

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 June 2006 (08.06.2006)

PCT

(10) International Publication Number
WO 2006/060653 A2

(51) International Patent Classification:
G06F 19/00 (2006.01)

(21) International Application Number:
PCT/US2005/043620

(22) International Filing Date:
30 November 2005 (30.11.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/632,053 30 November 2004 (30.11.2004) US
60/655,573 23 February 2005 (23.02.2005) US

(71) Applicant (for all designated States except US):
VERIDEX LLC [US/US]; 33 Technology Drive, Warren,
New Jersey 07059 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RAPONI, Mitch**
[US/US]; 1750 Kettner Blvd, No. 408, San Diego, Cali-
fornia 92101 (US). **YU, Jack** [US/US]; 9859 Deer Ridge
Place, San Diego, California 92127 (US).

(74) Agent: **LEHNHARDT, Susan**; One Johnson & Johnson
Plaza, New Brunswick, New Jersey 08933 (US).

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

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

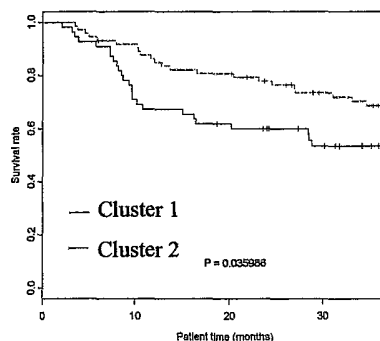
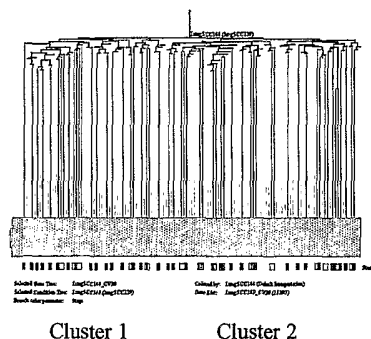
Published:

— without international search report and to be republished
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: LUNG CANCER PROGNOSTICS

Hierarchical Clustering of 129 Lung SCC Patients



(57) Abstract: A method of providing a prognosis of lung cancer is conducted by analyzing the expression of a group of genes. Gene expression profiles in a variety of medium such as microarrays are included as are kits that contain them.

WO 2006/060653 A2

LUNG CANCER PROGNOSTICS

FIELD OF THE INVENTION

This invention relates to prognostics for lung cancer based on the gene expression profiles of biological samples.

5 BACKGROUND

Lung cancer is the leading cause of cancer deaths in developed countries killing about 1 million people worldwide each year. An estimated 171,900 new cases are expected in 2003 in the US, accounting for about 13% of all cancer diagnoses. Non-small cell lung cancer (NSCLC) represents the majority (~75%) of bronchogenic
10 carcinomas while the remainder is small cell lung carcinomas (SCLC). NSCLC is comprised of three main subtypes: 40% adenocarcinoma, 40% squamous, and 20% large cell cancer. Adenocarcinoma has replaced squamous cell carcinoma as the most frequent histological subtype over the last 25 years, peaking the early 1990's. This may be associated with the use of "low tar" cigarettes resulting in deeper inhalation of
15 cigarette smoke. Wingo et al. (1999). The overall 10-year survival rate of patients with NSCLC is a dismal 8-10%.

Approximately 25-30% of patients with NSCLC have stage I disease and of these 35-50% will relapse within 5 years after surgical treatment. Depending upon stage, adenocarcinoma has a higher relapse rate than squamous cell carcinoma with
20 approximately 65% and 55% of SCC and adenocarcinoma patients surviving at 5 years, respectively. Mountain et al. (1987). Currently, it is not possible to identify those patients with a high risk of relapse. The ability to identify high-risk patients among the stage I disease group will allow for the consideration of additional therapeutic intervention leading to the potential for improved survival. Indeed, recent
25 clinical trials have shown that adjuvant therapy following resection of lung tumors can lead to improved survival. Kato et al. (2004). Specifically, Kato et al. demonstrated that adjuvant chemotherapy with uracil-tegafur improves survival among patients with completely resected pathological stage I adenocarcinoma, particularly T2 disease.

30 Microarray gene expression profiling has recently been utilized to define prognostic signatures in patients with lung adenocarcinomas, (Beer et al. (2002)) however, no large studies have investigated gene expression profiles of prognosis in the squamous cell carcinoma population. Here, we have profiled 134 SCC samples

and 10 normal matched lung samples on the Affymetrix U133A chip. Hierarchical clustering and Cox modeling has identified genes that correlate with patient prognosis. These signatures can be used to identify patients who may benefit from adjuvant therapy following initial surgery.

5 SUMMARY OF THE INVENTION

The present invention provides a method of assessing lung cancer status by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker genes above or below
10 pre-determined cut-off levels are indicative of lung cancer status.

The present invention provides a method of staging lung cancer patients by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker genes above or below
15 pre-determined cut-off levels are indicative of the lung cancer stage.

The present invention provides a method of determining lung cancer patient treatment protocol by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker
20 genes above or below pre-determined cut-off levels are sufficiently indicative of risk of recurrence to enable a physician to determine the degree and type of therapy recommended to prevent recurrence.

The present invention provides a method of treating a lung cancer patient by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers
25 associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker genes above or below pre-determined cut-off levels are indicate a high risk of recurrence and; treating the patient with adjuvant therapy if they are a high risk patient.

The present invention provides a method of determining whether a lung cancer
30 patient is high or low risk of mortality by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 4 where the expression levels of the Marker genes above or below pre-determined cut-off levels are sufficiently indicative

of risk of mortality to enable a physician to determine the degree and type of therapy recommended.

The present invention provides a method of generating a lung cancer prognostic patient report by determining the results of any one of the methods described herein and preparing a report displaying the results and patient reports generated thereby.

The present invention provides a composition comprising at least one probe set selected from the group consisting of: Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

The present invention provides a kit for conducting an assay to determine lung cancer prognosis in a biological sample comprising: materials for detecting isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

The present invention provides articles for assessing lung cancer status comprising: materials for detecting isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

The present invention provides a microarray or gene chip for performing the method described herein.

The present invention provides a diagnostic/prognostic portfolio comprising isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 depicts hierarchical clustering of 129 lung SCC patients.

Figure 2 depicts plots of AUC vs. number of genes.

Figure 3 depicts error rates of LOOCV vs various cutoffs in the 65-sample training set.

Figure 4 depicts Kaplan Meier plots of the 50-gene signature in the testing set.

Figure 5 depicts unsupervised clustering identifies epidermal differentiation pathway as being down-regulated in high-risk patients. A. Clustering of patients based on top 121 showed two clusters of patients. The majority of genes in cluster 1 were down-regulated (green). B. List of 20 genes associated with epidermal

differentiation pathway. C. Kaplan Meier curve of clustered patient groups defined by the 20 epidermal-related genes.

Figure 6 depicts verification of gene expression data using real-time RT-PCR. Four genes (NTRK2, FGFR2, VEGF, KRT13) were selected for RT-PCR.

- 5 Expression correlate very well with Affymetrix chip data ($R=0.71-0.96$).

DETAILED DESCRIPTION OF THE INVENTION

- Non-small cell lung cancer (NSCLC) represents the majority (~75%) of lung carcinomas and is comprised of three main subtypes: 40% squamous, 40% adenocarcinoma, and 20% large cell cancer. Approximately 25-30% of patients with NSCLC have stage I disease and of these 35-50% will relapse within 5 years after surgical treatment. Current histopathology and genetic biomarkers are insufficient for identifying patients who are at a high risk of relapse. As described in the present invention, 129 primary squamous cell lung carcinomas and 10 matched normal lung tissues were profiled using the Affymetrix U133A gene chip. Unsupervised hierarchical clustering identified two clusters of patients with lung carcinoma that had no correlation with stage of disease but had significantly different median overall survival ($p = 0.036$). Cox proportional hazard models were then utilized to identify an optimal set of 50 genes (Table 1) in a 65 patient training set that significantly predicted survival in a 64 patient test set. This signature achieved 52% specificity and 82% sensitivity and provided an overall predictive value of 71%. Kaplan-Meier analysis showed clear significant stratification of high and low risk patients ($p = 0.0075$). The identification of prognostic signatures allows identification of patients with high-risk squamous cell lung carcinoma who could benefit from adjuvant therapy following initial surgery.

25 Table 1

SEQ ID NO:	Rank	SEQ ID NO:	Rank	SEQ ID NO:	Rank	SEQ ID NO:	Rank
228	1	18	14	4	27	279	40
284	2	79	15	310	28	280	41
76	3	230	16	42	29	267	42
124	4	416	17	10	30	189	43
281	5	409	18	80	31	103	44
86	6	78	19	12	32	194	45
303	7	420	20	440	33	268	46
311	8	58	21	75	34	252	47
443	9	53	22	60	35	461	48
287	10	254	23	63	36	372	49
13	11	91	24	283	37	414	50

378	12	270	25	29	38
362	13	446	26	221	39

A Biomarker is any indicia of the level of expression of an indicated Marker gene. The indicia can be direct or indirect and measure over- or under-expression of the gene given the physiologic parameters and in comparison to an internal control, normal tissue or another carcinoma. Biomarkers include, without limitation, nucleic acids (both over and under-expression and direct and indirect). Using nucleic acids as Biomarkers can include any method known in the art including, without limitation, measuring DNA amplification, RNA, micro RNA, loss of heterozygosity (LOH), single nucleotide polymorphisms (SNPs, Brookes (1999)), microsatellite DNA, DNA hypo- or hyper-methylation. Using proteins as Biomarkers can include any method known in the art including, without limitation, measuring amount, activity, modifications such as glycosylation, phosphorylation, ADP-ribosylation, ubiquitination, etc., immunohistochemistry (IHC). Other Biomarkers include imaging, cell count and apoptosis markers.

The indicated genes provided herein are those associated with a particular tumor or tissue type. A Marker gene may be associated with numerous cancer types but provided that the expression of the gene is sufficiently associated with one tumor or tissue type to be identified using the algorithm described herein to be specific for a lung cancer cell, the gene can be used in the claimed invention to determine cancer status and prognosis. Numerous genes associated with one or more cancers are known in the art. The present invention provides preferred Marker genes and even more preferred Marker gene combinations. These are described herein in detail.

A Marker gene corresponds to the sequence designated by a SEQ ID NO when it contains that sequence. A gene segment or fragment corresponds to the sequence of such gene when it contains a portion of the referenced sequence or its complement sufficient to distinguish it as being the sequence of the gene. A gene expression product corresponds to such sequence when its RNA, mRNA, or cDNA hybridizes to the composition having such sequence (e.g. a probe) or, in the case of a peptide or protein, it is encoded by such mRNA. A segment or fragment of a gene expression product corresponds to the sequence of such gene or gene expression product when it contains a portion of the referenced gene expression product or its complement sufficient to distinguish it as being the sequence of the gene or gene expression product.

The inventive methods, compositions, articles, and kits of described and claimed in this specification include one or more Marker genes. "Marker" or "Marker gene" is used throughout this specification to refer to genes and gene expression products that correspond with any gene the over- or under-expression of which is associated with a tumor or tissue type. The preferred Marker genes are described in more detail in Table 8.

The present invention provides a method of assessing lung cancer status by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker genes above or below pre-determined cut-off levels are indicative of lung cancer status.

The present invention provides a method of staging lung cancer patients by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker genes above or below pre-determined cut-off levels are indicative of the lung cancer stage. The stage can correspond to any classification system, including, but not limited to the TNM system or to patients with similar gene expression profiles.

The present invention provides a method of determining lung cancer patient treatment protocol by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker genes above or below pre-determined cut-off levels are sufficiently indicative of risk of recurrence to enable a physician to determine the degree and type of therapy recommended to prevent recurrence.

The present invention provides a method of treating a lung cancer patient by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7 where the expression levels of the Marker genes above or below pre-determined cut-off levels are indicate a high risk of recurrence and; treating the patient with adjuvant therapy if they are a high risk patient.

The present invention provides a method of determining whether a lung cancer patient is high or low risk of mortality by obtaining a biological sample from a lung cancer patient; and measuring Biomarkers associated with Marker genes

corresponding to those selected from Table 4 where the expression levels of the Marker genes above or below pre-determined cut-off levels are sufficiently indicative of risk of mortality to enable a physician to determine the degree and type of therapy recommended.

5 In the above methods, the sample can be prepared by any method known in the art including, but not limited to, bulk tissue preparation and laser capture microdissection. The bulk tissue preparation can be obtained for instance from a biopsy or a surgical specimen.

10 In the above methods, the gene expression measuring can also include measuring the expression level of at least one gene constitutively expressed in the sample.

In the above methods, the specificity is preferably at least about 40% and the sensitivity at least at least about 80%.

In the above methods, the pre-determined cut-off levels are at least about 1.5-fold over- or under- expression in the sample relative to benign cells or normal tissue.

15 In the above methods, the pre-determined cut-off levels have at least a statistically significant p-value over-expression in the sample having metastatic cells relative to benign cells or normal tissue, preferably the p-value is less than 0.05.

20 In the above methods, gene expression can be measured by any method known in the art, including, without limitation on a microarray or gene chip, nucleic acid amplification conducted by polymerase chain reaction (PCR) such as reverse transcription polymerase chain reaction (RT-PCR), measuring or detecting a protein encoded by the gene such as by an antibody specific to the protein or by measuring a characteristic of the gene such as DNA amplification, methylation, mutation and allelic variation. The microarray can be for instance, a cDNA array or an
25 oligonucleotide array. All these methods and can further contain one or more internal control reagents.

The present invention provides a method of generating a lung cancer prognostic patient report by determining the results of any one of the methods described herein and preparing a report displaying the results and patient reports generated thereby.

30 The report can further contain an assessment of patient outcome and/or probability of risk relative to the patient population.

The present invention provides a composition comprising at least one probe set selected from the group consisting of: Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

The present invention provides a kit for conducting an assay to determine lung cancer prognosis in a biological sample comprising: materials for detecting isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7. The kit can further comprise reagents for conducting a microarray analysis, and/or a medium through which said nucleic acid sequences, their complements, or portions thereof are assayed.

The present invention provides articles for assessing lung cancer status comprising: materials for detecting isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7. The articles can further contain reagents for conducting a microarray analysis and/or a medium through which said nucleic acid sequences, their complements, or portions thereof are assayed.

The present invention provides a microarray or gene chip for performing the method of claim 1, 2, 5, 6 or 7. The microarray can contain isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7. Preferably, the microarray is capable of measurement or characterization of at least 1.5-fold over- or under-expression. Preferably, the microarray provides a statistically significant p-value over- or under-expression. Preferably, the p-value is less than 0.05. The microarray can contain a cDNA array or an oligonucleotide array and/or one or more internal control reagents.

The present invention provides a diagnostic/prognostic portfolio comprising isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7. Preferably, the portfolio is capable of measurement or characterization of at least 1.5-fold over- or under-expression. Preferably, the portfolio provides a statistically significant p-value over- or under-expression. Preferably, the p-value is less than 0.05.

The mere presence or absence of particular nucleic acid sequences in a tissue sample has only rarely been found to have diagnostic or prognostic value.

Information about the expression of various proteins, peptides or mRNA, on the other hand, is increasingly viewed as important. The mere presence of nucleic acid sequences having the potential to express proteins, peptides, or mRNA (such sequences referred to as “genes”) within the genome by itself is not determinative of whether a protein, peptide, or mRNA is expressed in a given cell. Whether or not a given gene capable of expressing proteins, peptides, or mRNA does so and to what extent such expression occurs, if at all, is determined by a variety of complex factors. Irrespective of difficulties in understanding and assessing these factors, assaying gene expression can provide useful information about the occurrence of important events such as tumorogenesis, metastasis, apoptosis, and other clinically relevant phenomena. Relative indications of the degree to which genes are active or inactive can be found in gene expression profiles. The gene expression profiles of this invention are used to provide diagnosis, status, prognosis and treatment protocol for lung cancer patients.

Sample preparation requires the collection of patient samples. Patient samples used in the inventive method are those that are suspected of containing diseased cells such as cells taken from a nodule in a fine needle aspirate (FNA) of tissue. Bulk tissue preparation obtained from a biopsy or a surgical specimen and Laser Capture Microdissection (LCM) are also suitable for use. LCM technology is one way to select the cells to be studied, minimizing variability caused by cell type heterogeneity. Consequently, moderate or small changes in Marker gene expression between normal or benign and cancerous cells can be readily detected. Samples can also comprise circulating epithelial cells extracted from peripheral blood. These can be obtained according to a number of methods but the most preferred method is the magnetic separation technique described in U.S. Patent 6,136,182. Once the sample containing the cells of interest has been obtained, a gene expression profile is obtained using a Biomarker, for genes in the appropriate portfolios.

Preferred methods for establishing gene expression profiles include determining the amount of RNA that is produced by a gene that can code for a protein or peptide. This is accomplished by reverse transcriptase PCR (RT-PCR), competitive RT-PCR, real time RT-PCR, differential display RT-PCR, Northern Blot analysis and other related tests. While it is possible to conduct these techniques using individual PCR reactions, it is best to amplify complementary DNA (cDNA) or complementary RNA (cRNA) produced from mRNA and analyze it via microarray. A number of different

array configurations and methods for their production are known to those of skill in the art and are described in U.S. Patents such as: 5,445,934; 5,532,128; 5,556,752; 5,242,974; 5,384,261; 5,405,783; 5,412,087; 5,424,186; 5,429,807; 5,436,327; 5,472,672; 5,527,681; 5,529,756; 5,545,531; 5,554,501; 5,561,071; 5,571,639; 5,593,839; 5,599,695; 5,624,711; 5,658,734; and 5,700,637.

Microarray technology allows for the measurement of the steady-state mRNA level of thousands of genes simultaneously thereby presenting a powerful tool for identifying effects such as the onset, arrest, or modulation of uncontrolled cell proliferation. Two microarray technologies are currently in wide use. The first are cDNA arrays and the second are oligonucleotide arrays. Although differences exist in the construction of these chips, essentially all downstream data analysis and output are the same. The product of these analyses are typically measurements of the intensity of the signal received from a labeled probe used to detect a cDNA sequence from the sample that hybridizes to a nucleic acid sequence at a known location on the microarray. Typically, the intensity of the signal is proportional to the quantity of cDNA, and thus mRNA, expressed in the sample cells. A large number of such techniques are available and useful. Preferred methods for determining gene expression can be found in US Patents 6,271,002; 6,218,122; 6,218,114; and 6,004,755.

Analysis of the expression levels is conducted by comparing such signal intensities. This is best done by generating a ratio matrix of the expression intensities of genes in a test sample versus those in a control sample. For instance, the gene expression intensities from a diseased tissue can be compared with the expression intensities generated from benign or normal tissue of the same type. A ratio of these expression intensities indicates the fold-change in gene expression between the test and control samples.

Gene expression profiles can also be displayed in a number of ways. The most common method is to arrange raw fluorescence intensities or ratio matrix into a graphical dendogram where columns indicate test samples and rows indicate genes. The data are arranged so genes that have similar expression profiles are proximal to each other. The expression ratio for each gene is visualized as a color. For example, a ratio less than one (indicating down-regulation) may appear in the blue portion of the spectrum while a ratio greater than one (indicating up-regulation) may appear as a color in the red portion of the spectrum. Commercially available computer software

programs are available to display such data including "GENESPRING" from Silicon Genetics, Inc. and "DISCOVERY" and "INFER" software from Partek, Inc.

In the case of measuring protein levels to determine gene expression, any method known in the art is suitable provided it results in adequate specificity and sensitivity.

5 For example, protein levels can be measured by binding to an antibody or antibody fragment specific for the protein and measuring the amount of antibody-bound protein. Antibodies can be labeled by radioactive, fluorescent or other detectable reagents to facilitate detection. Methods of detection include, without limitation, enzyme-linked immunosorbent assay (ELISA) and immunoblot techniques.

10 Modulated Markers used in the methods of the invention are described in the Examples. The genes that are differentially expressed are either up regulated or down regulated in patients with various lung cancer prognostics. Up regulation and down regulation are relative terms meaning that a detectable difference (beyond the contribution of noise in the system used to measure it) is found in the amount of
15 expression of the genes relative to some baseline. In this case, the baseline is determined based on the algorithm. The genes of interest in the diseased cells are then either up- or down-regulated relative to the baseline level using the same measurement method.

Diseased, in this context, refers to an alteration of the state of a body that
20 interrupts or disturbs, or has the potential to disturb, proper performance of bodily functions as occurs with the uncontrolled proliferation of cells. Someone is diagnosed with a disease when some aspect of that person's genotype or phenotype is consistent with the presence of the disease. However, the act of conducting a diagnosis or prognosis may include the determination of disease/status issues such as determining
25 the likelihood of relapse, type of therapy and therapy monitoring. In therapy monitoring, clinical judgments are made regarding the effect of a given course of therapy by comparing the expression of genes over time to determine whether the gene expression profiles have changed or are changing to patterns more consistent with normal tissue.

30 Genes can be grouped so that information obtained about the set of genes in the group provides a sound basis for making a clinically relevant judgment such as a diagnosis, prognosis, or treatment choice. These sets of genes make up the portfolios of the invention. As with most diagnostic markers, it is often desirable to use the fewest number of markers sufficient to make a correct medical judgment. This

prevents a delay in treatment pending further analysis as well unproductive use of time and resources.

One method of establishing gene expression portfolios is through the use of optimization algorithms such as the mean variance algorithm widely used in establishing stock portfolios. This method is described in detail in US patent publication number 20030194734. Essentially, the method calls for the establishment of a set of inputs (stocks in financial applications, expression as measured by intensity here) that will optimize the return (e.g., signal that is generated) one receives for using it while minimizing the variability of the return. Many commercial software programs are available to conduct such operations. "Wagner Associates Mean-Variance Optimization Application," referred to as "Wagner Software" throughout this specification, is preferred. This software uses functions from the "Wagner Associates Mean-Variance Optimization Library" to determine an efficient frontier and optimal portfolios in the Markowitz sense is one option. Use of this type of software requires that microarray data be transformed so that it can be treated as an input in the way stock return and risk measurements are used when the software is used for its intended financial analysis purposes.

The process of selecting a portfolio can also include the application of heuristic rules. Preferably, such rules are formulated based on biology and an understanding of the technology used to produce clinical results. More preferably, they are applied to output from the optimization method. For example, the mean variance method of portfolio selection can be applied to microarray data for a number of genes differentially expressed in subjects with cancer. Output from the method would be an optimized set of genes that could include some genes that are expressed in peripheral blood as well as in diseased tissue. If samples used in the testing method are obtained from peripheral blood and certain genes differentially expressed in instances of cancer could also be differentially expressed in peripheral blood, then a heuristic rule can be applied in which a portfolio is selected from the efficient frontier excluding those that are differentially expressed in peripheral blood. Of course, the rule can be applied prior to the formation of the efficient frontier by, for example, applying the rule during data pre-selection.

Other heuristic rules can be applied that are not necessarily related to the biology in question. For example, one can apply a rule that only a prescribed percentage of the portfolio can be represented by a particular gene or group of genes. Commercially

available software such as the Wagner Software readily accommodates these types of heuristics. This can be useful, for example, when factors other than accuracy and precision (e.g., anticipated licensing fees) have an impact on the desirability of including one or more genes.

5 The gene expression profiles of this invention can also be used in conjunction with other non-genetic diagnostic methods useful in cancer diagnosis, prognosis, or treatment monitoring. For example, in some circumstances it is beneficial to combine the diagnostic power of the gene expression based methods described above with data from conventional markers such as serum protein markers (e.g., Cancer Antigen 27.29
10 ("CA 27.29")). A range of such markers exists including such analytes as CA 27.29. In one such method, blood is periodically taken from a treated patient and then subjected to an enzyme immunoassay for one of the serum markers described above. When the concentration of the marker suggests the return of tumors or failure of therapy, a sample source amenable to gene expression analysis is taken. Where a
15 suspicious mass exists, a fine needle aspirate (FNA) is taken and gene expression profiles of cells taken from the mass are then analyzed as described above. Alternatively, tissue samples may be taken from areas adjacent to the tissue from which a tumor was previously removed. This approach can be particularly useful when other testing produces ambiguous results.

20 Kits made according to the invention include formatted assays for determining the gene expression profiles. These can include all or some of the materials needed to conduct the assays such as reagents and instructions and a medium through which Biomarkers are assayed.

Articles of this invention include representations of the gene expression profiles
25 useful for treating, diagnosing, prognosticating, and otherwise assessing diseases. These profile representations are reduced to a medium that can be automatically read by a machine such as computer readable media (magnetic, optical, and the like). The articles can also include instructions for assessing the gene expression profiles in such media. For example, the articles may comprise a CD ROM having computer
30 instructions for comparing gene expression profiles of the portfolios of genes described above. The articles may also have gene expression profiles digitally recorded therein so that they may be compared with gene expression data from patient samples. Alternatively, the profiles can be recorded in different representational format. A graphical recordation is one such format. Clustering algorithms such as

those incorporated in "DISCOVERY" and "INFER" software from Partek, Inc. mentioned above can best assist in the visualization of such data.

