgactg gggtgaagtc gtaacaaggt 1500

aaccgtaggg gaacctgcgg ttggatcacc t 1531

<210> 2030
<211> 1488
<212> DNA
<213> Yokenella regensburgei

<400> 2030
tagagtttga tccatggctc agattgaacg ctggcggcag gcctaacaca tgcaagtcga 60

acggtagcac agagagcttg ctctcgggtg acgagtggcg gacgggtgag taatgtctgg 120

gaaactgcct gatggagggg gataactact ggaaacggta gctaataccg cataacgtcg 180

caagaccaaa gaggggacc ttcgggcctc ttgccatcag atgtgcccag atgggattag 240

ctagtaggtg gggtaacggc tcacctaggc gacgatccct agctggtctg agaggatgac 300

cagccacact ggaactgaga cacggtccag actcctacgg gaggcagcag tggggaatat 360

tgcacaatgg gcgcaagcct gatgcagcca tgccgcgtgt atgaagaagg ccttcgggtt 420

gtaaagtact ttcagcgagg aggaaggcga tacggttaat aaccgtgtcg attgacgtta 480

ctcgcagaag aagcaccggc taactccgtg ccagcagccg cggtaatacg gagggtgcaa 540

gcgttaatcg gaattactgg gcgtaaagcg cacgcaggcg gtctgtcaag tcttatgtga 600

aatccccggg ctcaacctgg gaactgcatt cgaaactggc aggcttgagt cttgtagagg 660

ggggtagaat tccaggtgta gcggtgaaat gcgtagagat ctggaggaat accggtggcg 720

aaggcggccc cctggacaaa gactgacgct caggtgcgaa agcgtgggga gcaaacagga 780

ttagataccc tggtagtcca cgccgtaaac gatgtcgact tggaggttgt gcccttgagg 840

cgtggcttcc ggagctaacg cgttaagtcg accgcctggg gagtacggcc gcaaggttaa 900

aactcaaatg aattgacggg ggcccgcaca agcggtggag catgtggttt aattcgatgc 960

aacgcgaaga accttaccta ctcttgacat ccacggaact tagcagagat gctttggtgc 1020

cttcgggaac cgtgagacag gtgctgcatg gctgtcgtca gctcgtgttg tgaaatgttg 1080

ggttaagtcc cgcaacgagc gcaaccctta tcctttgttg ccagcggttc ggccgggaac 1140

tcaaaggaga ctgccagtga taaactggag gaaggtgggg atgacgtcaa gtcatcatgg 1200

cccttacgag tagggctaca cacgtgctac aatggcatat acaaagagaa gcgacctcgc 1260

gagagcaagc ggacctcata aagtatgtcg tagtccggat tggagtctgc aactcgactc 1320

catgaagtcg gaatcgctag taatcgtgga tcagaatgcc acggtgaata cgttcccggg 1380

ccttgtacac accgcccgtc acaccatggg agtgggttgc aaaagaagta ggtagcttaa 1440

ccttcgggag ggcgcttacc actttgtgat tcatgactgg ggtgaagt 1488

<210> 2031
<211> 1485
<212> DNA

<213> Zimmermannella bifida

<400> 2031
agagtttgat cctggctcag gacgaacgct ggcggcgtgc ttaacacatg caagtcgaac 60

gatgaagcct tagcttgctt tggtggatta gtggcgaacg ggtgagtaac acgtgagcaa 120

cgtgcccaga actctggaat aaccgccgga aacggtggct aatactggat aggtgccaag 180

gccgcatggt ctttggttgg aaagattttt cggttctgga tcggctcgcg gcctatcagc 240

ttgttggtgg ggtaatggcc taccaaggcg acgacgggta gccggcctga gagggtgacc 300

ggccacactg ggactgagac acggcccaga ctcctacggg aggcagcagt ggggaatatt 360

gcacaatggg cgcaagcctg atgcagcaac gccgcgtgag ggatgacggc cttcgggttg 420

taaacctctt ttagtaggga agaagcgaaa gtgacggtac ctgcagaaaa agcaccggct 480

aactacgtgc cagcagccgc ggtaatacgt agggtgcaag cgttgtccgg aattattggg 540

cgtaaagagc tcgtaggcgg tttgtcgcgt ctgctgtgaa attccgaggc tcaacctcgg 600

gcgtgcagtg ggtacgggca gacttgagtg cggtagggga gattggaatt cctggtgtag 660

