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(54) Title: METHOD FOR DETECTION OF MICRO-ORGANISMS AND ANTIBIOTIC RESISTANCE MARKERS AND NUCLEIC ACID OLIGONUCLEOTIDES THEREFOR

(57) Abstract: The present invention relates to methods of detecting one or more micro¬ organisms and/or one or more antibiotic resistance markers in a sample, comprising identifying the presence of distinct nucleic acid regions. Primers and probes suitable for use in such methods are provided.

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MITTERER G ET AL: "Microarray-based identification of bacteria in clinical samples by solid-phase PCR amplification of 23S ribosomal DNA sequences" JOURNAL OF CLINICAL MICROBIOLOGY, WASHINGTON, DC, US, vol. 42, no. 3, March 2004 (2004-03), pages 1048-1057, XP002363929 ISSN: 0095-1137 p. 1049, tab. 1, 2 and figure 3 ----- -/--	1-8, 60-71, 74-79

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 August 2007	26/10/2007

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE VRIES JOHANN ET AL: "Spread of recombinant DNA by roots and pollen of transgenic potato plants, identified by highly specific biomonitoring using natural transformation of an Acinetobacter sp." APPLIED AND ENVIRONMENTAL MICROBIOLOGY AUG 2003, vol. 69, no. 8, August 2003 (2003-08), pages 4455-4462, XP002445290 ISSN: 0099-2240 Material and methods, p.4457	1-8, 60-71, 74-79
X	WO 00/52203 A (KING S COLLEGE LONDON [GB]; GUY S & ST THOMAS S NATIONAL H [GB]; FRENC) 8 September 2000 (2000-09-08) pages 4-8	60-71, 74-79
X	US 6 512 105 B1 (HOGAN JAMES JOHN [US] ET AL) 28 January 2003 (2003-01-28) cited in the application columns 45-46; example 15	60-71, 74-79
A	US 2005/079490 A1 (STUBER FRANK [DE] ET AL STUEBER FRANK [DE] ET AL) 14 April 2005 (2005-04-14) abstract; figure 1	1-8, 60-71, 74-79

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2006/052919

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-5 (partly), 6-8 (entirely), 60-71 (partly), and 74-79 (partly)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: invention 1: claims 1-5 (partly), 6-8 (entirely), 60-71 (partly), and 74-79 (partly)

   concern a method for detecting Enterobacter cloacae comprising identifying the 23S RNA region corresponding to the SEQ ID Nos 1 or 2, by PCR using the pair of primers (SEQ ID NOs 3 and 4 or 5 and 6) and hybridization probes (SEQ ID NOs 3-6) and sequences complementary or homologous thereof.
   Said claims concern also containers, kits, devices comprising the SEQ ID Nos as mentioned herein above and the use thereof.
   Moreover, said claims concern compositions comprising these sequences and containers, kits, device comprising these compositions and the use thereof.

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2. claims: inventions 2-9: claims 1-5 (partly), 9-32 (entirely), 60-71 (partly), and 74-79 (partly)

   similarly to the invention 1 said claims concern a method for detecting a specific microorganism as defined in claims 9,12,15,18,21,24,27 and 30 comprising identifying the corresponding 23S RNA regions by PCR using pair of primers and hybridization probes selected from SEQ ID Nos 7-15, 16-21, 22-29, 30-37, 38-42, 43-51, 52-63 and 64-71, respectively and sequences complementaray or homologous thereof.
   Said claims concern also containers, kits, devices comprising the SEQ ID Nos as mentioned herein above and the use thereof.
   Moreover, said claims concern compositions comprising these sequences and containers, kits, devices comprising these compositions and the use thereof.

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3. claims: invention 10: claims 1, 3-5(partly), 33-35 (entirely), 60-71 (partly), 74-79 (partly)

   concern a method for detecting the antibiotic resistance marker blages-2 comprising identifying the corresponding nucleic acid (NA) region (i.e. SEQ ID NOS 72 or 73), by PCR using pair of primers represented by the SEQ ID Nos 74 and 75, or 76 and 77 and by hybridization using probes represented by the SEQ ID Nos 74-77, or sequences complementary or homologous thereof.
   Said claims concern also containers, kits, devices comprising the SEQ ID Nos as mentioned herein above and the use thereof.
   Moreover, said claims concern compositions comprising these sequencesand containers, kits, and devices comprising these compositions and the use thereof.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

4. claims: inventions 11-17: claims 1, 3-5 (partly), 36-59 (entirely), 60-71 (partly), and 74-79 (partly)

similarly to the invention 10, said claims concern a method for detecting a specific antibiotic resistance marker as defined in claims 36,39,42,45,48,51,54, and 57, comprising identifying specific nucleic acid regions by PCR using pair of primers and hybridization probes selected form SEQ ID Nos 78-83, 84-89, 90-95, 96-101, 102-107, 108-113, 114-119, 120-125, respectively and sequences complementary or homologous thereof.
Said claims concern also containers, kits, devices comprising the SEQ ID Nos as mentioned herein above and the use thereof.
Moreover, said claims concern also compositions comprising these sequences and containers, kits, device comprising these compositions and the use thereof.

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5. claims: inventions 18-44: claims 72, 80 and 81 (partly)

Concern the 23S RNA sequence corresponding to the SEQ ID Nos 131-157, respectively and sequences complementary or homologous thereof.

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6. claims: inventions 44-177: claims 73, 82 and 83 (partly)

concern the sequence of antibiotic resistance markers corresponding to the SEQ ID Nos 158-261, respectively and sequences complementary or homologous thereof.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2006/052919

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