Different types of articles of manufacture according to the invention are media or formatted assays used to reveal gene expression profiles. These can comprise, for example, microarrays in which sequence complements or probes are affixed to a matrix to which the sequences indicative of the genes of interest combine creating a readable determinant of their presence. Alternatively, articles according to the invention can be fashioned into reagent kits for conducting hybridization, amplification, and signal generation indicative of the level of expression of the genes of interest for detecting cancer.

The invention is further illustrated by the following non-limiting examples. All references cited herein are hereby incorporated herein.

Examples: Genes analyzed according to this invention are typically related to full-length nucleic acid sequences that code for the production of a protein or peptide. One skilled in the art will recognize that identification of full-length sequences is not necessary from an analytical point of view. That is, portions of the sequences or ESTs can be selected according to well-known principles for which probes can be designed to assess gene expression for the corresponding gene.

Example 1

Methods

Patient population

134 fresh frozen, surgically resected lung SCC and 10 matched normal lung samples from 133 individual patients (LS-71 and LS-136 were duplicate samples from different areas of the same tumor) from all stages of squamous cell lung carcinoma were evaluated in this study. These samples were collected from patients from the University of Michigan Hospital between October 1991 and July 2002 with patient consent and Institutional Review Board (IRB) approval. Portions of the resected lung carcinomas were sectioned and evaluated by the study pathologist by routine hematoxylin and eosin (H&E) staining. Samples chosen for analysis contained greater than 70% tumor cells. Approximately one third of patients (with equal proportions for each stage) received radiotherapy or chemotherapy following surgery. Seventy-seven patients were lymph node negative. Follow-up data were available for all patients. The mean patient age was 68 ± 10 (range 42-91) with approximately 45% of patients 70 years or older. One patient (LS-3) likely died of

surgery-related causes and was therefore not utilized in identifying prognostic signatures. Also, three specimens had mixed histology and were also not included in prognostic profiling (LS-76, LS-84, LS-112).

Microarray Analysis

For isolation of RNA, 20 to 40 cryostat sections of 30 μ m were cut from each sample, in total corresponding to approximately 100 mg of tissue. Before, in between, and after cutting the sections for RNA isolation, 5 μ m sections were cut for hematoxylin and eosin staining to confirm the presence of tumor cells. Total RNA was isolated with RNeasy RBB (Qiagen, Crawley, UK), and dissolved in DEPC (0.1%)-treated H₂O. About 2 ng of total RNA was resuspended in 10 μ l of water and 2 rounds of the T7 RNA polymerase based amplification were performed to yield about 50 μ g of amplified RNA. Quality of RNA was checked using the Agilent Bioanalyzer. The mean ribosomal ratio (28s/18s) for all samples was 1.5 (range: 1.0 - 2.1). Four micrograms of total RNA was amplified, labeled and aRNA was fragmented and hybridized to the Affymetrix U133A chip according to the manufacturer's instructions. Microarray data were extracted using the Affymetrix MAS 5 software. Global gene expression was scaled to an average intensity of 600 units. The data were then normalized using a spline quantile normalization method.

Statistical Analysis

Three complimentary statistical methods were performed to identify the optimal prognostic gene signature: Cox proportional-hazard regression modeling, bootstrapping, and a leave 20 percent out cross validation (L20OCV).

Univariate Cox proportional-hazard regression modeling was performed to identify genes that were significantly associated with overall survival. The Cox score was defined as the sum of the selected gene's log₂-based chip signals multiplied by their z scores from the Cox regression. Similarly, Cox scores were calculated for patients in the testing set with the same selected genes from the training set. A series of cutoffs (percentile of risk index for the patients in the training set) was applied to predict the clinical outcome of patients in the testing set by comparing the patients' Cox score in the testing set with a cutoff for the risk index. If a patient's Cox score was higher than the cutoff, the patient was classified as "high risk", otherwise, it is put in the "low risk" group.

Kaplan-Meier analysis was performed to explore the survival characteristics of high-risk and low-risk patients. A cutoff of 3-year survival was employed since the

majority of patients who will relapse in this population will have this occur within 3 years. Kiernan et al. (1993). Also many of these patients die due to non-cancer related illnesses after 3 years. Kiernan et al. (1993). This rationale was also employed when performing Cox modeling.

5 The bootstrap method was also employed to provide a more stringent means of defining prognostic genes. Using the same training and testing sets created above, 65 samples were selected, with replacement from the training set, and then Cox regression was performed on these samples. Each gene's P value and z score were recorded. This step was repeated 400 times thus giving 400 P values and z scores for
10 each gene. For each gene, the top and bottom 5% of P values were removed and then the mean P value and the rank of each gene (based on the mean P value) were defined. Similarly, the top and bottom 5% z scores for each gene in the training set were removed and the sum of the remaining ones was calculated. Various numbers of top genes based on the mean P value were defined, their log2-based chip signal were
15 multiplied with the sum of their z scores. This equated their Cox scores, namely, the risk index. The patients' Cox scores in the testing set was also calculated in this manner. Receiver operator characteristic (ROC) curves were drawn for patients in the training and testing sets and the area under the curve (AUC) values for each gene classifier was recorded. The AUC values were then plotted versus various numbers of
20 gene classifiers to determine the optimal gene number that provides steady AUC values in the training set.

A L20OCV was also performed to confirm the optimal gene number of the classifier. First samples were partitioned into 5 groups with the same or very close numbers of samples. Five pairs of training and testing sets was generated with the
25 training set consisting of 80% of samples and the testing set consisting of the remaining 20%. Therefore each sample was chosen exactly once in a testing set. Cox regression modeling was performed to select the top prognostic genes (from 2 to 200) in the training set and the selected genes were tested in the corresponding testing set. ROC was performed to calculate the AUC. The mean AUC of the 5 testing sets for
30 gene number from 2 to 200 was calculated. This was repeated 100 times and the mean of 100 AUC's for gene numbers from 2 to 200 was then calculated. The mean AUC versus gene number (2 to 200) was plotted and the optimal number of genes in the signature was selected.

Hierarchical clustering was performed with GeneSpring7.0 (Silicon Genetics) to identify major clusters of patients and investigate their association with patient co-variates. Prior to clustering genes that had a coefficient of variation (CV) smaller than 0.3 (arbitrarily chosen) were removed so as to reduce the impact of genes that displayed minimal change in expression across the dataset. Thus a dataset with 11,101 genes was created for clustering analysis. The signal intensity of each gene was divided by the median expression level of that gene from all patients. Samples were clustered using Pearson correlation as measurement of similarity. Genes were clustered in the same way.

Results

Microarray profiling

141 of the 144 microarrays gave excellent data (% present > 40, scaling factor < 10) while the remaining 3 samples (LS76, LS78, LS82) gave acceptable results (% present > 30, scaling factor < 15). Table 2 shows the clinical-pathological staging of the 134 SCC samples analyzed by microarray. All samples were included in initial clustering analysis. Genes were filtered from the dataset if they were not called present in at least 10% of all samples (including normal). This left 14,597 genes for analysis.

Table 2: Patient samples by stage

Clinical Stage	Number (%)	Pathological Stage	Number
1a	28 (20)	T1 N0 M0	27
1b	50 (35)	T2 N0 M0	48
IIA	7 (5)	T1 N1 M0	6
IIB	31 (22)	T1 N1 M0	30
IIIA	19 (14)	T2 N2 M0	10
		T3 N0 M0	1
		T3 N1 M0	3
		T3 N2 M0	4
IIIB	5 (4)	T4 N0 M0	1
		T4 N1 M0	3
		T4 N2 M0	1

Note. One duplicate stage IIB, 77 lymph node negative samples

Unsupervised Hierarchical clustering

For unsupervised clustering the dataset was further filtered by removing genes (CV<30%) that had low variation of expression across the entire dataset. The 134 SCC and 10 normal lung samples were initially clustered based on unsupervised k-means clustering of the remaining 11,101 genes. The normal lung samples had a distinct profile from the carcinomas and clustered together. The 2 duplicate SCC

samples (LS-71 and LS-136) clustered together demonstrating the reproducibility of the microarray analysis. Of the 133 unique patient carcinomas four were removed from further analysis since the patient either died due to surgery (LS3) or the sample had mixed histology (LS-76, LS-84, LS-112). When the 129 samples were clustered using the 11,101 genes two major clusters were formed, one with 55 patients and the other with 74 patients (Fig 1A). No significant association between tumor stage, differentiation, or patient gender and the two clusters was identified. There were approximately equal proportions of each stage present in both clusters (cluster 1 consists of 31 stage I, 15 stage II and 9 stage III patients; cluster 2 consists of 42 stage I, 18 stage II and 14 stage III patients). However, the patients in cluster 1 and 2 showed significantly separated survival curves (Fig 1B, $p = 0.036$), indicating that expression profiles, irrespective of stage, existed that were associated with overall survival (Fig 1B).

Identification of prognostic gene signatures

To identify genes that could further stratify early stage patients into good and poor prognostic groups several complimentary statistical analyses were performed. This included: 1) Cox modeling on a training set and validating prognostic signatures on a test set of samples; 2) bootstrapping; and 3) L20OCV.

First, the 129 SCC samples were split into training and test sets with equal number of stages represented in both groups. Both groups showed similar overall median survival times. The 65-patient training set was analyzed using a bootstrapping method (see Methods section) to determine the optimal number of genes to be used in the prognostic signature. When increasing numbers of genes was plotted versus the AUC from a receiver operator characteristic analysis it could be seen that the signature performance began to plateau at around 50 genes (Fig 2A). A L20OCV procedure was used to confirm the optimal number of prognostic genes in the 65-patient training set. The result showed that a signature has a stable performance when the number of genes reaches 50. Therefore, the top ranked 50 genes would be used as the signature. The 50-gene classifier demonstrated overall predictive value of 70% when used in the 64-patient test set (Fig 2B).

A LOOCV procedure was then used in the 65-patient training set to determine the optimal cutoff of the risk index. The error rates were calculated with various cutoffs. This indicated that cutoff at 58%ile gave the lowest error rate (Fig 3). Therefore, the 58%ile of patients was used as the cutoff for determining survival. The performance

of the prognostic signature was then examined in the testing set using this cutoff. The signature achieved 52.4% specificity and 81.8% sensitivity in the testing set (Fig. 3). Kaplan-Meier plot also showed good separation between predicted high-risk group of patients and low risk group of patients ($p = 0.0075$). Multivariate analysis including sex, differentiation, stage, tumor size, age, and lymph node status was performed. None of the parameters except for the 50-gene signature had a significant p-value (Table 3). Kaplan-Meier analysis was also performed using the 50-gene signature and a risk cutoff of 58%. The high-risk group was well separated from the low risk group in all patients ($p = 0.0075$, Fig. 4A) and when only those with stage 1 disease were tested ($p = 0.029$; Fig. 4B).

Table 3
Multivariate Analysis

Co-variate	P-value
50 gene signature	0.01
Sex	0.24
Differentiation	0.66
Stage	0.41
T	0.91
Age	0.35
N	0.99

Example 2

Identification of a robust prognostic signature

Although we used a bootstrap method to avoid random sampling issues in the training-testing method, a more robust prognostic signature might be identified if we use all 129 samples in the training set. Therefore, a gene signature was also selected by bootstrapping the entire 129-patient dataset. Genes were ranked based on their mean P value and the top 100 genes were identified (Table 4). Twenty-three of these genes were in common with the top 50 genes identified from the training-test method.

We had data on time to relapse (TTR) for 16 patients. The mean TTR was 21.7 months with 88% of patients relapsing within 3 years. Since the majority of patients who die after 3 years die from non-cancer related causes we chose a cutoff of 36 months for classifying patients who will have a lung cancer-related death. Our defined classifiers were tested with or without a 36-month cutoff. The signatures had a better performance in the testing set when a 3-year cutoff was employed. Therefore, a gene signature selected with the time limit is better than without the time limit.

Table 4

SEQ ID NO:	Rank	SEQ ID NO:	Rank	SEQ ID NO:	Rank	SEQ ID NO:	Rank
452	1	107	26	200	51	89	76
191	2	77	27	234	52	158	77
303	3	13	28	58	53	149	78
378	4	461	29	386	54	98	79
270	5	91	30	120	55	29	80
79	6	225	31	305	56	35	81
409	7	290	32	302	57	311	82
76	8	252	33	16	58	310	83
450	9	194	34	432	59	279	84
413	10	21	35	381	60	384	85
365	11	206	36	269	61	298	86
135	12	161	37	75	62	48	87
18	13	36	38	209	63	222	88
460	14	207	39	293	64	425	89
393	15	37	40	20	65	56	90
375	16	315	41	83	66	398	91
396	17	87	42	408	67	453	92
86	18	288	43	388	68	470	93
190	19	369	44	443	69	261	94
204	20	235	45	372	70	462	95
65	21	337	46	286	71	162	96
433	22	383	47	289	72	131	97
439	23	228	48	57	73	284	98
471	24	248	49	215	74	326	99
124	25	423	50	144	75	114	100

Example 3**Identification of a high-risk sub-group of SCC patients**

The unsupervised hierarchical clustering described above identified two main groups of patients that differed significantly in their overall survival. A bootstrap analysis performed on the two patient groups found 121 genes (non-unique) whose expression levels were significantly different between the high- and low-risk groups ($p < 0.001$, mean difference >3 -fold; Table 5). Interestingly, the majority of these genes (118) were down-regulated in the high risk group (Fig 5A, cluster 1). Pathway analysis demonstrated that genes involved in epidermal development functions, including keratins and small-proline rich proteins, were significantly enriched for in this dataset. These data, shown in Table 6, indicate that there are two major subtypes of SCC one of which has a gene expression profile consistent with poor differentiation and as such tends to be more aggressive. When the genes only involved in epidermal differentiation (Fig 5B) were used to cluster the patient samples the two prognostically differentiated groups were maintained (Fig 5C). These data indicate that there are two major subtypes of SCC one of which has a gene expression

profile consistent with poor differentiation and as such tends to be more aggressive.

The lack of expression of epidermal differentiation genes may be associated with a subgroup of tumors that are de-differentiated and therefore more aggressive.

Table 5 121 genes significantly different between low- and high-risk clusters

SEQ ID NO:	Dunn-Sidak p-value	SEQ ID NO:	Dunn-Sidak p-value	SEQ ID NO:	Dunn-Sidak p-value
47	4.069E-08	171	0	278	3.2363E-12
52	0.001779787	172	0	285	3.95638E-09
61	4.78438E-06	173	0	313	3.06803E-07
64	3.94295E-08	174	0	318	0
70	6.14897E-11	175	3.70691E-07	320	1.10983E-05
71	5.40462E-10	177	0.000964585	321	2.86717E-06
72	4.99526E-07	179	0.00023307	322	0
91	1.17801E-09	181	2.10853E-07	323	1.46054E-05
92	0	184	0.000261	324	2.65922E-05
93	1.51307E-07	185	1.22494E-09	331	0
94	0.00024053	186	0	332	1.77997E-10
97	3.25762E-06	188	8.3147E-08	333	0
101	0.000715044	192	0	341	3.60669E-08
102	4.042E-05	193	1.33552E-06	348	0.001219264
105	1.28648E-05	194	0	349	4.42435E-08
111	4.10746E-07	195	8.04368E-07	353	0
112	0.000129644	196	0	357	9.21286E-05
115	7.6587E-08	198	1.78886E-07	358	2.91267E-09
118	4.67009E-05	213	0	360	1.67317E-09
121	7.48718E-09	214	0	366	0
123	1.61815E-11	216	1.77997E-11	367	1.06791E-07
125	4.82759E-08	219	1.44447E-07	371	0
126	1.80901E-05	223	6.79057E-08	373	0.000736609
128	1.45634E-11	229	2.21201E-09	397	1.53724E-10
132	0.000571137	231	0.000127662	402	0.001640004
134	3.42792E-07	232	0.000670091	405	1.89887E-05
138	2.83176E-10	233	0.000334014	407	0
140	4.93018E-08	236	0.000371339	418	7.28168E-11
141	9.06164E-11	237	5.35608E-10	419	1.13076E-08
142	1.73482E-08	238	0	424	2.83902E-05
145	0	243	0	426	0.001696015
146	8.6277E-05	245	1.5392E-07	429	2.33385E-05
148	1.68459E-07	246	3.77172E-06	435	2.53251E-06
156	8.93603E-05	251	9.51746E-06	445	8.59804E-08
159	0	253	1.61815E-12	457	0
160	7.24383E-06	257	7.19348E-07	458	0
166	4.46788E-05	259	3.2363E-12	459	0
167	1.61815E-12	260	0	463	9.60372E-09
168	3.2363E-12	262	0	468	4.52017E-06

170	5.27808E-08	263	1.61815E-12		
-----	-------------	-----	-------------	--	--

Table 6. List of significantly enriched pathways

GO.ID	Gene. Count	GO. Class	Gene.#. On GO. . U133a	Category	p.value
8544	17	epidermal differentiation	56	P	7.31E-12
6325	3	chromatin architecture	12	P	2.75E-04
7586	3	digestion	15	P	7.08E-04
7156	4	homophilic cell adhesion	39	P	0.004886
7148	3	cell shape and cell size control	28	P	0.007914
7565	3	pregnancy	28	P	0.007914
165	2	MAPKKKcascade	15	P	0.008242
6805	2	xenobiotic metabolism	15	P	0.008242
7169	3	receptor tyrosine kinase signaling	41	P	0.029293
6832	2	small molecule transport	29	P	0.049333

Example 4**Gene Expression Signatures for Prognosis of Lung Cancer.****5 Methods****Real-Time Quantitative RT-PCR**

Total RNA samples were normalized by OD₂₆₀. Quality testing included analysis by capillary electrophoresis using a Bioanalyzer (Agilent). For aRNA, the RibobeastTM 1-Round Aminoallyl-aRNA amplification kit (Epicentre) was used. All first-strand cDNA synthesis, second-strand cDNA synthesis, in vitro transcription of aRNA, DNase treatment, purification and other steps were performed according to the manufacturer's protocol. For each sample aRNA was reverse transcribed into first-strand cDNA and used for real-time quantitative RT-PCR. The first-strand cDNA synthesis reaction contained, 100 ng of aRNA, 1 µl of 50 ng/µl T7-Oligo(dT) primer, 0.25 µl of 10mM dNTPs, 1 µl of 5X SuperscriptTM III Reverse Transcriptase Buffer, 0.25 µl of 200 U/µl SuperscriptTM III Reverse Transcriptase (Invitrogen Corp), 0.25 µl of 100 mM DTT and 0.25 µl of 0.3 U/µl RNase Inhibitor (Epicentre) in a total reaction volume of 5 µl.

Real-time quantitative RT-PCR analyses were performed on the ABI Prism 7900HT sequence detection system (Applied Biosystems). Each reaction contained 10 µl of 2X TaqMan® Universal PCR Master Mix (Applied Biosystems), 5 µl of cDNA template, and 1µl of 20X Assays-on-Demand Gene Expression Assay Mix (Applied Biosystems) in a total reaction volume of 20 µl. The PCR consisted of an UNG activation step at 50°C for 2 min and initial enzyme activation step at 95°C for 10 min, followed by 40 cycles of 95°C for 15 sec, 60°C for 1 min.

Immunohistochemistry

Immunohistochemistry (IHC) was performed on tissue microarrays containing 60 lung squamous cell carcinomas. Areas of the tumor that best represented the overall morphology were selected for generating a tissue microarray (TMA) block as previously described by Kononen et al. (1998). All controls stained negative for background.

Pathway Analysis

Pathway analysis was performed by first mapping the genes on the Affy U133A chip to the Biological Process categories of Gene Ontology (GO). The categories that had at least 10 genes on the U133A chip were used for subsequent pathway analyses. Genes that were selected from data analysis were mapped to the GO Biological Process categories. Then the hypergeometric distribution probability of the genes was calculated for each category. A category that had a p-value less than 0.05 and had at least two genes was considered over-represented in the selected gene list.

Identification of core set of prognostic genes

Briefly, 400 random training sets of 65 patients were selected from the 129 lung SCC patients. For each training set, Cox regression was performed to identify significant genes at the 5% significance level (i.e. $P < 0.05$). 331 genes that are significant in more than 40% of the training sets are used as the core gene sets. These 331 genes are shown in Table 7.

Microarray results verification

To confirm the microarray results we initially performed TaqMan® quantitative RT-PCR on 4 genes (FGFR2, KRT13, NTRK2, and VEGF). The correlation between the platforms ranged from 0.71 to 0.96 indicating the expression data were reproducible.

Immunohistochemistry was then performed on tissue microarrays to confirm expression of several of these proteins within the tumor cells. Various levels of expression of several keratins in addition to the tyrosine kinase proteins FGFR2 and NTKR2 in SCC cells was demonstrated.

Identification of a core set of prognostic genes

In the previous analysis a set of 50 genes was identified from a single training set of 65 patients. One problem with this approach is that the genes identified as predictors of prognosis can be unstable since the molecular signature strongly depends on the selection of patients in the training sets. The use of validation by

repeated random sampling can avoid this instability. We therefore generated 400 random training sets of 65 patients from the 129 lung SCC patients and performed Cox regression to identify significant genes at the 5% significance level (i.e. $P < 0.05$). 331 genes that were significant in more than 40% of the training sets were

- 5 identified as a core set of prognostic genes in squamous cell lung cancer. These genes are SEQ ID NOs: in Table 7.

Table 7 331 Core genes

1	2	3	5	6	7	8	9	11
13	14	15	16	17	18	20	21	22
23	24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	48	49	50
51	54	55	56	57	58	59	62	65
66	67	68	69	73	74	75	76	77
79	80	81	82	83	84	85	86	87
88	89	90	91	92	95	96	98	99
100	104	106	107	108	109	110	113	114
116	117	119	120	122	124	127	129	130
133	134	135	136	137	139	141	143	147
149	150	151	152	153	154	155	157	159
161	163	164	165	166	169	176	178	180
182	183	187	190	191	194	197	199	200
201	202	203	204	205	206	207	208	209
210	211	212	215	217	218	220	222	224
225	226	227	228	234	235	239	240	241
242	244	247	248	249	250	252	254	255
256	258	261	263	264	265	266	269	270
271	272	274	275	276	282	283	284	286
288	289	290	291	292	293	294	295	296
297	298	299	300	301	302	303	304	305
306	307	308	309	310	311	312	314	315
316	317	319	325	327	328	329	330	334
335	336	337	338	339	340	342	343	344
345	346	347	350	351	352	354	355	356
359	361	363	364	365	368	369	370	372
374	375	376	377	378	379	380	381	382
383	384	385	386	387	388	389	390	391
392	393	394	395	396	398	399	400	401
403	404	406	409	410	411	412	413	415
417	420	421	422	423	425	427	428	430
431	432	433	434	436	437	438	439	441
442	443	444	447	448	449	450	451	452
453	454	455	456	460	461	462	464	465
466	467	469	470	471	472	473		

Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, the descriptions and examples should not be construed as limiting the scope of the invention.