cggtggaatg cgcagatatc aggaggaaca ccgatggcga aggcagatct ctgggccgtt 720

actgacgctg aggagcgaaa gcatggggag cgaacaggat tagataccct ggtagtccat 780

gccgtaaacg ttgggcgcta gatgtgggga ccattccacg gtttctgtgt cgtagctaac 840

gcattaagcg ccccgcctgg ggagtacggc cgcaaggcta aaactcaaag gaattgacgg 900

gggcccgcac aagcggcgta gcatgcggat taattcgatg caacgcgaag aaccttacca 960

aggcttgaca tataccggaa acggccagag atggtcgccc ccttttgggt cggtatacag 1020

gtggtgcatg gttgtcgtca gctcgtgtcg tgagatgttc ggttaagtcc ggcaacgagc 1080

gcaaccctcg tcctatgttg ccagcacgtt atggtgggaa ctcatgggat actgccgtgg 1140

tcaacacgga ggaaggtggg gatgacgtca aatcatcatg ccccttatgt cttgggcttc 1200

acgtatgcta caatggccgg tacaatgggc tgcgataccg cgaggtggag cgaatcccaa 1260

aaagccggtc tcagttcgga ttggggtccg caactcgacc ccatgaagtc ggagtcgcta 1320

gtaatcgcag atcagcaacg ctgcggtgaa tacgttcccg ggccttgtac acaccgcccg 1380

tcaagtcatg aaagtcggta acacccgaag ccggtggcct aacctttttgg ggggagccgt 1440

cgaaggtggg atcggtgatt aggactaagt cgtaacaagg tagcc 1485

<210> 2032
<211> 1482
<212> DNA
<213> Zymomonas mobilis

<400> 2032
agagtttgat tctggctcag aacgaacgct ggcggcatgc ttaacacatg caagtcgaac 60

gaaggcttcg gccttagtgg cgcacgggtg cgtaacgcgt gggaatctgc cttcaggtac 120

ggaataacta ggggaaactc gagctaatac cgtatgatat cgagagatca aagatttatc 180

gcctgaagat gagcccgcgt tggattagct agttggtagg gtaaaggctt accaaggcga 240

cgatccatag ctggtctgag aggatgatca gccacactgg gactgagaca cggcccagac 300

tcctacggga ggcagcagtg gggaatattg gacaatgggg gaaaccctga tccagcaatg 360

ccgcgtgagt gaagaaggcc ttagggttgt aaagctcttt tacccgggat gataatgaca 420

gtaccgggag aataagctcc ggctaactcc gtgccagcag ccgcggtaat acggagggag 480

ctagcgttgt tcggaattac tgggcgtaaa gcgtacgtag gcggtttaat aagtcagggg 540

tgaaagccca gagctcaact ctggaactgc ctttgagact gttagactag aacatagaag 600

aggtaagtgg aattccgagt gtagaggtga aattcgtaga tattcggaag aacaccagtg 660

gcgaaggcga cttactggtc tatagttgac gctgaggtac gaaagcgtgg gtagcaaaca 720

ggattagata ccctggtagt ccacgccgta aacgatgata actagctgtc cgggtacatg 780

gtatctgggt ggcggagcta acgcattaag ttatccgcct ggggagtacg gtcgcaagat 840

taaaactcaa agaaattgac gggggcctgc acaagcggtg gagcatgtgg tttaattcga 900

agcaacgcgc agaaccttac cagcgtttga catcctgatc gcggaaagtg gagacacatt 960

ctttcagttc ggctggatca gagacaggtg ctgcatggct gtcgtcagct cgtgtcgtga 1020

gatgttgggt taagtcccgc aacgagcgca accctcacct ctagttgcca tcattaagtt 1080

gggcacttta gaggaactgc cggtgataag ccggaggaag gtggggatga cgtcaagtcc 1140

tcatggccct tacgcgctgg gctacacacg tgctacaatg gcggtgacag agggccgcaa 1200

gcctgcaaag gttagctaat ctcaaaaagc cgtctcagtt cggattgttc tctgcaactc 1260

gagagcatga aggcggaatc gctagtaatc gcggatcagc atgccgcggt gaatacgttc 1320

ccaggccttg tacacaccgc ccgtcacacc atgggagttg gattcacccg aaggcgctgc 1380

gctaacccgc aagggaggca ggcgaccacg gtgggtttag cgactggggt gaagtcgtaa 1440

caaggtagcc gtaggggaac ctgcggctgg atcacctcct tt 1482