Table 8 SEQ ID NOs: and gene descriptions

1	1255_g_at	guanylate cyclase activator 1A (retina)	GUCA1A	L36861
2	200619_at	splicing factor 3b, subunit 2	SF3B2	NM_006842
3	200650_s_at	lactate dehydrogenase A	LDHA	NM_005566
4	200727_s_at	ARP2 actin-related protein 2 homolog	ACTR2	AA699583
5	200728_at	ARP2 actin-related protein 2 homolog	ACTR2	BE566290
6	200737_at	phosphoglycerate kinase 1	PGK1	NM_000291
7	200795_at	SPARC-like 1 (mast9, hevin)	SPARCL1	NM_004684
8	200810_s_at	cold inducible RNA binding protein	CIRBP	NM_001280
9	200811_at	cold inducible RNA binding protein	CIRBP	NM_001280
10	200824_at	glutathione S-transferase pi	GSTP1	NM_000852
11	200836_s_at	microtubule-associated protein 4	MAP4	NM_002375
12	200840_at	lysyl-tRNA synthetase	KARS	NM_005548
13	200863_s_at	RAB11A, member RAS oncogene family	RAB11A	A1215102
14	200893_at	splicing factor, arginine/serine-rich 10	SFRS10	NM_004593
15	200951_s_at	cyclin D2	CCND2	AW026491
16	200970_s_at	stress-associated endoplasmic reticulum protein 1	SERP1	AL136807
17	200993_at	importin 7	IPO7	AA939270
18	201003_x_at	ubiquitin-conjugating enzyme E2 variant 1	UBE2V1	NM_003349
19	201033_x_at	ribosomal protein, large, P0	RPLP0	NM_001002
20	201047_x_at	RAB6A, member RAS oncogene family	RAB6A	BC003617
21	201067_at	proteasome (prosome, macropain) 26S subunit, ATPase, 2	PSMC2	BF215487
22	201125_s_at	integrin, beta 5	ITGB5	NM_002213
23	201151_s_at	muscleblind-like	MBNL1	BF512200
24	201152_s_at	muscleblind-like	MBNL1	N31913
25	201154_x_at	ribosomal protein L4	RPL4	NM_000968
26	201170_s_at	basic helix-loop-helix domain containing, class B, 2	BHLHB2	NM_003670
27	201175_at	thioredoxin-related transmembrane protein 2	TMX2	NM_015959
28	201236_s_at	BTG family, member 2	BTG2	NM_006763
29	201251_at	pyruvate kinase, muscle	PKM2	NM_002654
30	201286_at	syndecan 1	SDC1	Z48199
31	201287_s_at	syndecan 1	SDC1	NM_002997
32	201351_s_at	YME1-like 1	YME1L1	AF070656
33	201353_s_at	bromodomain adjacent to zinc finger domain, 2A	BAZ2A	AI653126
34	201361_at	hypothetical protein MGC5508	MGC5508	NM_024092
35	201447_at	TIA1 cytotoxic granule-associated RNA binding	TIA1	H96549
36	201448_at	TIA1 cytotoxic granule-associated RNA binding transcript variant 1	TIA1	AL046419
37	201449_at	TIA1 cytotoxic granule-associated RNA binding transcript variant 1	TIA1	AL567227
38	201545_s_at	poly(A) binding protein, nuclear 1	PABPN1	NM_004643
39	201623_s_at	aspartyl-tRNA synthetase	DARS	BC000629

40	201667_at	gap junction protein, alpha 1	GJA1	NM_000165
41	201683_x_at	chromosome 14 open reading frame 92	C14orf92	BE783632
42	201718_s_at	erythrocyte membrane protein band 4.1-like 2	EPB41L2	BF511685
43	201725_at	chromosome 10 open reading frame 7	C10orf7	NM_006023
44	201779_s_at	ring finger protein 13	RNF13	AF070558
45	201780_s_at	ring finger protein 13	RNF13	NM_007282
46	201801_s_at	solute carrier family 29 (nucleoside transporters), mem 1	SLC29A1	AF079117
47	201820_at	keratin 5	KRT5	NM_000424
48	201892_s_at	IMP (inosine monophosphate) dehydrogenase 2	IMPDH2	NM_000884
49	202006_at	protein tyrosine phosphatase, non-receptor type 12	PTPN12	NM_002835
50	202170_s_at	aminoadipate-semialdehyde dehydrogenase-phosphopantetheinyl transferase	AASDHPPT	AF151057
51	202181_at	KIAA0247	KIAA0247	NM_014734
52	202219_at	solute carrier family 6, member 8	SLC6A8	NM_005629
53	202223_at	integral membrane protein 1	ITM1	NM_002219
54	202253_s_at	dynammin 2	DNM2	NM_004945
55	202288_at	FK506 binding protein 12-rapamycin assoc. pro 1	FRAP1	U88966
56	202349_at	torsin family 1, member A (torsin A)	TOR1A	NM_000113
57	202364_at	MAX interactor 1	MXI1	NM_005962
58	202397_at	nuclear transport factor 2	NUTF2	NM_005796
59	202418_at	Yip1 interacting factor homolog	YIF1	NM_020470
60	202471_s_at	isocitrate dehydrogenase 3 (NAD+) gamma	IDH3G	NM_004135
61	202489_s_at	FXVD domain-containing ion transport regulator 3	FXVD3	BC005238
62	202496_at	autoantigen	RCD-8	NM_014329
63	202503_s_at	KIAA0101 gene product	KIAA0101	NM_014736
64	202504_at	ataxia-telangiectasia group D-associated protein	TRIM29	NM_012101
65	202530_at	mitogen-activated protein kinase 14	MAPK14	NM_001315
66	202602_s_at	HIV TAT specific factor 1	HTATSF1	NM_014500
67	202746_at	integral membrane protein 2A	ITM2A	AL021786
68	202747_s_at	integral membrane protein 2A	ITM2A	NM_004867
69	202753_at	proteasome regulatory particle subunit p44S10	P44S10	NM_014814
70	202755_s_at	glypican 1	GPC1	AI354864
71	202756_s_at	glypican 1	GPC1	NM_002081
72	202831_at	glutathione peroxidase 2	GPX2	NM_002083
73	202887_s_at	DNA-damage-inducible transcript 4	DDIT4	NM_019058
74	202935_s_at	SRV-box 9	SOX9	AI382146
75	202990_at	phosphorylase, glycogen; liver	PYGL	NM_002863
76	203040_s_at	hydroxymethylbilane synthase	HMBS	NM_000190
77	203082_at	BMS1-like, ribosome assembly protein (yeast)	BMS1L	NM_014753
78	203190_at	NADH dehydrogenase (ubiquinone) Fe-S	NDUFS8	NM_002496

		protein 8		
79	203196_at	ATP-binding cassette, sub-fam C (CFTR/MRP), mem 4	ABCC4	AI948503
80	203211_s_at	myotubularin related protein 2	MTMR2	AK027038
81	203368_at	cysteine-rich with EGF-like domains 1	CRELD1	NM_015513
82	203372_s_at	suppressor of cytokine signaling 2	SOCS2	AB004903
83	203378_at	pre-mRNA cleavage complex II protein Pcf11	PCF11	AB020631
84	203491_s_at	translokin	PIG8	AI123527
85	203494_s_at	translokin	PIG8	NM_014679
86	203545_at	asparagine-linked glycosylation 8 homolog	ALG8	NM_024079
87	203555_at	protein tyrosine phosphatase, non-receptor type 18	PTPN18	NM_014369
88	203573_s_at	Rab geranylgeranyltransferase, alpha subunit	RABGGTA	NM_004581
89	203589_s_at	transcription factor Dp-2	TFDP2	NM_006286
90	203611_at	telomeric repeat binding factor 2	TERF2	NM_005652
91	203638_s_at	fibroblast growth factor receptor 2	FGFR2	NM_022969
92	203639_s_at	fibroblast growth factor receptor 2	FGFR2	M80634
93	203691_at	protease inhibitor 3, skin-derived	PI3	NM_002638
94	203726_s_at	laminin, alpha 3	LAMA3	NM_000227
95	203759_at	ST3 beta-galactoside alpha-2,3-sialyltransferase 4	ST3GAL4	NM_006278
96	203787_at	single-stranded DNA binding protein 2	SSBP2	NM_012446
97	203798_s_at	visinin-like 1	VSNL1	NM_003385
98	203809_s_at	v-akt murine thymoma viral oncogene homolog 2	AKT2	AA769075
99	203853_s_at	GRB2-associated binding protein 2	GAB2	NM_012296
100	203885_at	RAB21, member RAS oncogene family	RAB21	NM_014999
101	203924_at	glutathione S-transferase A2	GSTA1	NM_000846
102	203953_s_at	Claudin 3	CLDN3	BE791251
103	203964_at	N-myc (and STAT) interactor	NMI	NM_004688
104	203974_at	haloacid dehalogenase-like hydrolase domain containing 1A	HDHD1A	NM_012080
105	204014_at	dual specificity phosphatase 4	DUSP4	NM_001394
106	204036_at	endothelial differentiation, lysophosphatidic acid G-protein-coupled receptor, 2	EDG2	AW269335
107	204037_at		EDG2	BF055366
108	204038_s_at		EDG2	NM_001401
109	204047_s_at	phosphatase and actin regulator 2	PHACTR2	AW295193
110	204049_s_at		PHACTR2	NM_014721
111	204136_at	collagen, type VII, alpha 1	COL7A1	NM_000094
112	204151_x_at	aldo-keto reductase family 1, member C1	AKR1C1	NM_001353
113	204154_at	cysteine dioxygenase, type I	CDO1	NM_001801
114	204206_at	MAX binding protein	MNT	NM_020310
115	204268_at	S100 calcium-binding protein A2	S100A2	NM_005978
116	204326_x_at	metallothionein 1X	MT1X	NM_002450
117	204367_at	Sp2 transcription factor	SP2	D28588
118	204379_s_at	fibroblast growth factor receptor 3	FGFR3	NM_000142
119	204385_at	kynureninase (L-kynurenine hydrolase)	KYNU	NM_003937

120	204388_s_at	monoamine oxidase A	MAOA	NM_000240
121	204455_at	bullous pemphigoid antigen 1	BPAG1	NM_001723
122	204460_s_at	RAD1 homolog	RAD1	AF074717
123	204469_at	protein tyrosine phosphatase, receptor-type, Z polypep 1	PTPRZ1	NM_002851
124	204493_at	BH3 interacting domain death agonist	BID	NM_001196
125	204532_x_at	UDP glycosyltransferase 1 family, polypep A9	UGT1A9	NM_021027
126	204542_at	sialyltransferase	SIAT7B	NM_006456
127	204547_at	RAB40B, member RAS oncogene family	RAB40B	NM_006822
128	204614_at	serine (or cysteine) proteinase inhibitor, clade B, mem 2	SERPINB2	NM_002575
129	204621_s_at	nuclear receptor subfamily 4, group A, member 2	NR4A2	AI935096
130	204622_x_at		NR4A2	NM_006186
131	204633_s_at	nuclear mitogen- and stress-activated protein kinase-1	RPS6KA5	AF074393
132	204636_at	collagen, type XVII, alpha 1	COL17A1	NM_000494
133	204672_s_at	ankyrin repeat domain 6	ANKRD6	NM_014942
134	204734_at	keratin 15	KRT15	NM_002275
135	204753_s_at	hepatic leukemia factor	HLF	AI810712
136	204754_at	hepatic leukemia factor	HLF	W60800
137	204755_x_at	hepatic leukemia factor	HLF	M95585
138	204855_at	serine (or cysteine) proteinase inhibitor, clade B, mem 5	SERPINB5	NM_002639
139	204887_s_at	polo-like kinase 4	PLK4	NM_014264
140	204952_at	GPI-anchored metastasis-associated protein homolog	C4.4A	NM_014400
141	204971_at	cystatin A (stefin A)	CSTA	NM_005213
142	205014_at	heparin-binding growth factor binding protein	FGFBP1	NM_005130
143	205022_s_at	checkpoint suppressor 1	CHES1	NM_005197
144	205054_at	nebulin	NEB	NM_004543
145	205064_at	small proline-rich protein 1B	SPRR1B	NM_003125
146	205081_at	cysteine-rich protein 1	CRIP1	NM_001311
147	205141_at	angiogenin, ribonuclease, RNase A family, 5	ANG	NM_001145
148	205157_s_at	keratin 17	KRT17	NM_000422
149	205176_s_at	integrin beta 3 binding protein (beta3-endonexin)	ITGB3BP	NM_014288
150	205206_at	Kallmann syndrome 1 sequence	KAL1	NM_000216
151	205219_s_at	galactokinase 2	GALK2	NM_002044
152	205267_at	POU domain, class 2, associating factor 1	POU2AF1	NM_006235
153	205367_at	adaptor protein with pleckstrin homology and src homology 2 domains	APS	NM_020979
154	205372_at	pleiomorphic adenoma gene 1	PLAG1	NM_002655
155	205450_at	phosphorylase kinase, alpha 1 (muscle)	PHKA1	NM_002637
156	205490_x_at	gap junction protein, beta 3	GJB3	BF060667
157	205569_at	lysosomal-associated membrane protein 3	LAMP3	NM_014398
158	205595_at	desmoglein 3	DSG3	NM_001944

159	205618_at	proline rich Gla (G-carboxyglutamic acid) 1	PRRG1	NM_000950
160	205623_at	aldehyde dehydrogenase 3	ALDH3A1	NM_000691
161	205624_at	carboxypeptidase A3 (mast cell)	CPA3	NM_001870
162	205789_at	CD1D antigen, d polypeptide	CD1D	NM_001766
163	205839_s_at	benzodiazapine receptor (peripheral) assoc pro 1	BZRAP1	NM_004758
164	205961_s_at	PC4 and SFRS1 interacting protein 1	PSIP1	NM_004682
165	205968_at	K+ voltage-gated channel, delayed-rectifier, subfamily S, member 3	KCNS3	NM_002252
166	205969_at	arylacetamide deacetylase (esterase)	AADAC	NM_001086
167	206032_at	desmocollin 3, transcript variant Dsc3a	DSC3	AI797281
168	206033_s_at	desmocollin 3, transcript variant Dsc3a	DSC3	AI797281
169	206068_s_at	acyl-Coenzyme A dehydrogenase, long chain	ACADL	AI367275
170	206094_x_at	UDP glycosyltransferase 1 family, polypeptide A6	UGT1A6	NM_001072
171	206122_at	SRY-box 20	SOX15	NM_006942
172	206164_at	chloride channel, calcium activated, family mem 2	CLCA2	NM_006536
173	206165_s_at	chloride channel, calcium activated, family mem 2	CLCA2	NM_006536
174	206166_s_at	calcium-activated chloride channel-2	CLCA2	NM_006536
175	206300_s_at	parathyroid hormone-like hormone	PTH LH	NM_002820
176	206331_at	calcitonin receptor-like	CALCRL	NM_005795
177	206400_at	lectin, galactoside-binding, soluble, 7	LGALS7	NM_002307
178	206461_x_at	metallothionein 1H	MT1H	NM_005951
179	206561_s_at	aldo-keto reductase family 1, member B10	AKR1B10	NM_020299
180	206566_at	solute carrier family 7 (cationic amino acid transporter, y+ system), member 1	SLC7A1	NM_003045
181	206581_at	basonuclin	BNC1	NM_001717
182	206641_at	tumor necrosis factor receptor superfamily, mem 17	TNFRSF17	NM_001192
183	206653_at	Polymerase (RNA) III (DNA directed) polypep G	POLR3G	BF062139
184	206658_at	hypothetical protein MGC10902	UPK3B	NM_030570
185	206756_at	carbohydrate (N-acetylglucosamine 6-O) sulfotransferase 7	CHST7	NM_019886
186	206912_at	forkhead box E1	FOXE1	NM_004473
187	207029_at	KIT ligand	KITLG	NM_000899
188	207126_x_at	UDP glycosyltransferase 1 family, polypep A1	UGT1A1 ///	NM_000463
189	207499_x_at	hypothetical protein FLJ10043	SMAP-1	NM_017979
190	207513_s_at	zinc finger protein 189	ZNF189	NM_003452
191	207620_s_at	calcium/calmodulin-dependent serine protein kinase	CASK	NM_003688
192	207935_s_at	keratin 13	KRT13	NM_002274
193	208153_s_at	FAT tumor suppressor homolog 2	FAT2	NM_001447
194	208228_s_at	fibroblast growth factor receptor 2	FGFR2	M87771
195	208502_s_at	paired-like homeodomain transcription factor	PITX1	NM_002653

		1		
196	208539_x_at	small proline-rich protein 2B	SPRR2A	NM_006945
197	208581_x_at	metallothionein 1X	MT1X	NM_005952
198	208596_s_at	UDP glycosyltransferase 1 family, polypep A3	UGT1A3	NM_019093
199	208657_s_at	septin 9	9-Sep	AF142408
200	208692_at	ribosomal protein S3	RPS3	U14990
201	208737_at	ATPase, H ⁺ transporting, lysosomal 13kDa, V1 subunit G isoform 1	ATP6V1G1	BC003564
202	208758_at	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase	ATIC	D89976
203	208798_x_at	golgin-67	GOLGIN- 67	AF204231
204	208856_x_at	ribosomal protein, large, P0	RPLP0	BC003655
205	208870_x_at	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, gamma polypeptide 1	ATP5C1	BC000931
206	208933_s_at	lectin, galactoside-binding, soluble, 8	LGALS8	AI659005
207	208935_s_at	lectin, galactoside-binding, soluble, 8	LGALS8	L78132
208	208950_s_at	aldehyde dehydrogenase 7 family, mem A1	ALDH7A1	BC002515
209	209009_at	esterase D/formylglutathione hydrolase	ESD	BC001169
210	209041_s_at	ubiquitin-conjugating enzyme E2G 2	UBE2G2	BG395660
211	209117_at	WW domain binding protein 2	WBP2	U79458
212	209122_at	adipose differentiation-related protein	ADFP	BC005127
213	209125_at	keratin 6A	KRT6A	J00269
214	209126_x_at	keratin 6 isoform K6f	KRT6B	L42612
215	209204_at	LIM domain only 4	LMO4	AI824831
216	209212_s_at	transcription factor BTEB2	KLF5	AB030824
217	209215_at	tetracycline transporter-like protein	TETRA	L11669
218	209220_at	glypican 3	GPC3	L47125
219	209260_at	stratifin	SFN	BC000329
220	209296_at	protein phosphatase 1B (formerly 2C), magnesium-dependent, beta isoform	PPM1B	AF136972
221	209309_at	zinc-alpha2-glycoprotein	AZGP1	D90427
222	209339_at	seven in absentia homolog 2	SIAH2	U76248
223	209351_at	keratin 14	KRT14	BC002690
224	209380_s_at	CFTR/MRP, member 5	ABCC5	AF146074
225	209411_s_at	Golgi associated, gamma adaptin ear containing, ARF binding protein 3	GGA3	AW008018
226	209446_s_at	Similar to hypothetical protein FLJ10803	---	BC001743
227	209457_at	dual specificity phosphatase 5	DUSP5	U16996
228	209509_s_at	dolichyl-phosphate	DPAGT1	BC000325
229	209587_at	hindlimb expressed homeobox protein backfoot	Bft	U70370
230	209647_s_at	IMAGE:2972022	SOCS5	AW664421
231	209699_x_at	dihydrodiol dehydrogenase	AKR1C2	U05598
232	209719_x_at	squamous cell carcinoma antigen 1	SCCA1	U19556
233	209720_s_at	serine (or cysteine) proteinase inhibitor, clade	SERPINB3	U19556

		B (ovalbumin), member 3		
234	209727_at	GM2 ganglioside activator	GM2A	M76477
235	209748_at	spastic paraplegia 4	SPG4	AB029006
236	209792_s_at	kallikrein 10	KLK10	BC002710
237	209800_at	keratin 16	KRT16	AF061812
238	209863_s_at	CUSP	TP73L	AF091627
239	209878_s_at	v-rel reticuloendotheliosis viral oncogene hom A,	RELA	M62399
240	209897_s_at	slit homolog 2 (Drosophila)	SLIT2	AF055585
241	209959_at	nuclear receptor subfamily 4, group A, member 3	NR4A3	U12767
242	209963_s_at	erythropoietin receptor	EPOR	M34986
243	210020_x_at	NB-1	CALML3	M58026
244	210052_s_at	TPX2, microtubule-associated protein homolog	TPX2	AF098158
245	210064_s_at	uroplakin 1B	UPK1B	NM_006952
246	210065_s_at	uroplakin 1b	UPK1B	NM_006952
247	210084_x_at	mast cell alpha II tryptase	---	AF206665
248	210133_at	chemokine (C-C motif) ligand 11	CCL11	D49372
249	210135_s_at	short stature homeobox 2	SHOX2	AF022654
250	210264_at	G protein-coupled receptor 35	GPR35	AF089087
251	210355_at	parathyroid-like protein	PTH1H	J03580
252	210406_s_at	RAB6A, member RAS oncogene family	RAB6A	AL136727
253	210505_at	alcohol dehydrogenase	ADH7	U07821
254	210512_s_at	vascular endothelial growth factor	VEGF	AF022375
255	210829_s_at	single-stranded DNA binding protein 2	SSBP2	AF077048
256	210876_at	annexin A2	ANXA2	M62896
257	211002_s_at	tripartite motif protein TRIM29 beta	TRIM29	AF230389
258	211105_s_at	nuclear factor of activated T-cells, cytoplasmic, calcineurin-dependent 1	NFATC1	U80918
259	211194_s_at	p73H	TP73L	AB010153
260	211195_s_at	p51 delta	TP73L	AB010153
261	211272_s_at	diacylglycerol kinase, alpha 80kDa	DGKA	AF064771
262	211361_s_at	hurpin	hurpin	AJ001696
263	211401_s_at	fibroblast growth factor receptor 2	FGFR2	AB030078
264	211452_x_at	clone FLB4816 PRO1252	---	AF130054
265	211456_x_at	metallothionein 1H-like	---	AF333388
266	211474_s_at	serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 6	SERPINF6	BC004948
267	211527_x_at	vascular permeability factor	VEGF	M27281
268	211547_s_at	Miller-Dieker lissencephaly protein	LIS1	L13387
269	211548_s_at	hydroxyprostaglandin dehydrogenase 15-(NAD)	HPGD	J05594
270	211596_s_at	leucine-rich repeats and immunoglobulin-like domains 1	LRIG1	AB050468
271	211634_x_at	immunoglobulin heavy constant mu	IGHM	M24669
272	211635_x_at	IgM rheumatoid factor RF-TT1, VH chain	---	M24670
273	211653_x_at	pseudo-chlordecone	AKR1C2	M33376

274	211689_s_at	transmembrane protease, serine 2	TMPRSS2	AF270487
275	211721_s_at	zinc finger protein 551	ZNF551	BC005868
276	211734_s_at	IgE Fc, high affinity I, receptor for α polypep	FCER1A	BC005912
277	211756_at	parathyroid hormone-like hormone	PTHLH	BC005961
278	211834_s_at	p73Lp63p51p40KET	TP73L	AB042841
279	212061_at	KIAA0332	SR140	AB002330
280	212092_at	KIAA1051	PEG10	BE858180
281	212094_at	KIAA1051	PEG10	BE858180
282	212162_at	FLJ12811	---	AK022873
283	212189_s_at	component of oligomeric Golgi complex 4	COG4	AK022874
284	212228_s_at	hypothetical protein DKFZp434K046	DKFZP434 K046	AC004382
285	212236_x_at	cytokeratin 17	KRT17	Z19574
286	212252_at	Ca ²⁺ calmodulin-dependent protein kinase kinase 2 β	CAMKK2	AA181179
287	212255_s_at	FLJ10822 fis	FLJ10822	AK001684
288	212286_at	ankyrin repeat domain 12	ANKRD12	AW572909
289	212311_at	KIAA0746 protein	KIAA0746	AA522514
290	212314_at	KIAA0746 protein	KIAA0746	AB018289
291	212424_at	programmed cell death 11	PDCD11	AW026194
292	212441_at	KIAA0232	KIAA0232	D86985
293	212458_at	sprouty-related, EVH1 domain containing 2	SPRED2	H97931
294	212466_at	sprouty-related, EVH1 domain containing 2	SPRED2	AW138902
295	212570_at	KIAA0830 protein	KIAA0830	AL573201
296	212573_at	KIAA0830 protein	KIAA0830	AF131747
297	212595_s_at	DAZ associated protein 2	DAZAP2	AL534321
298	212599_at	autism susceptibility candidate 2	AUTS2	AK025298
299	212600_s_at	ubiquinol-cytochrome c reductase core protein II	UQCRC2	AV727381
300	212662_at	poliovirus receptor	PVR	BE615277
301	212680_x_at	protein phosphatase 1, regulatory (inhibitor) subunit 14B	PPP1R14B	BE305165
302	212836_at	polymerase (DNA-directed), delta 3, accessory subunit	POLD3	D26018
303	212841_s_at	PTPRF interacting protein, binding protein 2	PPFIBP2	AI692180
304	212864_at	CDP-diacylglycerol synthase (phosphatidate cytidyltransferase) 2	CDS2	Y16521
305	212914_at	chromobox homolog 7	CBX7	AV648364
306	212980_at	AHA1, activator of heat shock 90kDa protein ATPase homolog 2	AHSA2	AL050376
307	213023_at	utrophin	UTRN	NM_007124
308	213034_at	KIAA0999 protein	KIAA0999	AB023216
309	213093_at	protein kinase C, alpha	PRKCA	AI471375
310	213199_at	DKFZP586P0123 protein	DKFZP586 P0123	AL080220
311	213325_at	poliovirus receptor-related 3	PVRL3	AA129716
312	213366_x_at	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, gamma polypeptide 1	ATP5C1	AV711183

313	213425_at	wingless-type MMTV integration site family, member 5A	WNT5A	AI968085
314	213440_at	RAB1A, member RAS oncogene family	RAB1A	AL530264
315	213471_at	nephronophthisis 4	NPHP4	AB014573
316	213490_s_at	mitogen-activated protein kinase kinase 2	MAP2K2	AI762811
317	213518_at	protein kinase C, iota	PRKCI	AI689429
318	213680_at	keratin 6A	KRT6B	AI831452
319	213700_s_at	Pyruvate kinase, muscle	PKM2	AA554945
320	213721_at	SRY-box 2	SOX2	L07335
321	213722_at	SRY-box 2	SOX2	AW007161
322	213796_at	Small proline-rich protein SPRK	SPRR1A	AI923984
323	213808_at	23688 clone	ADAM23	BE674466
324	213843_x_at	accessory proteins BAP31BAP29	SLC6A8	AW276522
325	213880_at	leucine-rich repeat-containing G protein-coupled receptor 5	LGR5	AL524520
326	213913_s_at	KIAA0984 protein	KIAA0984	AW134976
327	214073_at	cortactin	CTTN	BG475299
328	214100_x_at	IMAGE:1964520		AI284845
329	214260_at	COP9 constitutive photomorphogenic homolog subunit 8	COPS8	AI079287
330	214441_at	syntaxin 6	STX6	NM_005819
331	214549_x_at	small proline-rich protein 1A	SPRR1A	NM_005987
332	214580_x_at	keratin 6B	KRT6B	AL569511
333	214680_at	neurotrophic tyrosine kinase, receptor, type 2	NTRK2	BF674712
334	214688_at	transducin-like enhancer of split 4	TLE4	BF217301
335	214735_at	phosphoinositide-binding protein PIP3-E	PIP3-E	AW166711
336	214812_s_at	KIAA0184	KIAA0184	D80006
337	214829_at	aminoadipate-semialdehyde synthase	AASS	AK023446
338	214965_at	hypothetical protein MGC26885	MGC26885	AF070574
339	215011_at	RNA, U17D small nucleolar	RNU17D	AJ006835
340	215030_at	G-rich RNA sequence binding factor 1	GRSF1	AK023187
341	215125_s_at	UDP glycosyltransferase 1 family, polypep A9	UGT1A9	AV691323
342	215189_at	keratin, hair, basic, 6 (monilethrix)	KRTHB6	X99142
343	215354_s_at	proline-, glutamic acid-, leucine-rich protein 1	PELP1	BC002875
344	215372_x_at	Hypothetical protein LOC151878	LOC151878	AU146794
345	215382_x_at	mast cell alpha II tryptase	---	AF206666
346	215561_s_at	interleukin 1 receptor, type I	IL1R1	AK026803
347	215786_at	Hepatitis B virus x associated protein	HBXAP	AK022170
348	215812_s_at	creatine transporter	SLC6A10	U41163
349	216052_x_at	Artemin	ARTN	AF115765
350	216147_at	Septin 11	11-Sep	AL353942
351	216221_s_at	pumilio homolog 2	PUM2	D87078
352	216248_s_at	nuclear receptor subfamily 4, group A, member 2	NR4A2	S77154
353	216258_s_at	UV-B repressed sequence, HUR 7		BE148534
354	216263_s_at	chromosome 14 open reading frame 120	C14orf120	AK022215
355	216288_at	cysteinyl leukotriene receptor 1	CYSLTR1	AU159276

356	216412_x_at	IgG to Puumala virus G2, light chain V region ---		AF043584
357	216594_x_at	aldo-keto reductase family 1, member C1	AKR1C1	S68290
358	216603_at	solute carrier family 7, member 8	---	AL365343
359	216722_at	VENT-like homeobox 2 pseudogene 1	VENTX2P1	AF164963
360	216918_s_at	bullous pemphigoid antigen 1 isoforms 1 and 3	DST	AL096710
361	217003_s_at	tMDC II, isoform [d]	---	AJ132823
362	217097_s_at	hypothetical protein DKFZp564F013	PHTF2	AC004990
363	217165_x_at	metallothionein 1F (functional)	MT1F	M10943
364	217198_x_at	immunoglobulin heavy constant gamma 1	IGHG1	U80164
365	217227_x_at	immunoglobulin lambda locus	IGLVJC	X93006
366	217272_s_at	serine (or cysteine) proteinase inhibitor, clade B, member 13	hurpin	AJ001698
367	217312_s_at	collagen type VII intergenic region	COL7A1	L23982
368	217388_s_at	kynureninase,(L-kynurenine hydrolase)	KYNU	D55639
369	217418_x_at	membrane-spanning 4-domains, subfam A, mem 1	MS4A1	X12530
370	217480_x_at	similar to Ig kappa chain	LOC339562	M20812
371	217528_at	chloride channel, calcium activated, family mem 2	CLCA2	BF003134
372	217622_at	chromosome 22 open reading frame 3	C22orf3	AA018187
373	217626_at	IMAGE:3089210	AKR1C2 /// AKR1C1	BF508244
374	217746_s_at	programmed cell death 6 interacting protein	PDCD6IP	NM_013374
375	217783_s_at	yippee-like	YPEL5	NM_016061
376	217786_at	SKB1 homolog	SKB1	NM_006109
377	217811_at	selenoprotein T	SELT	NM_016275
378	217841_s_at	protein phosphatase methylesterase-1	PME-1	NM_016147
379	217860_at	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 10,	NDUFA10	NM_004544
380	217922_at	Mannosidase, alpha, class 1A, member 2	MAN1A2	AL157902
381	217994_x_at	hypothetical protein FLJ20542	FLJ20542	NM_017871
382	218070_s_at	GDP-mannose pyrophosphorylase A	GMPPA	NM_013335
383	218092_s_at	HIV-1 Rev binding protein	HRB	NM_004504
384	218192_at	inositol hexaphosphate kinase 2	IHPK2	NM_016291
385	218236_s_at	protein kinase D3	PRKD3	NM_005813
386	218238_at	GTP binding protein 4	GTPBP4	NM_012341
387	218239_s_at	GTP binding protein 4	GTPBP4	NM_012341
388	218288_s_at	hypothetical protein MDS025	MDS025	NM_021825
389	218305_at	importin 4	IPO4	NM_024658
390	218331_s_at	chromosome 10 open reading frame 18	C10orf18	NM_017782
391	218355_at	kinesin family member 4A	KIF4A	NM_012310
392	218384_at	calcium regulated heat stable protein 1	CARHSP1	NM_014316
393	218460_at	hypothetical protein FLJ20397	FLJ20397	NM_017802
394	218483_s_at	hypothetical protein FLJ21827	FLJ21827	NM_020153
395	218507_at	hypoxia-inducible protein 2	HIG2	NM_013332
396	218546_at	hypothetical protein FLJ14146	FLJ14146	NM_024709
397	218657_at	Link guanine nucleotide exchange factor II	RAPGEFL1	NM_016339

398	218696_at	eukaryotic translation initiation factor 2- α kinase 3	EIF2AK3	NM_004836
399	218699_at	RAB7, member RAS oncogene family-like 1	RAB7L1	BG338251
400	218750_at	hypothetical protein MGC5306	MGC5306	NM_024116
401	218769_s_at	ankyrin repeat, family A (RFXANK-like), 2	ANKRA2	NM_023039
402	218796_at	hypothetical protein FLJ20116	C20orf42	NM_017671
403	218834_s_at	heat shock 70kDa protein 5 (glucose-regulated protein, 78kDa) binding protein 1	HSPA5BP1	NM_017870
404	218957_s_at	hypothetical protein FLJ11848	FLJ11848	NM_025155
405	218960_at	transmembrane protease, serine 4	TMPRSS4	NM_016425
406	218962_s_at	hypothetical protein FLJ13576	FLJ13576	NM_022484
407	218990_s_at	small proline-rich protein 3	SPRR3	NM_005416
408	219129_s_at	hypothetical protein FLJ11526	SAP30L	NM_024632
409	219132_at	pellino homolog 2	PELI2	NM_021255
410	219154_at	Ras homolog gene family, member F	RHOF	NM_024714
411	219155_at	phosphatidylinositol transfer protein, cytoplasmic 1	PITPNC1	NM_012417
412	219201_s_at	twisted gastrulation homolog 1	TWSG1	NM_020648
413	219217_at	hypothetical protein FLJ23441	FLJ23441	NM_024678
414	219241_x_at	hypothetical protein FLJ20515	SSH3	NM_017857
415	219245_s_at	hypothetical protein FLJ13491	FLJ13491	AI309636
416	219250_s_at	fibronectin leucine rich transmem protein 3	FLRT3	NM_013281
417	219347_at	nudix (nucleoside diphosphate linked moiety X)-type motif 15	NUDT15	NM_018283
418	219389_at	hypothetical protein FLJ10052	FLJ10052	NM_017982
419	219554_at	Rh type C glycoprotein	RHCG	NM_016321
420	219582_at	opioid growth factor receptor-like 1	OGFRL1	NM_024576
421	219704_at	germ cell specific Y-box binding protein	YBX2	NM_015982
422	219732_at	plasticity related gene 3	PRG-3	NM_017753
423	219741_x_at	zinc finger protein 552	ZNF552	NM_024762
424	219756_s_at	hypothetical protein FLJ22792	POF1B	NM_024921
425	219854_at	zinc finger protein 14 (KOX 6)	ZNF14	NM_021030
426	219936_s_at	G protein-coupled receptor 87	GPR87	NM_023915
427	219959_at	molybdenum cofactor sulfurase	MOCOS	NM_017947
428	219962_at	angiotensin I converting enzyme (peptidyl-dipeptidase A) 2	ACE2	NM_021804
429	219995_s_at	hypothetical protein FLJ13841	FLJ13841	NM_024702
430	219997_s_at	COP9 constitutive photomorphogenic hom sub 7B	COPS7B	NM_022730
431	220046_s_at	cyclin L1	CCNL1	NM_020307
432	220177_s_at	transmembrane protease, serine 3	TMPRSS3	NM_024022
433	220285_at	chromosome 9 open reading frame 77	C9orf77	NM_016014
434	220466_at	hypothetical protein FLJ13215	FLJ13215	NM_025004
435	220664_at	small proline-rich protein 2C	SPRR2C	NM_006518
436	220668_s_at	DNA (cytosine-5-)-methyltransferase 3 beta	DNMT3B	NM_006892
437	221004_s_at	integral membrane protein 2C	ITM2C	NM_030926
438	221045_s_at	period homolog 3	PER3	NM_016831
439	221047_s_at	MAP/microtubule affinity-regulating kinase 1	MARK1	NM_018650

440	221050_s_at	GTP binding protein 2	GTPBP2	NM_019096
441	221064_s_at	chromosome 16 open reading frame 28	C16orf28	NM_023076
442	221096_s_at	hypothetical protein PRO1580	PRO1580	NM_018502
443	221234_s_at	BTB and CNC homology 1, basic leucine zipper transcription factor 2	BACH2	NM_021813
444	221286_s_at	proapoptotic caspase adaptor protein	PACAP	NM_016459
445	221305_s_at	UDP glycosyltransferase 1 family, polypep A8	UGT1A8	NM_019076
446	221326_s_at	delta-tubulin	TUBD1	NM_016261
447	221480_at	heterogeneous nuclear ribonucleoprotein D	HNRPD	BG180941
448	221513_s_at	UTP14, U3 small nucleolar ribonucleoprotein, homolog C / homolog A	UTP14C / UTP14A	BC001149
449	221514_at	U3 small nucleolar ribonucleoprotein, hom A	UTP14A	BC001149
450	221580_s_at	hypothetical protein MGC5306	MGC5306	BC001972
451	221597_s_at	HSPC171 protein	HSPC171	BC003080
452	221622_s_at	uncharacterized hypothalamus protein HT007	HT007	AF246240
453	221649_s_at	peter pan homolog	PPAN	BC000535
454	221679_s_at	abhydrolase domain containing 6	ABHD6	AF225418
455	221770_at	ribulose-5-phosphate-3-epimerase	RPE	BE964473
456	221790_s_at	LDL receptor adaptor protein	ARH	AL545035
457	221795_at	Similar to hypothetical protein FLJ20093		AI346341
458	221796_at	Similar to hypothetical protein FLJ20093		AA707199
459	221854_at	ESTs	PKP1	AI378979
460	221884_at	ecotropic viral integration site 1	EVI1	BE466525
461	243_g_at	microtubule-associated protein 4	MAP4	M64571
462	31846_at	ras homolog gene family, member D	RHOD	AW003733
463	33323_r_at	stratifin	SFN	X57348
464	33850_at	microtubule-associated protein 4	MAP4	W28892
465	34858_at	potassium channel tetramerisation domain containing 2	KCTD2	D79998
466	37512_at	3-hydroxysteroid epimerase	RODH	U89281
467	41037_at	TEA domain family member 4	TEAD4	U63824
468	41469_at	elafin	PI3	L10343
469	44111_at	vacuolar protein sorting 33B	VPS33B	AI672363
470	49049_at	deltex 3 homolog	DTX3	N92708
471	49077_at	protein phosphatase methylesterase-1	PME-1	AL040538
472	59625_at	nucleolar protein 3	NOL3	AI912351
473	65438_at	KIAA1609 protein	KIAA1609	AA195124

References

- Beer et al. (2002) "Gene-expression profiles predict survival of patients with lung adenocarcinoma" *Nat Med* 8:816-824
- Brookes (1999) "The essence of SNPs" *Gene* 23:177-186
- Kato et al. (2004) "A Randomized Trial of Adjuvant Chemotherapy with Uracil-Tegafur for Adenocarcinoma of the Lung" *N Engl J Med* 350:1713-1721
- Kiernan et al. (1993) "Stage I non-small cell cancer of the lung results of surgical resection at Fairfax Hospital" *Va Med Q* 120:146-149
- Kononen et al. (1998) "Tissue microarrays for high-throughput molecular profiling of tumor specimens" *Nat Med* 4:844-847
- Mountain et al. (1987) "Lung cancer classification: the relationship of disease extent and cell type to survival in a clinical trials population" *J Surg Oncol* 35:147-156
- Wingo et al. (1999) "Annual Report to the Nation on the Status of Cancer, 1973-1996, With a Special Section on Lung Cancer and Tobacco Smoking" *J Natl Cancer Inst* 91:675-690

Claims

1. A method of assessing lung cancer status comprising the steps of
 - a. obtaining a biological sample from a lung cancer patient; and
 - b. measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7wherein the expression levels of the Marker genes above or below pre-determined cut-off levels are indicative of lung cancer status.
2. A method of staging lung cancer patients comprising the steps of
 - a. obtaining a biological sample from a lung cancer patient; and
 - b. measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7wherein the expression levels of the Marker genes above or below pre-determined cut-off levels are indicative of the lung cancer stage.
3. The method of claim 2 wherein the stage corresponds to classification by the TNM system.
4. The method of claim 2 wherein the stage corresponds to patients with similar gene expression profiles.
5. A method of determining lung cancer patient treatment protocol comprising the steps of
 - a. obtaining a biological sample from a lung cancer patient; and
 - b. measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7wherein the expression levels of the Marker genes above or below pre-determined cut-off levels are sufficiently indicative of risk of recurrence to enable a physician to determine the degree and type of therapy recommended to prevent recurrence.
6. A method of treating a lung cancer patient comprising the steps of:
 - a. obtaining a biological sample from a lung cancer patient; and
 - b. measuring Biomarkers associated with Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7wherein the expression levels of the Marker genes above or below pre-determined cut-off levels are indicate a high risk of recurrence and;
 - c. treating the patient with adjuvant therapy if they are a high risk patient.

7. A method of determining whether a lung cancer patient is high or low risk of mortality comprising the steps of

- a. obtaining a biological sample from a lung cancer patient; and
- b. measuring Biomarkers associated with Marker genes corresponding to those selected from Table 4

wherein the expression levels of the Marker genes above or below pre-determined cut-off levels are sufficiently indicative of risk of mortality to enable a physician to determine the degree and type of therapy recommended.

8. The method of claim 1, 2, 5, 6 or 7 wherein the sample is prepared by a method are selected from the group consisting of bulk tissue preparation and laser capture microdissection.

9. The method of claim 8 wherein the bulk tissue preparation is obtained from a biopsy or a surgical specimen.

10. The method of claim 1, 2, 5, 6 or 7 further comprising measuring the expression level of at least one gene constitutively expressed in the sample.

11. The method of claim 1, 2, 5, 6 or 7 wherein the sample is obtained from a primary tumor.

12. The method of claim 1, 2, 5, 6 or 7 wherein the specificity is at least about 40%.

13. The method of claim 1, 2, 5, 6 or 7 wherein the sensitivity is at least at least about 80%.

14. The method of claim 1, 2, 5, 6 or 7 wherein the pre-determined cut-off levels are at least 1.5-fold over- or under- expression in the sample relative to benign cells or normal tissue.

15. The method of claim 1, 2, 5, 6 or 7 wherein the pre-determined cut-off levels have at least a statistically significant p-value over-expression in the sample having metastatic cells relative to benign cells or normal tissue.

16. The method of claim 28 wherein the p-value is less than 0.05.

17. The method of claim 1, 2, 5, 6 or 7 wherein gene expression is measured on a microarray or gene chip.

18. The method of claim 17 wherein the microarray is a cDNA array or an oligonucleotide array.
19. The method of claim 17 wherein the microarray or gene chip further comprises one or more internal control reagents.
20. The method of claim 1, 2, 5, 6 or 7 wherein gene expression is determined by nucleic acid amplification conducted by polymerase chain reaction (PCR) of RNA extracted from the sample.
21. The method of claim 20 wherein said PCR is reverse transcription polymerase chain reaction (RT-PCR).
22. The method of claim 21, wherein the RT-PCR further comprises one or more internal control reagents.
23. The method of claim 1, 2, 5, 6 or 7 wherein gene expression is detected by measuring or detecting a protein encoded by the gene.
24. The method of claim 23 wherein the protein is detected by an antibody specific to the protein.
25. The method of claim 1, 2, 5, 6 or 7 wherein gene expression is detected by measuring a characteristic of the gene.
26. The method of claim 25 wherein the characteristic measured is selected from the group consisting of DNA amplification, methylation, mutation and allelic variation.
27. A method of generating a lung cancer prognostic patient report comprising the steps of:
 - determining the results of any one of claims 1, 2, 5, 6 or 7; and
 - preparing a report displaying the results.
28. The method of claim 27 wherein the report contains an assessment of patient outcome and/or probability of risk relative to the patient population.
29. A patient report generated by the method according to claim 27.
30. A composition comprising at least one probe set selected from the group consisting of: Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.
31. A kit for conducting an assay to determine lung cancer prognosis in a biological sample comprising: materials for detecting isolated nucleic acid sequences, their

complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

32. The kit of claim 31 further comprising reagents for conducting a microarray analysis.

33. The kit of claim 31 further comprising a medium through which said nucleic acid sequences, their complements, or portions thereof are assayed.

34. Articles for assessing lung cancer status comprising: materials for detecting isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

35. The articles of claim 34 further comprising reagents for conducting a microarray analysis.

36. The articles of claim 35 further comprising a medium through which said nucleic acid sequences, their complements, or portions thereof are assayed.

37. A microarray or gene chip for performing the method of claim 1, 2, 5, 6 or 7.

38. The microarray of claim 37 comprising isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

39. The microarray of claim 38 wherein the measurement or characterization is at least 1.5-fold over- or under-expression.

40. The microarray of claim 38 wherein the measurement provides a statistically significant p-value over- or under-expression.

41. The microarray of claim 40 wherein the p-value is less than 0.05.

42. The microarray of claim 40 comprising a cDNA array or an oligonucleotide array.

43. The microarray of claim 40 further comprising or more internal control reagents.

44. A diagnostic/prognostic portfolio comprising isolated nucleic acid sequences, their complements, or portions thereof of a combination of genes selected from the group consisting of Marker genes corresponding to those selected from Table 1, Table 4, Table 5 or Table 7.

45. The portfolio of claim 44 wherein the measurement or characterization is at least 1.5-fold over- or under-expression.
46. The portfolio of claim 45 wherein the measurement provides a statistically significant p-value over- or under-expression.
47. The portfolio of claim 45 wherein the p-value is less than 0.05.

Hierarchical Clustering of 129 Lung SCC Patients

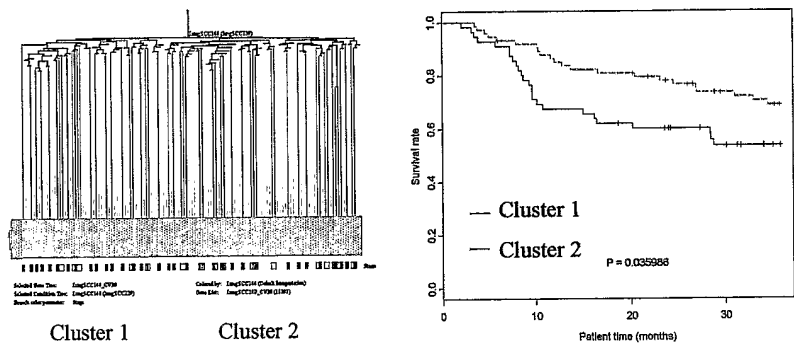


Figure 1

Plot of AUC vs. Number of Genes

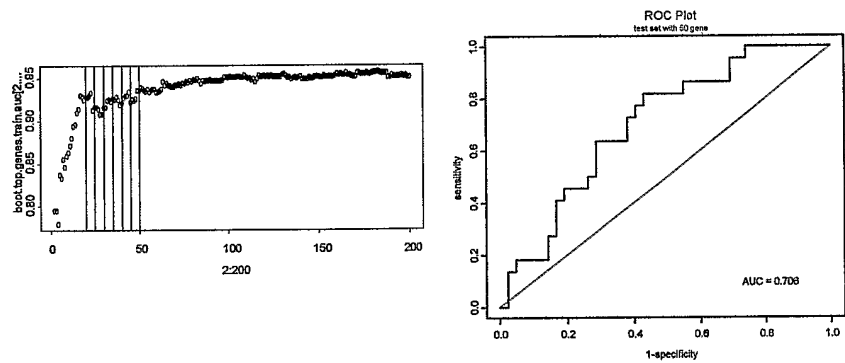


Figure 2

Error Rates of LOOCV Vs. Various Cutoffs in the 65-Sample Training Set

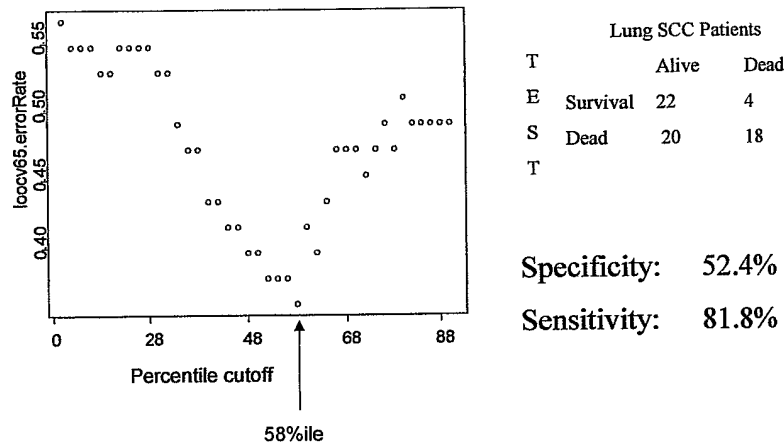


Figure 3

Kaplan-Meier Plot of The 50-Gene Signature in the Testing Set

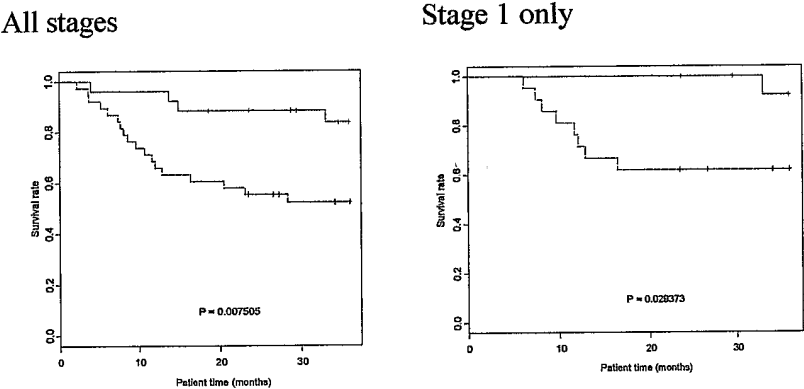


Figure 4

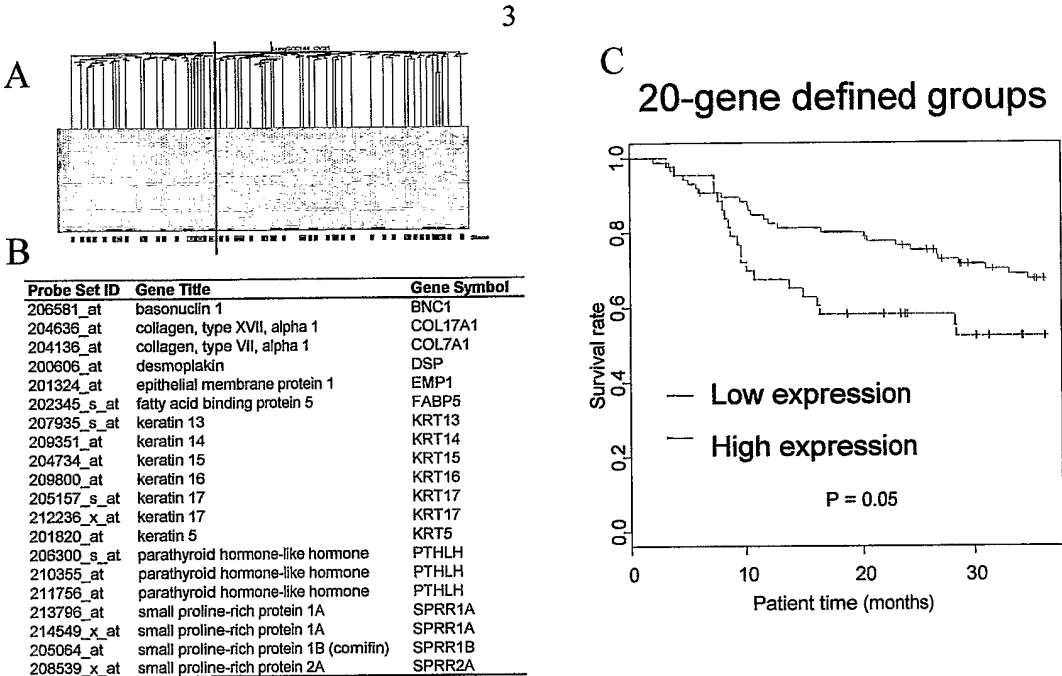
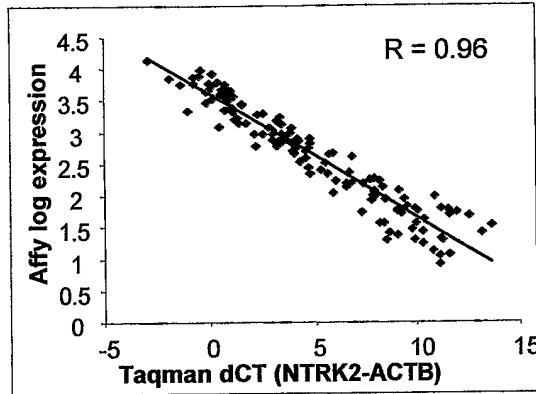
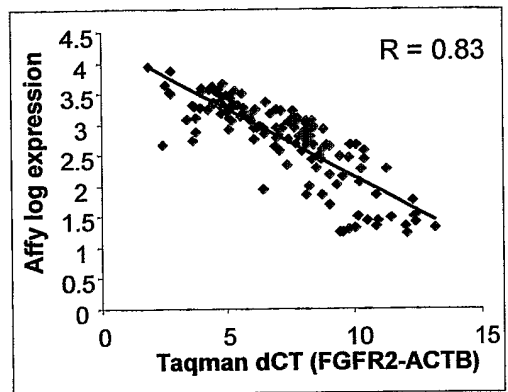


Figure 5

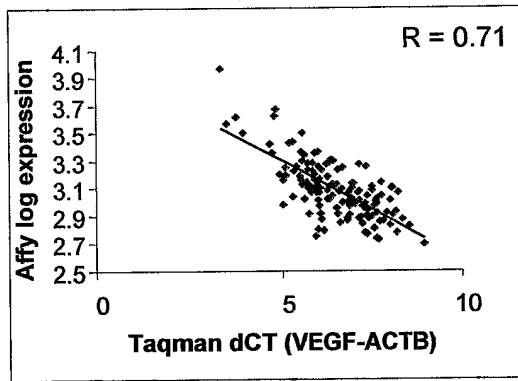
NTRK2 - Affy vs TaqMan



FGFR2 - Affy vs TaqMan



VEGF - Affy vs TaqMan



KRT13 - Affy vs TaqMan

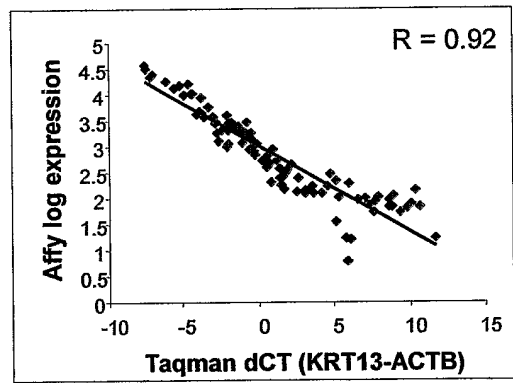


Figure 6

VDX5009WOPCT.11.30.ST25.txt
SEQUENCE LISTING

<110> VERIDEX LLC
RAPONI, Mitch

<120> LUNG CANCER PROGNOSTICS

<130> VDX5009WOPCT

<150> 60/632,053

<151> 2004-11-30

<150> 60/655,573

<151> 2005-02-23

<160> 473

<170> PatentIn version 3.3

<210> 1

<211> 409

<212> DNA

<213> human

<400> 1

ctgagtgaca gctggtggca gcactccttg ctgggggggca ctgttcaaca ttcctctgcc	60
gtcgggtgacc cctagccctt ctgactcctt ccagcttttt cccagctttc ccactgagct	120
tctccagtca tgctcttctg acgtgactct ctgagcagaa ctgagctttc caggcctcta	180
tggaatcctg cagatccagt ggctgcagct tcaatcccag tgctgcaatc acacatccat	240
tctgcctggg gaccctggag cctacttggt cgctttgcat ttcattgatt gacgcctccc	300
ttcaacaagc atttactgag ggcgcctacta tgtactaatg ctagatgtta gatgtacaaa	360
gaagacagtt ttcacacctt aggaactcat aggctaattg tgagacaca	409

<210> 2

<211> 511

<212> DNA

<213> human

<400> 2

tggagacccc tgaactcatt gagctgagga agaagaagat tgaggaggcg atggacggaa	60
gtgagacacc tcagctcttc actgtgttgc cagagaagag aacagccact gttggagggg	120
ccatgatggg atcaaccac atttatgaca tgtccacggt tatgagccgg aagggcccgg	180
ctcctgagct gcaaggtgtg gaagtggcgc tggcgcctga agagttggag ctggatccta	240
tggccatgac ccagaagtat gaggagcatg tgcgggagca gcaggctcaa gtagagaagg	300
aggacttcag tgacatggtg gctgagcacg ctgccaaaca gaagcaaaaa aaacggaaag	360
ctcagcccca ggacagccgt gggggcagca agaaatataa ggagttcaag ttttaggtcc	420
cctcacacta gccctttttt tggccctacg tctggatgcc tgggcttcac acaagaacca	480
cctctcccg c agttcccaag gacttgtcat t	511

VDX5009WOPCT.11.30.ST25.txt

<210> 3
 <211> 425
 <212> DNA
 <213> human

<400> 3
 gtcatatcat ttcactgtct aggctacaac aggattctag gtggagggtg tgcattgtgt 60
 cctttttatc tgatctgtga tttaaagcagt aatattttta gatggactgg gaaaaacatc 120
 aactcctgaa gttagaaata agaatgggtt gtaaaatcca cagctatatc ctgatgctgg 180
 atggtattaa tcttgtgtag tcttcaactg gttagtgtga aatagttctg ccacctctga 240
 cgcaccactg ccaatgctgt acgtactgca tttgcccctt gagccagggt gatgtttacc 300
 gtgtgttata taacttcctg gctccttcac tgaacatgcc tagtccaaca ttttttccca 360
 gtgagtcaca tcctgggatc cagtgtataa atccaatatt atgtcttctg cataattctt 420
 ccaaa 425

<210> 4
 <211> 439
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (268)..(269)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (325)..(325)
 <223> n is a, c, g, or t

<400> 4
 ggggtggtgca gttctagcgg atatcatgaa agacaaagac aacttttggg tgacccgaca 60
 agagtaccaa gaaaagggtg tccgtgtgct agagaaactt ggtgtgactg ttcgataaac 120
 tccaaagctt gttcccatca taccgtaat gctttctttt ttcctttatt gccaatcttt 180
 gaactcattc aactccagga catggaagag gcctctctct gccctttgac tggaaagggtc 240
 aagttttatt ctggtgtctt ggggaagnnt tggttaaatt ttgttaatgt gggtaaattct 300
 gagtttaatt caactgcttc cctanataga ctagagggtc aaggattctg tctgctgctt 360
 tgtttcttct aagtaggcat ttagatcatt cctgtaggct tcctattttc actttactgc 420
 tctaattgctg ctagtcgta 439

<210> 5
 <211> 312
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (106)..(106)
 <223> n is a, c, g, or t

<400> 5
 gaacagataa gtttgcctgc atgctggaca tgcctcagaa ccatgaatag cccgtactag 60
 atcttgggaa catggatctt agagtcactt tggaataagt tcttanataa atacccccag 120
 ccttttgaga acggggcctt ttaaaggacg cgtatgtagg gcccgtacct actggcagtt 180
 ggggttcaggg aaatgggatt gacttggcct tcaggctcct ttggtcataa ttttaaata 240
 tgggagtaga aaacaacaaa gaatggaatg gactcttaaa acaatgaaag agcatttatc 300
 gtttgtcct tg 312

<210> 6
 <211> 165
 <212> DNA
 <213> human

<400> 6
 gggctgcatc accatcatag gtggtggaga cactgccact tgctgtgcca aatggaacac 60
 ggaggataaa gtcagccatg tgagcactgg ggggtggtgcc agtttggagc tcctggaagg 120
 taaagtcctt cctgggggtgg atgctctcag caatatcttag tactt 165

<210> 7
 <211> 511
 <212> DNA
 <213> human

<400> 7
 aacactgcat aaccggtttc tttgaggagt gtgaccccaa caaggataag cacatcaccc 60
 tgaaggagtg gggccactgc tttggaatta aagaagagga catagatgaa aatctcttgt 120
 tttgaacgaa gattttaaag aactcaactt tccagcatcc tcctctgttc taaccacttc 180
 agaaatatat gcagctgtga tacttgtaga tttatatatta gcaaaatgtt agcatgtatg 240
 acaagacaat gagagtaatt gcttgacaac aacctatgca ccaggatatt aacattaact 300
 ttggaaacaa aaatgtacaa ttaagtaaag tcaacatatg caaaatactg tacattgtga 360
 acagaagttt aattcatagt aatttactc tctgcattga cttatgagat aattaatgat 420
 taaactatta atgataaaaa taatgcattt gtattgttca taatatcatg tgcacttcaa 480
 gaaaatggaa tgctactctt ttgtggttta c 511

<210> 8
 <211> 215
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 8
 ttctgagtgt agtgtggttag gacccggcgg gtgtgcagca actgccctgg agccccagcc 60
 cctgcgtcca tctgtgctgt gcgccccaca gtagacgtgc agacgtccct gagaggttct 120
 tgaagatgtt tatttatatt gtcctttttt actggaagac gtacgcatac tccatcgatg 180
 ttgtatttgc agtggctgag gaattcttgt acgca 215

<210> 9
 <211> 383
 <212> DNA
 <213> human

<400> 9
 gttctgatct tgtcaaacc agcctgaccg cttctgacgc cgggatggcc tcgttactag 60
 acttttcttt ttaaggaagt gctgtttttt tttgagggtt ttcaaaacat tttgaaaagc 120
 atttactttt ttgaccacga gccatgagtt ttcaaaaaaa tcggggggtt tgtgggtttt 180
 tggtttttgt tttagttttt gggtgcgttg cttttttttt ttagtggggg tggcccatg 240
 aagtgggtgc cccactcact tctctgagat cgaacggact gtgaatccgc tctttgtcgg 300
 aagctgagca agctgtggct tttttccaac tccgtgtgac gtttctgagt gtagtgtggg 360
 aggacccggc ggggtgtgcag caa 383

<210> 10
 <211> 431
 <212> DNA
 <213> human

<400> 10
 aggagggctc actcaaagcc tcctgcctat acgggcagct cccaagtcc caggacggag 60
 acctcaccct gtaccagtcc aataccatcc tgcgtcacct gggccgcacc cttgggctct 120
 atgggaagga ccagcaggag gcagccctgg tggacatggt gaatgacggc gtggaggacc 180
 tccgctgcaa atacatctcc ctcatctaca ccaactatga ggcgggcaag gatgactatg 240
 tgaaggcact gcccgggcaa ctgaagcctt ttgagaccct gctgtcccag aaccaggagg 300
 gcaagacctt cattgtggga gaccagatct ctttcgctga ctacaacctg ctggacttgc 360
 tgctgatcca tgaggtccta gcccctggct gcctggatgc gttccccctg ctctcagcat 420
 atgtggggcg c 431

<210> 11
 <211> 544
 <212> DNA
 <213> human

<400> 11
 cgagtgggtga caggacgctg accgtggagc ttaagccact gcctctccct ctgggtccac 60

VDX5009WOPCT.11.30.ST25.txt

aaatggggcgc cccccctcc ccatgcagggt ggtgtcgggc ctttcttgct gccctgcccc	120
aagttggggg tcagtgtgc ctgtcccatg cttaacataa ccgcctagct gctgtcacat	180
ttttcttggt ttgtcctttt atttttttct aataacctaa aaactggcaa aatagttctg	240
caggttgaag ccatgtctac atgaaagtcc tcagtaagtg ttagaggga cagggcggag	300
atataccttat gccacccccg ctggaggatg tgggcagctt agggccctgg aggcggtgcg	360
gcagggaaga ggggtgcaga ggctgtggct ggtgagccgg tcaggcacac aaggggccct	420
tggagcgtgg actggttggt ttgtccattt tgttggtgggt atgctgcttt tcttttctaa	480
ccaagaggct gggtttggca tctctgtccc attccctggg atctggtggt cagccctagg	540
ataa	544

<210> 12
 <211> 136
 <212> DNA
 <213> human

<400> 12	
cagttggcac ttctgtctag aaaataataa ttgcaagttg tataactcag gcgtctttgc	60
atttctgcga aagatcaagg tctgcaaggg aattcttggt tgctgctttc catttgacac	120
cgcagttctg ttcagc	136

<210> 13
 <211> 466
 <212> DNA
 <213> human

<400> 13	
atcgtggagc tgtaggtgcc ttattggttt atgacattgc taaacatctc acatatgaaa	60
atgtagagcg atggctgaaa gaactgagag atcatgtga tagtaacatt gttatcatgc	120
ttgtgggcaa taagagtgat ctacgtcatc tcagggcagt tcctacagat gaagcaagag	180
cttttgacaga aaagaatggt ttgtcattca ttgaaacttc ggccctagac tctacaaatg	240
tagaagctgc ttttcagaca attttaacag agatttaccg cattgtttct cagaagcaaa	300
tgtcagacag acgcgaaaat gacatgtctc caagcaacaa tgtggttcct attcatgttc	360
caccaaccac tgaaaacaag ccaaagggtgc agtgctgtca gaacatctaa ggcatttctc	420
ttctccccta gaaggctgtg tatagtccat ttcccagggtc tgagat	466

<210> 14
 <211> 546
 <212> DNA
 <213> human

<400> 14	
tacttttctt tctaacatat caatgcttag cagaactatt cagattgtca gtagtaaatt	60

VDX5009WOPCT.11.30.ST25.txt

taaagacaaa tgcccgtttt cctccagtcc atgaaacata ccatacttat atacctgcaa	120
ctaagtgttt aaaattatgc tctgtaactc tgtactgcta gtattagaac taaaaatctt	180
aaaatacagc cagtgccttaa tgcttatatc aatgtggatt tgtcggcttt tatgtaatct	240
gtaatatgta tagcaggaaa tacgaagagt tacacagtgt atgccttaaa aggctgtttc	300
ttaaagggtgt tacaagggga taatgggtatt tcaactagtt atcagcaagt gacaatacat	360
tccaccacaa atacactctt gttcttctag ctttttagact atatgaaaaa accgggtgct	420
tcaaagtaca tgataaggga acactatacc tgtcatggat gaactgaaga ctttgcctgt	480
tcatttttta aatattatatt tcaggtcctt tgcttaccaa aggaggccca atttcactca	540
aatgtt	546

<210> 15
 <211> 469
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n is a, c, g, or t

<400> 15	
aagcatgctc agaccttcat tgctctgtgt gccacngact ttaagtttgc catgtaccca	60
ccgtcgatga tcgcaactgg aagtgtggga gcagccatct gtgggctcca gcaggatgag	120
gaagtgagct cgctcacttg tgatgccctg actgagctgc tggctaagat caccaacaca	180
gacgtggatt gtctcaaagc ttgccaggag cagattgagg cggtgctcct caatagcctg	240
cagcagtacc gtcaggacca acgtgacgga tccaagtcgg aggatgaact ggaccaagcc	300
agcacccta cagacgtgcg ggatatcgac ctgtgaggat gccagttggg ccgaaagaga	360
gagacgcgtc cataatctgg tctcttcttc tttctggttg tttttgttct ttgtgtttta	420
gggtgaaact taaaaaaaaa attctgcccc cacctagatc atattttaa	469

<210> 16
 <211> 530
 <212> DNA
 <213> human

<400> 16	
gaacctcaca gggggcttct gataccctca aacatggaga acagtaaggg agcagagtgg	60
ttaaggactt tcaggaactt aactattctg gaataaggaa tgaatcaact gaccttgggc	120
cagcaggttt ttaactaaat tgttacttgc ctttctcacc cagttaatca gtctctgtac	180
ttgtttccct ttttgaaaca agtgtcttgg ttaactaatt ctgttttatg gttgtgctaa	240
attcatagca ggtgccttat tctttgcttt tagtcaaacc attccatata agaattttcc	300

VDX5009WOPCT.11.30.ST25.txt

ttggtttact atagatat	ggctttaagt	tggtgtttgt	gtttttta	gtacaatgtt	360
ctgataaatt tgactgttaa	attgctatag	ctagcaatca	ttttacatat	gtaaaaaatt	420
gcattccctt tgtatttcat	gtgtaattca	ccaattaagt	gcagtttata	ttcaggttgg	480
attatgcatg tttaggtaaa	cgaaagctgt	gtcttacttg	atttattctt		530

<210> 17
 <211> 366
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (107)..(107)
 <223> n is a, c, g, or t

<400> 17			
cttgatttga ttgcagtttt	ttcctaatta taacaaat	ttcctcattg gcctgttttt	60
aatcctgtgc ctagaaggag	tacaaaatgc acactttaca	aaattgnata tttaacactt	120
accactccc ctttcccat	ctcttctacc gctcttggtg	atcgtggtat ctgatcttga	180
ctagataggc tgaaggcaca	tggttcctc caaaaaccac	tattgatacc actacaaaaa	240
caagccagca aaaagatact	gtagagaggt tggcttgctt	ccctctcttc ctaactgcat	300
gttgaaaaat aagccgttat	tgatcttaaa catcggtcag	atgagtcata cattgggtta	360
tttttt			366

<210> 18
 <211> 530
 <212> DNA
 <213> human

<400> 18			
gaagtataca cttccgctgt	accacgcaat gatgggtggc	agtgagggtg cccagaccct	60
cgccaaggag acttttgc	catccaccgcctc ccagctccac	agcaatggtg tcaactatgt	120
ccagcagatc gtggcaccca	agggcagtta gaggctcgtg	tgcatggccc ctgcctcttc	180
aggctctcca ggctttcaga	ataattgttt gttcccaa	at tcctgttccc gtgatcaatt	240
tcctggagtt tatatccc	ct caggataatc tattctctag	cttaggtatc tgtgactctt	300
gggcctctgc tctggtggga	acttacttct ctatagccca	ctgagccccg agacagagaa	360
cctgcccaca gctctccccg	ctacaggctg caggcacgca	gggcagcggg tattctcctc	420
ccacctaagt ctctgggaag	aagtggagag gactgatgct	cttctttttt ctctttctgt	480
cctttttctt gctgatttat	gcaaagggct ggcattctga	tgcttttcag	530

<210> 19

VDX5009WOPCT.11.30.ST25.txt

<211> 473
 <212> DNA
 <213> human

<400> 19
 caccactaaa atctccaggg gcaccattga aatcctgagt gatgtgcagc tgatcaagac 60
 tggagacaaa gtgggagcca gcgaagccac gctgctgaac atgctcaaca tctccccctt 120
 ctccttttggg ctgggtcatcc agcaggtggt cgacaatggc agcatctaca accctgaagt 180
 gcttgatatac acagaggaaa ctctgcattc tcgcttcctg gaggggtgtcc gcaatgttgc 240
 cagtgtctgt ctgcagattg gctacccaac tgttgcatca gtacccatt ctatcatcaa 300
 cggttacaaa cgagtcctgg ccttgctgtg ggagacggat tacaccttcc cacttgctga 360
 aaaggtcaag gccttcttgg ctgatccatc tgcctttgtg gctgctgccc ctgtggctgc 420
 tgccaccaca gctgctcctg ctgctgctgc agccccagct aagggtgaag cca 473

<210> 20
 <211> 516
 <212> DNA
 <213> human

<400> 20
 atctatttag agcttcacca tggcaatatg tatttccctt aaaacactgc aaacaaatat 60
 actaggagtg tgccctttta atctttacta gttattgtga gattgctgtg taagctaata 120
 aacacatttg taaatacatt gtttgcagga cgaaaacttc tgagttacag ctcaggaaaa 180
 gcctgctgaa tttatgttgt aagcattact taacacagta taaagatgaa aagacaacaa 240
 aaatatcttc atacttcctc atcccccatc tggaacaaaa acctaaact gggagaacct 300
 tagtccccctc tctttcctct tcctcctcca cttcccactt attgtcacct tgtaatatc 360
 agagagcact tggattatgg atctgaatag agaaatgctt acagataatc attagcccac 420
 ataccagtaa cttatactta aagatgggat ggagttgtaa agtgctttta taatacaata 480
 taattgttaa aggcaagggg tgactctttg ttttat 516

<210> 21
 <211> 322
 <212> DNA
 <213> human

<400> 21
 cacacccgtt taaggatttc acatcatata aagcgcttgc ttagatggct tctatcctag 60
 gcatatgctg gccgggtgct ctacatataa attctcattg tatcctcca tctgtccact 120
 gaggaagatt atcaaattga tcttcatcca atggatgcat aaactttcct acttacttgt 180
 agtggcaaag ctggctttca agtacaagtt tgttggtccc attacctatg ctcctattat 240
 ccgcttctgt cccgcaacaa agtagctcac ttaggcgtat gaccacatgc attatgatag 300

VDX5009WOPCT.11.30.ST25.txt

tttcccacca ccatattgaa ta 322

<210> 22
 <211> 461
 <212> DNA
 <213> human

<400> 22
 agccacaggt gcctgtacag gaaggtgcct ggccatgtca cctggctgct aggccagagc 60
 catgccaggc tgcgtccctc cgagcttggg ataaagcaag gggaccttgg cgctctcagc 120
 tttccctgcc acatccagct tgttgtccca atgaaatact gagatgctgg gctgtctctc 180
 ccttccagga atgctgggcc ccagcctgg ccagacaaga agactgtcag gaagggctcg 240
 agtctgtaaa accagcatac agtttggctt ttttcacatt gatcattttt atatgaaata 300
 aaaagatcct gcattttatgg tgtagtcttg agtcctgaga cttttctgcg tgatggctat 360
 gccttgcaca caggtgttgg tgatggggct gttgagatgc ctgttgaagg tacatcgttt 420
 gcaaattgtga gtttcctctc ctgtccgtgt ttgttttagta c 461

<210> 23
 <211> 554
 <212> DNA
 <213> human

<400> 23
 gttcagatta actgcttata gccttagaaa gcctttttaca aaattaaaaa aaaaatagat 60
 gtgcattcag tttttaagaa tggaatcatc caaaggaatt cttttttttg aggtttggat 120
 gttgcagcta gtaaaggata tttttgctct gttcagcagt tctaaaaatt gctgaagtag 180
 gggccagggtc actggtagtt atagtatgga atgggagaag tgaaagttca gttatagaac 240
 tttccatact tccaagttaa ctgcaagttt ttatgcttga gagagatgct ttctaataa 300
 agactgatgt gttgatttta ctgattgtac tgtacatcta ttaaagcctt agattattac 360
 attacgggtt ggaacccata ccaatgtaat ttcaatcgtg ttaagaaagt aatggtgact 420
 tcacatgtta ttgtagttag ttacattata gaatattact tttttttctt gttaaaatgt 480
 agtttttcat ttcctacatt tattagattt tcatttttcta ttaacaattg aataccattt 540
 cagtttatag actt 554

<210> 24
 <211> 521
 <212> DNA
 <213> human

<400> 24
 gaaatccctg agtatcaggc cttgttataa ataagctgca taatcaataa atagaacaag 60
 ggactttttg ttgataatcc aaataactcaa agtttacgta atgaaaatta tagcgtgtgt 120

VDX5009WOPCT.11.30.ST25.txt

gcaaactctt gagggttgat tatgctgcaa tttagcatgt tggaacgtct agggagaagg 180
 ttgacttttt gcacttctgt atatatgcaa aagagagaaa cctgtataat agtaagatct 240
 ttttttgaat aaaaacgtct ataattacaa ggagttttgt taaggctaata acaatgacag 300
 actgagcaaa attgcttgca aaagtggcac agagtttagca ctccataccc cttcaaacaat 360
 gttgcttttg tttcttgtgg acagcttgta gtttgccagg attttttcag ctggaaagat 420
 acgccatcct ttcaaaccct catgactgac aaaaactcca tggggccaaa tctgcctgaa 480
 gatcattacc aaaaatagca ggtacttcta ccattaaggt g 521

<210> 25
 <211> 434
 <212> DNA
 <213> human

<400> 25
 cggcacttgg cgtaaagccg cttccctcaa gagtaactac aatcttccca tgcacaagat 60
 gattaataca gatcttagca gaatcttgaa aagcccagag atccaaagag cccttcgagc 120
 accacgcaag aagatccatc gcagagtcct aaagaagaac ccactgaaaa acttgagaat 180
 catgttgaag ctaaaccat atgcaaagac catgcgccgg aacaccattc ttcgccaggc 240
 caggaatcac aagctccggg tggataaggc agctgctgca gcagcggcac tacaagccaa 300
 atcagatgag aaggcgccgg ttgcaggcaa gaagcctgtg gtaggtaaga aaggaaagaa 360
 ggctgctgtt ggtgttaaga agcagaagaa gcctctggtg ggaaaaaagg cagcagctac 420
 caagaaacca gccc 434

<210> 26
 <211> 491
 <212> DNA
 <213> human

<400> 26
 ttcaattcca tcctaaaact ctttttaacc aagcttagct tctcaaaggc ctaaccaagc 60
 cttggcaccg ccagatcctt tctgtaggct aattcctctt gcccaacggc atatggagtg 120
 tccttattgc taaaaaggat tccgtctcct tcaaagaagt tttatTTTTg gtccagagta 180
 cttgttttcc cgatgtgtcc agccagctcc gcagcagctt ttcaagatgc actatgcctg 240
 attgctgata gtgttttaac tttttctttt cctgttttta ttttggtatt aagtcgttgc 300
 ctttatttgt aaagctgtta taaatatata ttatatata atattaaaaa ggaaaatgtt 360
 tcagatgttt atttgtataa ttacttgatt cacacagtga gaaaaaatga atgtattcct 420
 gtttttgaag agaagaataa tttttttttc tctagggaga ggtacagtgt ttatattttg 480
 gagccttcct g 491

VDX5009WOPCT.11.30.ST25.txt

<210> 27
 <211> 474
 <212> DNA
 <213> human

<400> 27
 gaattgtcag gcaccctaca ggaaggcctg ccatgcttgt ggccaactgt ttcactggag 60
 caaagaaaga gatctcatag gacggagggg gaaaatgggt ttccctccaa gcttgggtca 120
 gtgtgttaac tgcttatcag ctattcagac atctccatgg tttctccatg aaactctgtg 180
 gtttcatcat tccttcttag ttgacctgca cagcttgggt agacctagat ttaaccctaa 240
 ggtaagatgc tggggatatag aacgctaaga attttcccc aaggactctt gcttcctcaa 300
 gcccttcttg cttcgtttat ggtcttcatt aaaagtataa gcctaacttt gtcgctagtc 360
 ctaaggagaa acctttaacc acaaagtttt tatcattgaa gacaatattg aacaaccccc 420
 tattttgttg ggattgagaa ggggtgaata gaggcttgag actttccttt gtgt 474

<210> 28
 <211> 398
 <212> DNA
 <213> human

<400> 28
 ccctttcctg gatcttctaaa ctgctcaatt ttgactcaaa ggtgctatct accaaacact 60
 ctccctaccc attcctgcc a gctctgcctc cttttcaact ctccacattt tgtattgcct 120
 tcccagacct gcttcagtc tttattgctt taaagttcac tttgggcca cagaccaag 180
 agctaatttt ctggtttgtg ggttgaaaca aagctgtgaa tctactgcagg ctgtgttctt 240
 gcatcttgtc tgcaaacagg tccctgcctt tttagaagca gcctcatggg ctcattgctta 300
 atcttgcttc tcttctcttc tttatgatgt tcactttaaa aacaacaaaa cccctgagct 360
 ggactgttga gcaggcctgt ctctcctatt aagtaaaa 398

<210> 29
 <211> 381
 <212> DNA
 <213> human

<400> 29
 catccattag gccagcaacg cttgtagaac tcactctggg ctgtaacgtg gcaactggtag 60
 gttgggacac caggaagaa gatcaacgcc tcactgaaac atggctgtgt ttgcagcctg 120
 ctctagtggg acagcccaga gcctggctgc cccatcatgt ggccccacc aatcaagga 180
 agaaggagga atgctggact ggaggcccc ggagccagat ggcaagaggg tgacagcttc 240
 ctttctgtg tgtactctgt ccagttcctt tagaaaaaat ggatgccag aggactccca 300
 accctggctt ggggtcaaga aacagccagc aagagttagg ggccttaggg cactgggctg 360
 ttgttccatt gaagccgact c 381

VDX5009WOPCT.11.30.ST25.txt

<210> 30
 <211> 488
 <212> DNA
 <213> human

<400> 30
 gtttttgctg aaattctcct ggaggtcggg aggttcagcc aaggttttat aaggctgatg 60
 tcaatttctg tgttgccaag ctccaagccc catcttctaa atggcaaagg aagggtggatg 120
 gccccagcac agcttgacct gaggtctgtg tcacagcgga ggtgtggagc cgaggcctac 180
 cccgcagaca ctttgacat cctcctccca cccggctgca gaggccagag gccccagcc 240
 cagggctcct gcacttactt gcttatttga caacgtttca gcgactccgt tggccactcc 300
 gagaggtggg ccagtctgtg gatcagagat gcaccaccaa gccaagggaa cctgtgtccg 360
 gtattcgata ctgcgacttt ctgcctggag tgtatgactg cacatgactc ggggggtgggg 420
 aaaggggtcg gctgaccatg ctcatctgct ggtccgtggg acggtgcca agccagaggc 480
 tgggttca 488

<210> 31
 <211> 534
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (306)..(306)
 <223> n is a, c, g, or t

<400> 31
 atgtaggctt agtttgtgtg ttgtctcttg agtttgtcgc tcatgtgtgc aacaggggtat 60
 ggactatctg tctggtggcc ccgtttcttg tggctctgtg gcaggctggc cagtccaggc 120
 tgccgtgggg ccgccgcctc tttcaagcag tcgtgcctgt gtccatgcgc tcagggccat 180
 gctgaggcct gggccgctgc cacgttggag aagcccgtgt gagaagtga tgctgggact 240
 cagccttcag acagagagga ctgtagggag ggcggcaggg gcctggagat cctcctgcag 300
 accacncccg tcctgcctgt gcgccgtctc caggggctgc ttctccttg aaattgacga 360
 ggggtgtctt gggcagagct ggctctgagc gcctccatcc aaggccagggt tctccgttag 420
 ctctgtggc cccaccctgg gccctgggct ggaatcagga atattttcca aagagtgata 480
 gtcttttgct tttggcaaaa ctctacttaa tccaatgggt ttttcctgt acag 534

<210> 32
 <211> 527
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

```

<400> 32
gaggagctta tatttggaac cgaccatatt acaacaggtg cttccagtga ttttgataat    60
gccactaaaa tagcaaagcg gatggttacc aaatttgga tgaagtgaaaa gcttgagatt    120
atgacctaca gtgatacagg gaaactaagt ccagaaaccc aatctgcat cgaacaagaa    180
ataagaatcc ttctaaggga ctcatatgaa cgagcaaac atatcttgaa aactcatgca    240
aaggagcata agaatctcgc agaagcttta ttgacctatg agactttgat gccaaagaga    300
ttcaaattgt tcttgagggg aaaaagttgg aagtgaagtg ataactctct tgatatggat    360
gcttgctggt ttatttgcaa gaatataagt agcattgcag tagtctactt ttacaacgct    420
ttccctcat tcttgatgtg gtgtaattga aggggtgtgaa atgctttgtc aatcatttgt    480
cacatttatc cagtttgggt tattctcatt atgacaccta ttgcaa                    527

```

```

<210> 33
<211> 440
<212> DNA
<213> human

```

```

<220>
<221> misc_feature
<222> (30)..(31)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (34)..(38)
<223> n is a, c, g, or t

```

```

<400> 33
ctcacatttt gcgagattat cctgatggan ntgnnnnncc atgatgcagc ctggcctttc    60
ctagagcctg tgaaccacg tttggtgagt gggtagcggc gcatcatcaa aaatcctatg    120
gatttttcca ccatgcggga gcggctgctc aggggagggg acaccagctc agaggagttt    180
gcggctgatg ccctcctggt atttgacaac tgccagactt tcaacgagga tgactctgaa    240
gtaggcaagg ctgggcacat catgcgccgc ttcttcgaga gccgctggga ggagttttat    300
cagggaaaac aggccaatct gtgaggcaag ggaggtgggg agtcaccttg tggcatctcc    360
ccccaccttc caaacaacaaa cctgccattt tcacctgctg atgctgccct ggggccagac    420
tcaagtcaga tacaaccctg                    440

```

```

<210> 34
<211> 447
<212> DNA
<213> human

```

```

<400> 34
gagcagtcac tctcagaatc ttgattcccc atcagccaaa gcaaaagatg gctgctgctt    60
tgtaggcatg tgccctgaag tgggaccttg ctgggcatta tatgccctgt gggggtttca    120

```

VDX5009WOPCT.11.30.ST25.txt

gagaccctga aagaggaggg aggacccgcc tccttgtctg cacaactgca tgcacttctc 180
 tccccatcgc tccacaacct gaaaccgaga aggagtgtgt gaccagtgcc caccgccgga 240
 gccccgggagg aacacaggca gctcctttcc cttcacgtgg tctgcagaga gcaggggtgag 300
 ctgccagctg cccctctcca ccagggtacc ctgtcttggg ggtagggggc cacttttcct 360
 ttgaggctct agtggagggt gatgtccttc tctgccaggc ttggcacatg atgtgaagaa 420
 taaatgccca attcttactg ttcaggt 447

<210> 35
 <211> 530
 <212> DNA
 <213> human

<400> 35
 ggggtggctc caagcattaa gaggtttaat ctttgatggc attgttctag ttttgaaatt 60
 tctagtatat ttcagagtct cttagaagac ttgtgtggga agtttcactt tgttttcagt 120
 gaagatcaca aacctccttc ttcctttact caagaggaaa ggtcccagta tacatatttg 180
 aatggttgat ggttttcaag accttcaggg agctccctgc attttaccta gaaacagaaa 240
 aggcccgcaa aatcttaagt ttcctggcct gcatttcccg ggtaggggca aatgactcca 300
 agctggtctc taagccaata cccttataaa ccagagccca ggaaagacag ctcgagtgt 360
 taattctctg gagctcaatt ctatgcagtt gtgctgatat ttcattaagt cactgtgtat 420
 ttttaagtgt tgatacatta aaagtcgctt tatggaagat gagtaaattt tttaaatact 480
 tggaaatttt atttccttgt taacttctac agatcagggc atgcaaccaa 530

<210> 36
 <211> 503
 <212> DNA
 <213> human

<400> 36
 tagatttctt ctggcttatg tttctacttt aggaccctca ttgttctctt attaaaaaaaa 60
 attatttcct gtgcatctca tggactgcag ggtaaattat ttgggcataa ataatttaaa 120
 tagttttctt tcattttgac tatctccagt aataacagtt tttattatcc agcatattgg 180
 cttattgcac aaatcttaaa atgtacattg actactttct gagaagaaag tggatatcagt 240
 actcatgatg aaaagggttac tactgaacaa attcacattt caggaacacc tctatctttg 300
 gtttaaatct tactcttagt ttttccgtct aaaaatcata ctggtattag tatcaggtaa 360
 ggaaattaaa gtttttaaaa tggtttcatt ctctgcaata tgcaaaattt agattttact 420
 ttctggtact gtaaagaacc tgaagtgatt tacacttaat gggtgattaa tccagtattc 480
 tttaccctga atgtttggat att 503

VDX5009WOPCT.11.30.ST25.txt

<210> 37
 <211> 452
 <212> DNA
 <213> human

<400> 37
 atgagattca cattctagtc tttatatttcc tcctgttttg tccctgtgct tgtacatctt 60
 ccttttatttt gtgtgtttata gttctatttcc atttgagaag gcagttggta agaactagat 120
 tgcattgtaca aagacagggt tactaagtgc tgtacagtgg tcctgagggt acagttgaat 180
 tagaaaaacg aaatgtactt acaggaaata agaaagcaaa cttttcaaatt gagagtgatg 240
 atttcttttaa aaaaaatcag tttttttctc tcaaataatg ttctttattt cacgaaatcg 300
 tcaatcttaa gcatgagcag ggataaaciaa ctcttagaag gaactcaatt cattcttctt 360
 ggatttttctc tgtttgttaaa tcacaaaaat gatagtcccc aatcgtttct ttataggagg 420
 ttattacatt tcattacagt cactgcattt tg 452

<210> 38
 <211> 510
 <212> DNA
 <213> human

<400> 38
 gctcaagggt aggtgggctg ggggtggtagg aggggtttttt ttaccagagg ctctggaagg 60
 acaccaaact gttctgcttg ttaccttccc tcccgcttct tcctcgctt tcacagtccc 120
 ctctcgcttg ctctgtcca gccagggtcta ccaccaccc caccctctt tctccggctc 180
 cctgccccctc cagattgcct ggtgatctat tttgttttct tttgtgtttc tttttctggt 240
 ttgagtgtct ttctttgcag gtttctgtag ccggaagatc tccgttccgc tcccagcggc 300
 tccagtgtaa attccccctt cccctgggga aatgcactac cttgtttttg ggggttttagg 360
 ggtgtttttg tttttcagtt gttttgtttt tttgtttttt ttttttctt tgcctttttt 420
 cctttttatt tggagggaaat gggaggaagt gggaacaggg aggtgggagg tggattttgt 480
 ttattttttt agctcatttc caggggtggg 510

<210> 39
 <211> 544
 <212> DNA
 <213> human

<400> 39
 cagttcccat gtgagccatt caaatatttg gagccaactc taagactaga atattgtgaa 60
 gcattggcta tgcttaggga agctggagtc gaaatgggag atgaagacga tctgagcaca 120
 ccaaatgaaa agctgttggg tcatttggtg aaggaaaagt atgatacaga tttttatatt 180
 cttgataaat atccattggc tgtaagacct ttctatacca tgcctgacct aagaaatccc 240

VDX5009WOPCT.11.30.ST25.txt

aaacagtcca actcttacga tatgttcacg agaggagaag aaatattgtc aggagctcaa 300
 agaatacatg atcctcaact gctaacagag agagctttac atcatggaat tgatttggag 360
 aaaattaagg cttacattga ttccttccgc tttggagccc ctccatcatgc tggaggaggc 420
 attggattgg aacgagttac tatgctgttt ctgggattgc ataattgttcg tcagacctcc 480
 atgttccctc gtgatcccaa acgactcact ccttaaattc acactttgcc acttaactcc 540
 agtg 544

<210> 40
 <211> 436
 <212> DNA
 <213> human

<400> 40
 gagtggacta ttaaattgtc ctaaattgaat tttgcagtaa ctggtattct tgggttttcc 60
 tacttaatac acagtaattc agaacttgta ttctattatg agtttagcag tcttttggag 120
 tgaccagcaa ctttgatgtt tgcactaaga ttttatttgg aatgcaagag aggttgaaag 180
 aggattcagt agtacacata caactaattt atttgaacta tatgttgaag acatctacca 240
 gtttctccaa atgccttttt taaaactcat cacagaagat tggtgaaaat gctgagtatg 300
 acacttttct tcttgcacgc atgtcagcta cataaacagt tttgtacaat gaaaattact 360
 aatttgtttg acattccatg ttaaactacg gtcatgttca gcttcattgc atgtaatgta 420
 gacctagtcc atcaga 436

<210> 41
 <211> 484
 <212> DNA
 <213> human

<400> 41
 ggaatttgaa atcccaccta tctccttgga ttctgatccc tcattggctg tctcagatgt 60
 gggtggccac tttgatgacc tggcagaccc ttcctcttca caggatggca gtttttcagc 120
 ccagtatggg gtccagacat tggacatgcc tgtgggcatg acccatggct tgatggagca 180
 gggcgggggg ctccctgagt ggggcttgac catggacttg gaccactcta taggaactca 240
 gtatagtgcc aaccacctg ttacaattga tgtaccaatg acagacatga catctggctt 300
 gatggggcat agccagttga ccaccattga tcagtcagaa ctgagttccc agctgggttt 360
 gagcctaggg ggtggcacca tcctgccacc tgcccagtca cctgaagatc gtctttcaac 420
 cacccttca cctactagtt cacttcacga ggatggtgtt gaggatttcc ggaggcaact 480
 tccc 484

<210> 42
 <211> 510

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 42
aaccatcaca tatgagtctc cacagattga tggcggggct ggtggtgatt cgggcacggt 60
actgaccgca caaaccatca catctgagtc cgtgtcaaca acgacaacca cacacatcac 120
caagactgta aaaggtggaa tttctgaaac aagaattgag aaacgcattg tgatcacagg 180
agatggagat attgatcatg accaggcact ggctcaggcg atcaggggaag ccagagagca 240
gcaccctgac atgtcggcca caagagtggg ggtacacaaa gaaacagagt tggctgagga 300
aggggaagat taagtaagaa agtcattttt taaacaacac tcaactttgt gaaccctga 360
agatttttttg accgttccaa gtcttaatgc cacaccacta ttccagcgaa tttatgctac 420
aactggtaac aatgaccaga agcctgaaga attaaaatgc caacacaaa ctttcctta 480
ccagctctgg tctatattgc tcccatgcat 510

<210> 43
<211> 439
<212> DNA
<213> human

<400> 43
ggtgtggctc attgacttta atccatttgg tgaagtcaca gattcactgc tgttcacctg 60
ggaagaactg atatctgaga acaacttaaa cggcgatttt agtgaagttg acgctcaaga 120
gcaggattcc ccagctttcc gttgcacaaa cagtgaagtg acagtccagc ccagccccta 180
tttgagttac cggctaccca aggactttgt agacctctct actgggaggg acgctcacia 240
gctaatagac ttccttaagc tgaagagaaa tcagcaggag gacgactgat gagcgactg 300
taactggaga agaggaggcc cggccccacc gctccgggag ctgctcatca gccgcaactt 360
cctgccgacc ctgatgcggg tgggccgagc agtgtggaca tcagccactt tttatattca 420
tgtacattca cctggggaa 439

<210> 44
<211> 537
<212> DNA
<213> human

<400> 44
aaacctgtcc agtgtgcaag caaaaagttg ttccttctca aggcgattca gactctgaca 60
cagacagtag tcaagaagaa aatgaagtga cagaacatac ccctttactg agaccttag 120
cttctgtcag tgcccagcca tttggggctt tatcggaatc ccgctcacat cagaacatga 180
cagaatcttc agactatgag gaagacgaca atgaagatac tgacagtagt gatgcagaaa 240
atgaaattaa tgaacatgat gtcgtgggtc agttgcagcc taatggtgaa cgggattaca 300
acatagcaaa tactgtttga ctttcagaag atgattgggt tatttcctt taaaatgatt 360

VDX5009WOPCT.11.30.ST25.txt

aggtatatac tgtaatttga ttttttgctc ctttcaaaga tttctgtaga aataacttat 420
 ttttttagtat tctacagttt aatcaaatta ctgaaacagg acttttgatc tggatattat 480
 ctgccaagaa tataacttcat tcactaataa tagactggtg ctgtaactca agcatca 537

<210> 45
 <211> 364
 <212> DNA
 <213> human

<400> 45
 gggagaggca acaaggtaat tcagcctttc ctctatcag cacaaagaaa ctcaaagctg 60
 ttttttccct ttctgttcca aagcagtctt atcctgacag gagcgggtcta tactagtgc 120
 gatttcaaca ctttttttta acgttttaat tactatagtg ttatgtagag atttgattga 180
 gcagctaata tttctgaact ttacttacta attttcagtg tccttaaggg ttctgtagtg 240
 ttatcaaagc aaaaagaaaa tgctgcataa aaataccaaa cttcagcaac tgtaataact 300
 cagatcatat acctcttaat aaatagcatc ttatgctaata tagccctgct aaactatgta 360
 caga 364

<210> 46
 <211> 514
 <212> DNA
 <213> human

<400> 46
 tggagtttca gtctccaact ctccagccac caatgaaagc cactctatca aagccatcct 60
 gaaaaatatc tcagtcctgg ctttctctgt ctgcttcac ttcactatca ccattgggat 120
 gtttccagcc gtgactgttg aggtcaagtc cagcatcgca ggcagcagca cctgggaacg 180
 ttacttcatt cctgtgtcct gtttcttgac tttcaatatc tttgactggt tgggccggag 240
 cctcacagct gtattcatgt ggcctgggaa ggacagccgc tggctgcca gcctggtgct 300
 ggcccggctg gtgtttgtgc cactgctgct gctgtgcaac attagcccc gccgctacct 360
 gactgtggtc ttcgagcacg atgcctggtt cttttcttc atggctgcct ttgccttctc 420
 caacggctac ctgcagcc tctgcatgtg cttcgggccc aagaaagtga agccagctga 480
 ggcagagacc gcaggagcca tcatggcctt cttc 514

<210> 47
 <211> 549
 <212> DNA
 <213> human

<400> 47
 cgggtggaggt cttgccggag gtagcagtg aagctactac tccagcagca gtgggggtgt 60
 cggcctaggt ggtgggctca gtgtgggggg ctctggcttc agtgcaagca gtggccgagg 120

VDX5009WOPCT.11.30.ST25.txt

```

gctgggggtg ggctttggca gtggcggggg tagcagctcc agcgtcaa at ttgtctccac 180
cacctcctcc tcccgaaga gcttcaagag ctaagaacct gctgcaagtc actgccttcc 240
aagtgcagca acccagccca tggagattgc ctcttctagg cagttgctca agccatgttt 300
tatccttttc tggagagtag tctagaccaa gccaatgca gaaccacatt ctttggttcc 360
caggagagcc ccattcccag cccctggtct cccgtgccgc agttctatat tctgcttcaa 420
atcagccttc aggtttccca cagcatggcc cctgctgaca cgagaacca aagttttccc 480
aaatctaat catcaaaaca gaatccccac cccaatccca aattttgttt tggttctaac 540
tacctccag 549

```

```

<210> 48
<211> 519
<212> DNA
<213> human

```

```

<400> 48
tgtcagagta tgcacggcgc tttggtgttc cggtcattgc tgatggagga atccaaaatg 60
tgggtcatat tgcgaaagcc ttggcccttg gggcctccac agtcatgatg ggctctctcc 120
tggctgccac cactgaggcc cctggtgaat acttcttttc cgatgggatc cggctaaaga 180
aatatcgcgg tatgggttct ctcgatgcca tggacaagca cctcagcagc cagaacagat 240
atcttcagtga agctgacaaa atcaaagtgg cccagggagt gtctggtgct gtgcaggaca 300
aagggtcaat ccacaaattt gtcccttacc tgattgctgg catccaacac tcatgccagg 360
acattggtgc caagagcttg acccaagtcc gagccatgat gtactctggg gagcttaagt 420
ttgagaagag aacgtcctca gccaggtgg aagggtggcg ccatagcctc cattcgtatg 480
agaagcggct tttctgaaaa gggatccagc acacctcct 519

```

```

<210> 49
<211> 553
<212> DNA
<213> human

```

```

<400> 49
agatccacct tcagaatgga catgattcag ggagctagaa gacacttta gttatactgg 60
aaaattcagg tgccactgaa agccagattt atagtattcc atctttaata tgtgggacta 120
acagcagtgt agattgttac cttaatattt tttgctggga ccatctacct gccttatact 180
acacttagga aaaagtatta catatggttt attttgaaac ttcaagtatt attgccttaa 240
tgtctcttaa ccctgttaca cgctgcttgt agacatgtta atataagta acctttatga 300
tatattgagt ttaaggacta ccctttttct gttttatcat gtattcatta ttttgtatat 360
gtacagggca agtaggtata taatttgata aagttgcaat tgaaatatta ttaacagaag 420

```

VDX5009WOPCT.11.30.ST25.txt

atgtaagaaa tttctgcatg gtctaaatct ttgtgtactt tatttgtaaa ttatttgccc 480
 tggagtttta gaaaatagtt tctgaatttt aaacttgctg gattcatgca gccagctttg 540
 caggttatca gag 553

<210> 50
 <211> 493
 <212> DNA
 <213> human

<400> 50
 gagtggactc agctggatat gttttatagg aattgggcac ttaaggaaag cttcataaaa 60
 gccattggtg ttggactagg atttgaattg cagcggcttg aatttgatct atctccatta 120
 aacttgata taggccaagt ttataaagaa acacgtttat tcctggatgg agaggaagaa 180
 aaagaatggg catttgagga aagcaaaata gatgagcacc attttgttgc agttgctctt 240
 aggaaacccg atggatctag acatcaggat gttccatctc aggatgattc caaaccaacc 300
 cagaggcaat ttactattct caactttaat gatttaatgt catctgccgt tcccatgaca 360
 cctgaagatc cttcatTTTT ggactgtttt tgcttcacag aagaaattcc aatacgaat 420
 ggtacaaagt catgatgatt ccctgagtaa caaagggaaa tgaaaactgt ttgtgatctt 480
 ccgtattcac tga 493

<210> 51
 <211> 446
 <212> DNA
 <213> human

<400> 51
 gtctgtcagc tctcggaata gggacagtcc ttactggtgc cccaagggtg gacttggaga 60
 atattttgct tggcatatgt ttggtctgaa tgggtgtagtt gctgggtccc tagagaggaa 120
 aagggtggcag gcccagcttt gctgggaaat ggctcttaat ttccagttga aaccctagta 180
 gaattgtgaa tgaaaacctc aaggttgagc ccctctgcca agcagcagag ctagtagaag 240
 gggatgcagg ggcaaagcac tcagttgcca agcaaggagg agagatgtac gtgggctgtg 300
 tggcagttcc cacaccctgc cctggcttct tcaggttatc gcaccactat ggaatccttt 360
 gcagaatggt actcatataa tggtttaaaa caacacattc ataattgact ctgtgcagga 420
 tgtcactcaa tcagtttggg ttgtgt 446

<210> 52
 <211> 448
 <212> DNA
 <213> human

<400> 52
 aagcttcgag ctgttgcgtg tgtgagtctg ttgtgtggat gtgcgtgtgt ggtccccagc 60

VDX5009WOPCT.11.30.ST25.txt

```

cccagactgg attgaaaaag tgcattggtg gggcctcggg gctgtcccca cgctgtccct 120
ttgccacaag tctgtggggc aagaggctgc aatattccgt cctgggtgtc tgggctgcta 180
acctggcctg ctcaggcttc ccaccctgtg cggggcacac cccaggaag ggaccctgga 240
cacggctccc acgtccaggc ttaagggtga tgcacttccc gcacctccag tcttctgtgt 300
agcagcttta acccacgttt gtctgtcacg tccagtcccc agacggctga gtgacccaa 360
gaaaggcttc cccgacaccc agacagaggc tgcagggctg gggctgggtg aggggtggcg 420
gcctgcgggg acattctact gtgctaaa 448

```

<210> 53
 <211> 421
 <212> DNA
 <213> human

```

<400> 53
caactgggga gttccgtgtg gaccgtgaag gttctccagt gctgctcaac tgcctcatgt 60
acaagatgtg ttactatcgc tttggacagg ttacacaga agccaagcgt cctccaggct 120
ttgaccgtgt ccgaaatgct gagattggga ataaagactt tgagcttgat gtcctggagg 180
aaggctatac cacagaacat tggttggtca ggatatacaa ggtaaaggac ctggataatc 240
gaggcttgct aaggacataa atgtcacgtc cagctctgat atcttcgcac tgagcacatc 300
acatttagga cgttgaagat tttttttttt tttttttttt taatatgcag tttgtaagaa 360
caaaactgga tggcatccga attgtctgga agttttgtct tgggcatgat gggctgggcc 420
a 421

```

<210> 54
 <211> 537
 <212> DNA
 <213> human

```

<400> 54
gacaccatcc tgaatgaggg gtccagcctg ggggggactc taccaaggct ttcttgggct 60
gggaaagccc atgtagggca ggccttctat aagtgcgggc accaagggcg cctacatccc 120
caggccttgc tggggtgcag gggatatca acttcccatt agcaggagct cccagcggc 180
aagcctggcc cagtgggctc ggtagtggc agctggcagg cctgaggtgt acatagtcct 240
tccgggcatc attaacaca cagcctgagc ctggcccagc ctcggctgcc agaggtgcct 300
ttgctaggcc cggagccgtt gccgggcctt gcccttgccc tattcctctc ctctctctcc 360
tcctgggtcc cccaggggtg ctgggcttgg gctatgtggg tgggtgggtg ggggggtctt 420
gggggcctct cagctccgc ccatgcctcc ctgatgggtg ggcccagggc ggcctctctc 480
tgaggagacc tcaccactc ctcgctcagt ttgaccactg taagtgcctg cactctg 537

```

VDX5009WOPCT.11.30.ST25.txt

<210> 55
 <211> 468
 <212> DNA
 <213> human

<400> 55
 taggatccta gcctgtaaag acacagaaga tgctgacctc acccctgcca cctatcccaa 60
 gacctcactg gtctgtggac agcagcagaa atgtttgcaa gataggccaa aatgagtaca 120
 aaagtctctgt tttccatcag acccagtgat gttgcgattc acacgttcaa ttcaagacct 180
 gaccgttagt agggaggttt attcagatcg ctggcagcct cggctgagca gatgcacaga 240
 ggggatcact gtgcagtggg accaccctca ctggccttct gcagcagggg tctgggatgt 300
 tttcagtggg caaaatactc tgtttagagc aagggctcag aaaacagaaa tactgtcatg 360
 gaggtgctga acacagggaa ggtctggtac atattgggaa ttatgagcag aacaaatact 420
 caactaaatg cacaaagtat aaagtgtagc catgtctaga caccatgt 468

<210> 56
 <211> 490
 <212> DNA
 <213> human

<400> 56
 atgagcccaa gcacacatgc atggcatttg ttcctgaaca ggagggcatc cctggggatg 60
 tggctggagc atgagccagc tctgtcccag gatggtccca gcggatgctg ccagggggcag 120
 tgaagtgttt aggtgaagga caagtaggta agaggacgcc ttcaggcacc acagataagc 180
 ctgaaacagc ctctccaagg gttttcacct tagcaacaat gggagctgtg ggagtgtatt 240
 tggccacact gtcaacattt gttagaacca gtcttttgaa agaaaagtat ttccaacttg 300
 tcacttgcca gtcactccgt tttgcaaaag gtggcccttc actgtccatt ccaaatagcc 360
 cacacgtgct ctctgctgga ttctaaatta tgtgaatttt gccatattaa atcttcctca 420
 tttatactat tatttgttac gttcaatcag aatccccgaa acctcctata aagcttagct 480
 gccccttctg 490

<210> 57
 <211> 417
 <212> DNA
 <213> human

<400> 57
 aatgataaaa cacctcacac ctcaactctt atagtgcaca aaatgaatga ggtctgggct 60
 aggtagaaaa aggggtcaatg ctatctttgt ttttagaatc attacctttt accagctttt 120
 aaccatctga tatctatagt agacacacta tcatagttaa catagttaag ttcagcactt 180
 gtctcatttt aatgtaaaga tttgcttcca ttttcctaca ggcagtctct ctcttcctca 240
 cagtcccact gtgcagggtgc tattgttact cttacgaata ttttcagtaa tgttattttc 300

VDX5009WOPCT.11.30.ST25.txt

ttctaagtga aatttctagc ctgcactttg atgtcatgtg ttccctttgt ctttcaaact 360
ccaagggttcc cctgtggccc tctcccttac cctgggaagg cctcttggag accttac 417

<210> 58
<211> 540
<212> DNA
<213> human

<400> 58
atcagcccac tccagatagc tgcacatca gcatggttgt gggccagctt aaggcggatg 60
aagaccccat catgggggttc caccagatgt tcctattaaa gaacatcaac gatgcttggg 120
tttgcaccaa tgacatgttc aggctcgccc tgcacaactt tggctgacct cctctcagct 180
aggcactcac gctgtttcct cctccctcct cttcccaata ctattccac tcctccagat 240
gctccaaata tcatgcacaa atgagcaggg ccgcggtggg agtgggcgca gtgcgctgct 300
gccactgagg tgttgtgcat gatgtttgga tgctagacta gttgcatctg acgggagaag 360
tttgtgttgt accagcgcat gccttggaaa gacttaagta atgcaaaagg ttgtcctttt 420
tttttttttt ttttttttaa tctactgaca agttgctcta gtaacccaaa gaagtgaagg 480
agaaagcagc tgcctcaccg cccagacatt gatttgttca gatgtttcaa tgcctcatga 540

<210> 59
<211> 443
<212> DNA
<213> human

<400> 59
tatatcccca cgaaggcctt cattacttac gtgctcctgg ctgggatggc actgggcatt 60
cagaaaaggt tctccccgga ggtgctgggc ctgtgtgcaa gcacagcgct ggtgtgggtg 120
gtgatggagg tgctggccct gctcctgggc ctctacctgg ccaccgtgcg cagtgcctg 180
agcacctttc acctgctggc ctacagtggc tacaataacg tgggaatgat cctcagtgtg 240
ctcacggggc tgctgttcgg cagcgatggc tactacgtgg cgctggcctg gacctcatcg 300
gcgctcatgt acttcattgt gcgctctttg cggacagcag ccctgggccc cgacagcatg 360
ggggggcccc tccccggca gcgtctccag ctctacctga ctctgggagc tgcagccttc 420
cagccccctca tcatatactg gct 443

<210> 60
<211> 543
<212> DNA
<213> human

<400> 60
taccctcaga tcaccttcga gaacatgatt gtggataaca ccaccatgca gctggtgtcc 60
cggccccagc agtttgatgt catggtgatg cccaatctct atggcaacat cgtcaacaat 120

VDX5009WOPCT.11.30.ST25.txt

gtctgcgcgg gactggtcgg gggcccaggc cttgtggctg gggccaacta tggccatgtg 180
 tacgcggtgt ttgaaacagc tacgaggaac accggcaaga gtatcgccaa taagaacatc 240
 gccaacccca cggccaccct gctggccagc tgcgatgatgc tggaccacct caagctgcac 300
 tcctatgcc a cctccatccg taaggctgtc ctggcatcca tggacaatga gaatatgcac 360
 actccggaca tcggggggcca gggcacaaca tctgaagcca tccaggacgt catccgccac 420
 atccgcgtca tcaacggccg ggccgtggag gcctaggctg gccctaggac cttcttggtt 480
 tgctccttgg attccccctc ccactccagc accccagcca gcctggtacg cagatcccag 540
 aat 543

<210> 61
 <211> 433
 <212> DNA
 <213> human

<400> 61
 gccagcgctc tgacatgcag aagggtgacc tgggcctgct tgtgttcctg gcaggctttc 60
 ctgtccttga cgccaatgac ctagaagata aaaacagtcc tttctactat gactggcaca 120
 gcctccaggt tggcgggctc atctgcgctg gggttctgtg cgccatgggc atcatcatcg 180
 tcatgagtgc aaaatgcaaa tgcaagtttg gccagaagtc cggtcaccat ccaggggaga 240
 ctccacctct catcacccca ggctcagccc aaagctgatg aggacagacc agctgaaatt 300
 ggggtggagga ccgttctctg tccccaggtc ctgtctctgc acagaaactt gaactccagg 360
 atggaattct tcctcctctg ctgggactcc tttgcatggc agggcctcat ctcacctctc 420
 gcaagagggt ctc 433

<210> 62
 <211> 502
 <212> DNA
 <213> human

<400> 62
 catccagcag ctggcatctg accttggcac tcgaactgac ctcaagctca gctacctgga 60
 agaggccgtg atgcacctgg accacagtga ccccatcact cgggaccaca tgggctccgt 120
 tatggcccag gtgcgccaaa agctttttca gttcctgcag gctgagccac acaactcact 180
 tggcaaagca gctcggcgctc tcagcctcat gctgcatggc ctctgtgacc ccagcctccc 240
 ttagctgcta agcctgcctt gcccaggggt gggatggcac tgaaggccag cagacaggcc 300
 taggctgggg cagggtcacg gctggccttt acctgctcag gccccatct ctgggggtgtt 360
 tgggggtcag ggagcagggg gcaactggccg tgggtctacag cgtgtggtag tcagaagggtt 420
 tagctggggc cagggcaggt attgcgcctg cttgggttct gccatgcctg gagcatgacc 480

ctgagatcgt gacaccactt ga VDX5009WOPCT.11.30.ST25.txt 502

<210> 63
 <211> 524
 <212> DNA
 <213> human

<400> 63
 tggagaattc tttaggttgt cccctaaaga ttctgaaaaa gagaatcaga ttcctgaaga 60
 ggcaggaagc agtggcttag gaaaagcaaa gagaaaagca tgtcctttgc aacctgatca 120
 cacaaatgat gaaaaagaat agaactttct cattcatctt tgaataacgt ctccttgttt 180
 accctggtat tctagaatgt aaatttacat aaatgtgttt gttccaatta gctttgttga 240
 acaggcattt aattaaaaaa tttaggttta aatttagatg ttcaaaagta gttgtgaaat 300
 ttgagaattt gtaagactaa ttatggtaac ttagcttagt attcaatata atgcattgtt 360
 tggtttcttt taccaaatta agtgtctagt tcttgctaaa atcaagtcatt tgcattgtgt 420
 tctaattaca agtatgttgt atttgagatt tgcttagatt gttgtactgc tgccattttt 480
 attggtgttt gattattgga atggtgccat attgtcactc cttc 524

<210> 64
 <211> 380
 <212> DNA
 <213> human

<400> 64
 ggaaacctct cagtgtcttg acatcacctt acccaggcgg tgggtctcca ccacagccac 60
 tttgagtctg tgggtccctgg aggggtggctt ctcctgactg gcaggatgac cttagccaag 120
 atattcctct gttccctctg ctgagataaa gaattccctt aacatgatat aatccaccca 180
 tgcaaatagc tactggccca gctaccattt accatttgcc tacagaattt cattcagtct 240
 acactttggc attctctctg gcgatggagt gtggctgggc tgaccgcaaa aggtgcctta 300
 cacactgccc ccaccctcag ccgttgcccc atcagaggct gcctcctcct tctgattacc 360
 ccccatgttg catatcaggg 380

<210> 65
 <211> 473
 <212> DNA
 <213> human

<400> 65
 aagtcacttc cagtgttggc tgtgtgacag aatcttgtat ttgggccaag gtgtttccat 60
 ttctcaatca gtgcagtgat acatgtactc cagagggaca ggggtggacc cctgagtcaa 120
 ctggagcaag aaggaaggag gcagactgat ggcgattccc tctcaccgg gactctcccc 180
 ctttcaagga aagtgaacct tttaaagtaaa ggcctcatct cttttattgc agttcaaatc 240

VDX5009WOPCT.11.30.ST25.txt

ctcaccatcc acagcaagat gaattttatc agccatgttt ggttgtaa at gctcgtgtga 300
 tttcctacag aaatactgct ctgaatattt tgtaataaag gtctttgcac atgtgaccac 360
 atacgtgtta ggaggctgca tgctctggaa gcctggactc taagctggag ctcttggaa 420
 agctcttcgg tttctgagca taatgctccc atctcctgat ttctctgaac aga 473

<210> 66
 <211> 359
 <212> DNA
 <213> human

<400> 66
 gttgtttgac gattctgatg agagggggac tttgggtggt tttgggagtg ttgaagaagg 60
 gcccctatcc actggcagca gctttattct cagtagcgat gatgatgacg atgatattta 120
 atcccttaaa cttgcttttt agggagagtc ctccatctac atttgccctgt gcttcagggg 180
 aattactagt agtggttacat gaacatgtgc atagtggtag gatgccatca gattaaagca 240
 ttgaagtgtt tcattgttac ctgtacctaa tggtttttaa tatatgttaa ttgattgttt 300
 agttaaaatg tcatagttac aatgcaagta aactggatac ttgttctttt gtcagattt 359

<210> 67
 <211> 549
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (76)..(76)
 <223> n is a, c, g, or t

<400> 67
 aaactactaa ccaactgcaag ctcttgtaa attttagttt aattggcatt gcttgttttt 60
 tgaaactgaa attacntgag tttcattttt tctttgaatt tatagggttt agatttctga 120
 aagcagcatg aatatatcac ctaacatcct gacaataaat tccatccgtt gttttttttg 180
 tttgtttgtt ttttcttttc ctttaagtaa gctctttatt catcttatgg tgcagcaatt 240
 ttaaaatttg aaatatattta aattgttttt gaactttttg tgtaaaatat atcagatctc 300
 aacattgttg gtttcttttg tttttcattt tgtacaactt tcttgaattt agaaattaca 360
 tctttgcagt tctgttaggt gctctgtaat taacctgact tatatgtgaa caattttcat 420
 gagacagtca tttttaacta atgcagtgat tctttctcac tactatctgt attgtggaat 480
 gcacaaaatt gtgtagggtgc tgaatgctgt aaggagttta ggttgatga attctacaac 540
 cctataata 549

<210> 68
 <211> 533

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 68
 tgcaatcatt gatgtgcctg tccccagttt ctctgatagt gaccctgcag caattattca 60
 tgactttgaa aagggaaatga ctgcttacct ggacttggtg ctggggaact gctatctgat 120
 gcccctcaat acttctattg ttatgcctcc aaaaaatctg gtagagctct ttggcaaact 180
 ggcgagtggc agatatctgc ctcaaactta tgtgggttcga gaagacctag ttgctgtgga 240
 ggaaattcgt gatgttagta accttggcat ctttatttac caactttgca ataacagaaa 300
 gtccttccgc cttcgtcgca gagacctctt gctgggtttc aacaaacgtg ccattgataa 360
 atgctggaag attagacact tccccaacga atttattggt gagaccaaga tctgtcaaga 420
 gtaagaggca acagatagag tgtccttggt aataagaagt cagagattta caatatgact 480
 ttaacattaa ggtttatggg atactcaaga tattttactca tgcatttact cta 533

<210> 69
<211> 508
<212> DNA
<213> human

<400> 69
 aagtgttgca cagtcttcca gcagttcggc agtatctggt ttactctat gaatgccggt 60
 actctgtttt cttccaatca ttagcgggtg tggaacagga aatgaaaaag gactggcttt 120
 ttgcccctca ttatcgatac tatgtaagag aaatgagaat tcatgcatac agtcagctgc 180
 tggaatcata taggtcatta acccttggct atatggcaga agcgtttggt gttggtgtgg 240
 aattcattga tcaggaactg tccaggttta ttgctgccgg gagactacac tgcaaaatag 300
 ataaagtga tgaatatagta gaaaccaaca gacctgatag caagaactgg cagtaccaag 360
 aaactatcaa gaaaggagat ctgctactaa acagagttca aaaactttcc agagtaatta 420
 atatgtaaag ccatgtaact aacaaaggat ttgctttaga gataattatt tggaattttt 480
 atagcttact tcacaatgtg cccagggtc 508

<210> 70
<211> 430
<212> DNA
<213> human

<400> 70
 gtgatgaccg ctgctggaac gggatggcca gaggccggta cctccccgag gtcatgggtg 60
 acggcctggc caaccagatc aacaaccccg aggtggaggt ggacatcacc aagccggaca 120
 tgaccatccg gcagcagatc atgcagctga agatcatgac caaccggctg cgcagcgctt 180
 acaacggcaa cgacgtggac ttccaggacg ccagtgacga cggcagcggc tcgggcagcg 240
 gtgatggctg tctggatgac ctctgcggcc ggaaggctcag caggaagagc tccagctccc 300

VDX5009WOPCT.11.30.ST25.txt

ggacgccctt gacccatgcc ctcccaggcc tgtcagagca ggaaggacag aagacctcgg 360
 ctgccagctg cccccagccc ccgaccttcc tcctgcccct cctcctcttc ctggccctta 420
 cagtagccag 430

<210> 71
 <211> 363
 <212> DNA
 <213> human

<400> 71
 gtcccgca gtaggacggag gtccccggtt gctggtcagg tcccatggc ttgttctctg 60
 gaacctgact ttagatgttt tgggatcagg agcccccaac acaggcaagt ccaccccata 120
 ataacctgc cagtgccagg gtgggctggg gactctggca cagtgatgcc gggcgccagg 180
 acagcagcac tcccgctgca cacagacggc ctaggggtgg cgctcagacc ccacctacg 240
 ctcatctctg gaagggggcag ccctgagtgg tctactgtca gggcagtggc caagcctgct 300
 gtgtccttcc tccacaaggt cccccaccg ctcagtgtca gcgggtgacg tgtgttcttt 360
 tga 363

<210> 72
 <211> 464
 <212> DNA
 <213> human

<400> 72
 ctacccttat gatgacccat tttccctcat gaccgatccc aagctcatca tttggagccc 60
 tgtgcgccgc tcagatgtgg cctggaactt tgagaagttc ctcatagggc cggagggaga 120
 gcccttccga cgctacagcc gcaccttccc aaccatcaac attgagcctg acatcaagcg 180
 cctccttaaa gttgccatat agatgtgaac tgctcaacac acagatctcc tactccatcc 240
 agtcctgagg agccttagga tgcagcatgc cttcaggaga cactgctgga cctcagcatt 300
 cccttgatat cagtcccctt cactgcagag ccttgccctt cccctctgcc tgtttctttt 360
 tcctctccca accctctggt tgggtattca acttgggctc caagacttgg gtaagctctg 420
 ggccttcaca gaatgatggc accttcctaa accctcatgg gtgg 464

<210> 73
 <211> 380
 <212> DNA
 <213> human

<400> 73
 gaaggaagag gcacgtgctc ctgagagcag ccggagggag gggggagggtc ggaggtcgtg 60
 gaggtgggtt gtgtatctta ctggtctgaa gggaccaagt gtgtttgttg tttgttttgt 120
 atcttgtttt tctgatcgga gcatcactac tgacctgttg taggcagcta tcttacagac 180

VDX5009WOPCT.11.30.ST25.txt

gcatgaatgt aagagtagga aggggtgggt gtcagggatc acttgggatc tttgacactt 240
 gaaaaattac acctggcagc tgcgtttaag ctttcccca tcgtgtactg cagagttgag 300
 ctggcagggg aggggctgag aggggtggggg ctggaacccc tccccgggag gagtgccatc 360
 tgggtcttcc atctagaact 380

<210> 74
 <211> 529
 <212> DNA
 <213> human

<400> 74
 gagaggacca accagaattc cctttggaca tttgtgtttt tttgtttttt tattttgttt 60
 tgttttttct tcttcttctt cttccttaaa gacatttaag ctaaaggcaa ctcgtaccca 120
 aatttccaag acacaaacat gacctatcca agcgcattac ccacttgtgg ccaatcagtg 180
 gccaggccaa ccttggctaa atggagcagc gaaatcaacg agaaactgga ctttttaaac 240
 cctcttcaga gcaagcgtgg aggatgatgg agaatcgtgt gatcagtggtg ctaaattctct 300
 ctgcctgttt ggactttgta attatttttt tagcagtaat taaagaaaaa agtcctctgt 360
 gaggaatatt ctctatttta aatattttta gtatgtactg tgtatgattc attaccattt 420
 tgaggggatt tatacatatt tttagataaa attaaatgct cttatttttc caacagctaa 480
 actactctta gttgaacagt gtgccctagc ttttcttgca accagagta 529

<210> 75
 <211> 510
 <212> DNA
 <213> human

<400> 75
 agagcagatt tccactgcag gcaccgaagc ctcggggaca ggcaatatga agttcatgct 60
 aaatggggcc ctaactatcg ggaccatgga tggggccaat gtggaaatgg cagaagaagc 120
 tggggaagag aacctgttca tctttggcat gaggatagat gatgtggctg ctttggacaa 180
 gaaagggtag gaggcaaaaag aatactatga ggcacttcca gagctgaagc tggtcattga 240
 tcaaattgac aatggctttt tttctcccaa gcagcctgac ctcttcaaag atatcatcaa 300
 catgctattt tatcatgaca ggttttaaagt ctttgagac tacgaagcct atgtcaagt 360
 tcaagataaa gtgagtcagc tgtacatgaa tccaaaggcc tggaacacaa tggactcaa 420
 aaacatagct gcctcgggga aattctccag tgaccgaaca attaaagaat atgccccaaa 480
 catctggaac gtggaacctt cagatctaaa 510

<210> 76
 <211> 335
 <212> DNA

VDX5009WOPCT.11.30.ST25.txt

<213> human

<400> 76
 gttggtaggc atcactgctc gtaacattcc acgagggccc cagttggctg cccagaactt 60
 gggcatcagc ctggccaact tgttgctgag caaaggagcc aaaaacatcc tggatgttgc 120
 acggcagctt aacgatgccc attaactggt ttgtggggca cagatgcctg ggttgctgct 180
 gtccagtgcc tacatcccgg gcctcagtgc cccattctca ctgctatctg gggagtgatt 240
 accccgggag actgaactgc agggttcaag ccttcaggga atttgcctca ccttggggcc 300
 ttgatgactg ccttgccctc tcagtatgtg ggggc 335

<210> 77
 <211> 479
 <212> DNA
 <213> human

<400> 77
 caaaggacag gcggagaccg gccgtcatac gcgagcctca tgaaagaaag atccttgcac 60
 tgctggatgc tctgagtacg gtgcatagtc agaagatgaa gaaggccaag gagcagcggc 120
 acctgcacaa taaagagcac ttcagagcca agcagaagga ggaggaggag aagctgaagc 180
 ggcagaagga cctcaggaag aagctcttca gaattcaggg gcagaaggaa agaagaaacc 240
 agaagtccag tttgaagggg gctgagggcc aattgcagtg agcctttgga ctggaggggac 300
 tgtccctgga tctgcgagg tagacagttt caaacatcac agtttgaatg cctgtgaatg 360
 acacgtcagt gggaaagagc tcaagagatg tctctactca aactgtgcct gcaggaggag 420
 gaacagagaa gcctgggctg ctgggactgg gttcattctc atgacttggg gctgtcgag 479

<210> 78
 <211> 542
 <212> DNA
 <213> human

<400> 78
 gcagccacct acaagtatgt gaacatgcag gatccccgaga tggacatgaa gtcagtgact 60
 gaccgggcag cccgcaccct gctgtggact gagctcttcc gaggcctggg catgaccctg 120
 agctacctgt tccgggaacc ggccaccatc aactaccgt tcgagaaggg cccgctgagc 180
 cctcgcttcc gtggggagca tgcgctgcgc cggtacccat ccggggagga gcgttgcat 240
 gcctgcaagc tctgcgaggc catctgcccc gccaggcca tcaccatcga ggctgagcca 300
 agagctgatg gcagccgccg gaccaccgc tatgacatcg acatgacca gtgcatctac 360
 tgcggcttct gccaggaggc ctgtcccgtg gatgccatcg tcgagggccc caactttgag 420
 ttctccacgg agacccatga ggagctgctg tacaacaagg agaagttgct caacaacggg 480
 gacaagtggg aggccgagat cgccgccaac atccaggctg actacttgta tcggtgacgc 540

VDX5009WOPCT.11.30.ST25.txt

cc

542

<210> 79
 <211> 444
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (368)..(368)
 <223> n is a, c, g, or t

<400> 79
 gaagtggagt ctcacgacct ctcagaataa ggtgtcacct ccctgaaatt gcatatatgt 60
 atatagacat gcacacgtgt gcatttggtt gtatacatat atttgtcctt cgtatagcaa 120
 gttttttgct catcagcaga gagcaacaga tgttttattg agtgaagcct taaaaagcac 180
 acaccacaca cagctaactg ccaaaataca ttgaccgtag tagctgttca actcctagta 240
 cttagaaata cacgtatggt taatgttcag tccaacaaac cacacacagt aaatgtttat 300
 taatagtcac ggttcgtatt ttaggtgact gaaattgcaa cagtgatcat aatgaggttt 360
 gttaaaanga tagctatatt caaaatgtct atatgtttat ttggactttt gaggttaaag 420
 acagtcatat aaacgtcctg tttc 444

<210> 80
 <211> 444
 <212> DNA
 <213> human

<400> 80
 gggaggcctt atagatgtgc ttgggggaaa atgaagggga gaaagtagcc atacaggagt 60
 tcaaagaatt ccatgccctt cagattagcc caattaccag aaacatcatg aaagatatat 120
 taaaaactaa ttatttacta cagtgtatct cacttgtctt gtgtgtctga acacacagaa 180
 gctaattagc aagtttttaa gaagtattta aaaatcttac taggattgac attttttctg 240
 aattctgtat aaatagctta tagtgagaag tactgtgctc aaattttaca tttttttcct 300
 ttgcaaattc tgtaatttca ctcaacgatt aagtctacca aagaacacac tgcattgtaa 360
 agatgtatta caatctcaaa gccagtaaaa gaaatcttgc ttactgttgc acctgctaca 420
 agtaagagtt tgggtgctggt agaa 444

<210> 81
 <211> 435
 <212> DNA
 <213> human

<400> 81
 cacgctggct gctaaggcg acttggtgtt caccgccatc ttcatgggg ctgtggcggc 60

VDX5009WOPCT.11.30.ST25.txt

```

catgactggc tactggttgt cagagcgcag tgaccgtgtg ctggagggct tcatctaggg 120
cagataatcg cggccaccac ctgtaggacc tcctcccacc cacgctgccc ccagagcttg 180
ggctgccctc ctgctggaca ctcaggacag cttggtttat ttttgagagt ggggtaagca 240
ccccctacctg ctttacagag cagcccaggt acccaggccc gggcagacaa ggcccctggg 300
gtaaaaagta gccctgaagg tggataccat gagctcttca cctggcgggg actggcaggc 360
ttcacaatgt gtgaatttca aaagtttttc cttaatggtg gctgctagag ctttggcccc 420
tgcttaggat taggt 435

```

```

<210> 82
<211> 319
<212> DNA
<213> human

```

```

<400> 82
gagatagctc gcattcagac tacctactaa caatatctgt taaaacatca gctggaccaa 60
ctaattcttcg aatcgaatac caagacggaa aattcagatt ggactctatc atatgtgtca 120
aatccaagct taaacaattt gacagtgtgg ttcatctgat cgactactat gttcagatgt 180
gcaaggataa gcggacaggt ccagaagccc cccggaacgg cactgttcac ctttatctga 240
ccaaaccgct ctacacgtca gcaccatctc tgcagcatct ctgtaggctc accattaaca 300
aatgtaccgg tgccatctg 319

```

```

<210> 83
<211> 533
<212> DNA
<213> human

```

```

<220>
<221> misc_feature
<222> (36)..(36)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (245)..(245)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (249)..(250)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (393)..(393)
<223> n is a, c, g, or t

```

```

<400> 83
tatgcacacc atcaaatagt ttctgtactt tttatngggg aaaaatggaa ttgaacagca 60

```

VDX5009WOPCT.11.30.ST25.txt

```

acctcaacat aagatTTTTT ttctagtagc ctcccactga ttaaagaagc aagtttgagg 120
tttcatcctt caaaaggggg ttccgagaga gcaccgtagg gcttttctca aatagaaaag 180
ccagatTTTg aaaaaTTTT aaagataaaa taggacatat ttgcagata tatatatata 240
tatanacann aacacatctc caggtataga gaaccatcca gatgttctact ttgaaaata 300
tctaattgatg caaagtTTTT ttcttgaact tggacactga tgccatcaaa caattaacaa 360
atatatttaa gtactaaagg tgattTTTT tttaaagact ttttcaaatt gtcaaattgat 420
ttaatgcaga tgaacatatt tctattttta gtaacgggaa tctgtaagaa tgtttgcttg 480
agatatgggt aactTTTTTC ttttgttggg tttgacttag atggacacca tga 533

```

<210> 84
 <211> 479
 <212> DNA
 <213> human

```

<400> 84
gattcgacgc ttggaacttg agaggattca ggcagaagaa agtgtgaaaa ccttgtctag 60
agaaacaatt gaataataaga aagtactgga tgaacagata caagaaaggg agaattcaaa 120
gaatgaggaa tcaaagcaca atcaagaact gacatctcag ttgttagctg cagaaaataa 180
atgcaatcta ttagaaaaac aattggaata catgcgaaat atgataaagc atgccgaaat 240
ggagaggaca tctgtcttag agaaacaagt ttccctagaa agagaacgac aacatgatca 300
aacacatgtt cagagccaac ttgaaaaatt ggatcttctt gaacaggagt ataacaaact 360
taccacaatg caggcccttg cagaaaaaaa aatgcaagag ttggaagcaa aactccatga 420
agaagaacag gaaaggaaac gcatgcaagc taaggcagct gagttgcaga ctggtctag 479

```

<210> 85
 <211> 325
 <212> DNA
 <213> human

```

<400> 85
actagtactt agttgccaca ctcatgctta catagaaaga gagcccaaga atattagatt 60
tcctcatgat acaagatact acagtaacag gctttaattt aggatcctta agattttggg 120
gtattatttg tgactctcct gaaattgtaa acttgtgctt ctgtgtccag ttttctaattg 180
agtaggttcg tagcttgatt gaattaataa ttgtgagccc atagacacaa gggaagttag 240
aaacagtgct ctggtgacat gataaatata tgtgtcaacc accatttcag ctattaaaaa 300
ctcctgttat ctccttgttt gaatt 325

```

<210> 86
 <211> 442
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 86
 ttctccgatg tctaactctt tgtgccttga gctcctttat gtttgggtgg catgttcatg 60
 aaaaagccat acttctagca attctcccaa tgagcctttt gtctgtggga aaagcaggag 120
 acgcttcgat ttttctgatt ctgaccacaa caggacatta ttccctcttt cctctgctct 180
 tcactgcacc agaacttccc attaaaatct tactcatggt actattcacc atatatagta 240
 tttcgtcact gaagacttta ttcagaaaag aaaaacctct ttttaattgg atggaaactt 300
 tctacctgct tggcctgggg cctctggaag tctgctgtga atttgtattc ctttcacct 360
 cctggaaggt gaagtacccc ttcattccctt tgttactaac ctgagtgtat tgtgcagtag 420
 gcgtcacata tgcttggttc aa 442

<210> 87
 <211> 555
 <212> DNA
 <213> human

<400> 87
 gactcctaac caaccagatg gactgccaga caggcagaca tcagtccaca tggaatcctg 60
 acatcccagc cagccggcca gactctcatc ttgatgtctt gatggatgga ccccagctag 120
 tcagacatga tcctccagat tgacagacaa gtcccccaaa tgagtacaca tctccagcta 180
 ttcagacaga tggagcccca gcaaatacagg acctatctag gcagaccca gccagacccc 240
 cgccagacag actcccaacc agactgaccc cttgctgttc acacagcctg ccgagtagct 300
 gggactacag gtctaatttt tttttttttt aagaaatgag tttttgccat gttgcccaga 360
 ctggtcttga actcccaacc tcaagcaatc ctctgcctc agcctcccaa agtgctgaga 420
 ttacaggtgt gagccaccag gctcagcccc ctaagatttg aaacacttta aatggcccat 480
 ggtaggggtc ctgctaggat aaaacattaa gtggctgtta aaagaaataa aaggaggaca 540
 cgtctctgtg caaaa 555

<210> 88
 <211> 547
 <212> DNA
 <213> human

<400> 88
 agaaggagac cctgcagtag ttccagaccc tcaaggccgt ggaccccatg cgggcaacgt 60
 atctggatga cctgcgcagc aagttcttgc tggagaatag cgtgctcaag atggagtatg 120
 ccgaggtgct tgtgctgcac ctggctcaca aggatctgac agtgctctgc catctggaac 180
 agctgctctt ggtcacccat cttgacttgt cacacaatcg cctccgaacc ctgccacctg 240
 cactggctgc cctgcgctgc cttgaggtgc tgcaggccag tgataatgca atagagtccc 300
 tggacggcgt caccaaccta ccccggtgctc aggagctgct actgtgcaac aaccgcctcc 360

VDX5009WOPCT.11.30.ST25.txt

agcagcctgc agtgctccag cctcttgccct cctgccccag gctggctcctc ctcaacctgc 420
 agggtaaccc gctgtgccaa gcggtgggca tcttgagca actggctgaa ctgctgcctt 480
 cagtttagcag cgtcctcacc taagaggccc tgccccctac ccttgccctt taacttattg 540
 ggactga 547

<210> 89
 <211> 460
 <212> DNA
 <213> human

<400> 89
 gggatactga gggcagtcct gtggctgagg ggcacagatt gaactgctga actagttgga 60
 ggtctagatg aggtgcttta cgcacagct gccttagaca gcttctagaa aggagcgagc 120
 gctacttctt aagtacttaa gtgacattta gataatttat agtaaaactg aaattattat 180
 tagccaatgc attggtgcat agaatttact agggctactt ctggaagccc ccaatagaat 240
 agcatttcca tgtgcattaa atactttgcc agcactgcct ttgccagcat cctaaatctg 300
 gagttttacc aagaaggaaa ctgtatcttt aggttaatcc aagctatgca tttcatatag 360
 ctttttcatt taaaacaagg caaagaaaca aattcctatg accaaattgc ttgcctacag 420
 ttccctgcag taattgtatg atctcaccca gtgtgcaatt 460

<210> 90
 <211> 485
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (53)..(53)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (171)..(171)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (174)..(174)
 <223> n is a, c, g, or t

<400> 90
 tttgttccac gtcaagttct ggccttctga tgcaaagca aaggaaactta gtntgttatg 60
 aaccagggtt gatgacagac cagtccttgt ggaataagat tccctttaa aactctttag 120
 ccagtcgtga catcaaccct agacctgtct gccttggcat ttgctgtcaa natntgctgg 180
 gctatgtagg caggttaatc ctccacttct catgtggttg aaccagtgtg ttttttgga 240

VDX5009WOPCT.11.30.ST25.txt

aaatggtgat tgtagataag attagttccc tgatcccctg ccccctgtcc cctgcctctt 300
 ttcccaattc ccttccttat gctggacttt taaagcttaa aaaaaatccg attgaatata 360
 aatgcctaatt ttcattcttt tgtgaaatgg ttgcttcctc ctgattccct aattgtgctg 420
 tgttcgtgtc ttgactgga attcaacatt ccttctcct tttgtactgt gttgtgcttg 480
 ctgtc 485

<210> 91
 <211> 435
 <212> DNA
 <213> human

<400> 91
 caacgtctaa ctggacttcc caagataaat ggtaccagcg tcctcttaaa agatgcctta 60
 atccattcct tgaggacaga ccttagttga aatgatagca gaatgtgctt ctctctggca 120
 gctggccttc tgcttctgag ttgcacatta atcagattag cctgattctc ttcagtgaat 180
 tttgataatg gcttccagac tctttgcgtt ggagacgcct gttaggatct tcaagtccca 240
 tcatagaaaa ttgaaacaca gagttgttct gctgatagtt ttggggatac gtccatcttt 300
 ttaagggatt gctttcatct aattctggca ggacctcacc aaaagatcca gcctcatacc 360
 tacatcagac aaaatatcgc cgttgttcct tctgtactaa agtattgtgt tttgctttgg 420
 aaacacccac tcact 435

<210> 92
 <211> 394
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (284)..(284)
 <223> n is a, c, g, or t

<400> 92
 tccccaaaat gattccaata gacaacaaag ttgaggaacc actggcacat cccaagctaa 60
 gatacaaggt taaatggcct ttttaagtat gtcatactgg atcttttaaat aaagcaaggc 120
 ttttgttaca ctttgtcatg ttattaaaag cagacctttg ggctgtttta ccgtgtaaca 180
 aaaatgccac gtgaaaaata aaaattttta ttgtatagca attctctata aatagtagat 240
 aatctaagtc cttatcttct gatggctctt gttccactat taanattgtt ttttaattttt 300
 aaaatcctat cagcagcctc ctaattagca gtgttaggaa tttgccttat gttttccatc 360
 tcattctctg aacctgttat tctgagaact cata 394

<210> 93
 <211> 416

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 93
gattggtatg gccttagctc ttagccaaac accttcctga caccatgagg gccagcagct 60
tcttgatcgt ggtggtgttc ctcatcgtg ggacgctggt tctagaggca gctgtcacgg 120
gagttcctgt taaagggtcaa gacactgtca aaggccgtgt tccattcaat ggacaagatc 180
ccgttaaagg acaagtttca gttaaagggtc aagataaagt caaagcgcaa gagccagtca 240
aagggtccagt ctccactaag cctggctcct gcccattat cttgatccgg tgcgccatgt 300
tgaatcccc taaccgctgc ttgaaagata ctgactgccc aggaatcaag aagtgtctgtg 360
aaggctcttg cgggatggcc tgtttcgttc cccagtgaag ggagccggtc cttgct 416

<210> 94
<211> 437
<212> DNA
<213> human

<400> 94
tggcactcgg tggcagtcac cataaaacaa cacatcctgc acctggaact ggacacagac 60
agtagctaca cagctggaca gatccccctc ccacctgcca gcactcaaga gccactacac 120
cttgagggtg ctccagccaa tttgacgaca ctgaggatcc ctgtgtggaa atcattcttt 180
ggctgtctga ggaatattca tgtcaatcac atccctgtcc ctgtcactga agccttggaa 240
gtccaggggc ctgtcagtct gaatggttgt cctgaccagt aaccaagcc tatttcacag 300
caaggaaaatt caccttcaaa agcactgatt acccaatgca cctccctccc cagctcgaga 360
tcattcttca attaggacac aaaccagaca ggtttaatag cgaatctaatt tttgaattct 420
gaccatggat acccatc 437

<210> 95
<211> 466
<212> DNA
<213> human

<400> 95
tgccagtatg acccacttgg actcaccccc tcttggggag ggagttcttg gcctggccag 60
gtctgagatg aggccatgcc cctggctgct cttatggagc cgagatccag tcagggtggg 120
ggcgtggag ccgtgggagc ccggccaggg cagggggctc gtcgctgttg cccccctct 180
ctgccagcac caagagatta tttaatgggc tatttaatta aggggtagga aggtgctgtg 240
ggctgggtccc acacatccag gaaagaggcc agtagagaat tctgcccact tttataaaa 300
acttacagcg atggccccac caaggcctag acacggcact ggccctccag gagggcaggg 360
gcattgggaa tgggtgggtg ccctccagag aggggctgct acctccagc aggcattggga 420
agagcactgg tgtgggggtt ccaccgagaa ggggacctca tctaga 466

VDX5009WOPCT.11.30.ST25.txt

<210> 96
 <211> 443
 <212> DNA
 <213> human

<400> 96
 aggaatctca gtcacaccaa accaaccctt tcatttcctg ctctctcccc tcttttgtga 60
 agaaagcggg tccagatgtg attcaaacaa ctgtacggag tggcatatta gaattgccct 120
 aaactgaact gcaaataatt atgtgtgtat gtatatgtgt gggaaagaga atgtactgta 180
 tatgtgtatg ttatacagac atatacacat acatacattg acccacagga cattgtaaaa 240
 tattatcaca tgacatctta agtagaaata agtagggact ttattccat cttttttttc 300
 acgtttacat ttttaattatt acaagttgct cctgccccct ccctgaacta ttttgtgctg 360
 tgtatatcac tgctttatat aagttatttt ttaaggtgaa ctcatatgtt atggttttgt 420
 atatgtctgc aatcatggat agg 443

<210> 97
 <211> 460
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (57)..(59)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (183)..(183)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (303)..(303)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (305)..(305)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (316)..(316)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (389)..(389)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature

VDX5009WOPCT.11.30.ST25.txt

<222> (404)..(404)

<223> n is a, c, g, or t

<400> 97

```

gaagctgaac tgggccttca atatgtatga cctggatggt gatggcaaga tcacccnnnt      60
ggagatgctg gagatcatcg aggctatcta caaaatggta ggcactgtga tcatgatgaa      120
aatgaatgag gatggcctga cgcctgagca gcgagtagac aagattttca gcaagatgga      180
tangaacaaa gatgaccaga ttacactggg tgaattcaga gaagctgcaa agagcgaccc      240
ttccattgta ttactttctcc agtgcgacat ccagaaatga gctgatgtca atgctatggg      300
ctnnccccaa gtctcnatgt tccattcagt ctgcagctat tcacacacac acacacacac      360
acacacacac acacacacac acacacacnc aaatattgct tggntacct ataaatggac      420
ttgcttcttg tgtttgaaac actcgtgtgc atgagaatgt                               460

```

<210> 98

<211> 412

<212> DNA

<213> human

<220>

<221> misc_feature

<222> (258)..(258)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (273)..(273)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (314)..(314)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (319)..(319)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (325)..(325)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (363)..(363)

<223> n is a, c, g, or t

<400> 98

```

tcacacagtc accgagagcc gggctctcca gaacaccagg caccggttcc tactgcgct      60
gaagtatgcc ttccagaccc acgaccgcct gtgctttgtg atggagtatg ccaacggggg      120
tgagctgttc ttccacctgt cccgggagcg tgtcttcaca gaggagcggg cccggtttta      180

```

VDX5009WOPCT.11.30.ST25.txt

tggtgcagag attgtctcgg ctcttgagta cttgcactcg cgggacgtgg tataaccgca	240
catcaagctg gaaaaccntc atgctggaca aangatggcc acatcaagat cactgacttt	300
ggcctctgca aagnagggnc atcangtgac ggggccacca tgaaaacctt ctgtgggacc	360
ccnggagtac ctggcgcctg aggtgctgga ggacaatgac tatggccggg cc	412

<210> 99
 <211> 488
 <212> DNA
 <213> human

<400> 99	
ttcccatct gggccttcat aaaatgcagg ggaagccaga ctggtctcag gagcgctaaa	60
gcccttccgt ggggggtcgt ctttctggga ctagccctgc tgtttaggac ctgggaccac	120
aatggggtac ctgccgaggg ggtccccaag agatccaggc tgtcatgtga tttatggtgg	180
catgtgttgt gtatttgttg gctacttgtg tcttgaaatc tagaattatt tcacgcagaa	240
ttgtcactgt ttgtcaggaa gagaaaatgg gctagtggaa gcccagtctt gagttcttgt	300
cttgttacca tttaaaattg acatttaatt ttcaaatac tgttggtgcc taatcactta	360
agttattaat ttattctgtt gtattctttt ttttaaattg taacatattt atccggtggg	420
tgggacagga gtgtgttcaa gtgggtcatg tttttgctgt ggtgacacat ggtacaggct	480
tggagctt	488

<210> 100
 <211> 558
 <212> DNA
 <213> human

<400> 100	
ttttgcctc tgtgagttca tctgatgatt gagcagtagc atttgccttt tgggtttttt	60
gtttgttatt atagaagaga tgacttctgc tgattttgct ttagaatggg taccttagaa	120
gaatttggtt ggctcatgtt gaatttcact tctgcaatag ctttcatttt ctcataggct	180
ttataagaga tgggttcagt ggtatgagca gaggaagaga tcccagatag tagccagtta	240
accaagactc attcatatag cacgtagttt atgttcttga ggcagcactt ttagatcctt	300
tgtgagcaag ttctatttgt tcattgcttg ccagagatga acacagaatg ttctgtttca	360
ttttacaaga actatcctga gtttctgttg atggaaacat tacatgtaat gcagatatag	420
tgaacactgg aaagatttat taaagaatta tatttgtgta tactttataa attagtccct	480
cattagattt ttttttctta agcataagac tgaacttaaa tgtgttaatt ttagtagaat	540
caggcactgc tcgcagaa	558

<210> 101

VDX5009WOPCT.11.30.ST25.txt

<211> 444
 <212> DNA
 <213> human

<400> 101
 gagccctgat tgatatgtat atagaaggta tagcagattt gggtgaaatg atcctccttc 60
 tgcccgtatg tccacctgag gaaaaagatg ccaagcttgc cttgatcaag gagaaaataa 120
 aaaatcgcta cttccctgcc ttgaaaaag tcttaaagag ccatggacaa gactaccttg 180
 ttggcaacaa gctgagccgg gctgacattc atctggtgga acttctctac tacgtcgagg 240
 agcttgactc cagtcttata tccagcttcc ctctgctgaa ggccctgaaa accagaatca 300
 gcaacctgcc cacagtgaag aagtttctac agcctggcag cccaaggaag cctcccatgg 360
 atgagaaatc tttagaagaa gcaaggaaga ttttcaggtt ttaataacgc agtcatggag 420
 gccaagaact tgcaatacca atgt 444

<210> 102
 <211> 372
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (57)..(57)
 <223> n is a, c, g, or t

<400> 102
 cagccatgtc catgggcctg gagatcacgg gcaccgcgct ggccgtgctg ggctggncctg 60
 ggcaccatcg tgtgctgcgc gttgcccattg tggcgctgtg cggccttcat cggcagcaac 120
 atcatcacgt cgcagaacat ctgggagggc ctgtggatga actgcgtggt gcagagcacc 180
 ggccagatgc agtgcaagggt gtacgactcg ctgctggcac tgccacagga ctttcaggcg 240
 gcccgcgccc tcatcgtggt ggccatcctg ctggccgcct tcgggctgct agtggcgctg 300
 gtgggcgccc agtgcaccaa ctgcgtgcag gacgacacgg ccaaggccaa gatcaccatc 360
 gtggcaggcg tg 372

<210> 103
 <211> 471
 <212> DNA
 <213> human

<400> 103
 gtggaccgcg tggactatga cagacagtcc gggagtgcag tcatcacgtt tgtggagatt 60
 ggagtggctg acaagatttt gaaaaagaaa gaataccctc tttatataaa tcaaacctgc 120
 catagagtta ctgtttctcc atacacagaa atacacttga aaaagtatca gatattttca 180
 ggaacatcta agaggacagt gcttctgaca ggaatggaag gcattcaaatt ggatgaagaa 240

VDX5009WOPCT.11.30.ST25.txt

attgtggagg atttaattaa cattcacttt caacgggcaa agaatggagg tggagaagta 300
 gatgtgggtca agtgtttctt aggtcaacct cacatagcat actttgaaga atagacttaa 360
 cagaatcatg aaaactatag ctttttaacc cggattactg taaatgtttg acaagaatga 420
 atatgctttt ccttaaaaaa tgaaaacttt aatttttacc atccatttat g 471

<210> 104
 <211> 537
 <212> DNA
 <213> human

<400> 104
 atttacctgg tatctacatc cttacctgca ttggaaaatg tttgctacct cacaacaacc 60
 atttgccctcc tttaagaaca ctgatgggct gcactttttg gatagaaata gaatttgatt 120
 tcagaatgta tgcttggtga gtctcagtgc ccaggaacac ttttgggaata atttatcaga 180
 cattgaactt ctgtgattaa tcgctttttat agatttactc agtctttaaa attcgtctct 240
 gatttgccag agaaaaacgg tggtagccat ggaaatcggg agtgaaggag cactgcttca 300
 ttgtggctca gcccttccta ggggcctctg ccctttgatg tccttgagct actcttcagc 360
 tctggaagtt gtggacaaac cgtaggaatg tatgtgtgcg tgtgggtggag tgattgtctg 420
 tgaatgacag gccctggcta ttgattgatg ttgcatcaat ttagcaaatt catttcctca 480
 ttcttgatgg cctgaatata tgtctgcact ttaatgctc ctcttaacca gttgtaa 537

<210> 105
 <211> 390
 <212> DNA
 <213> human

<400> 105
 gaagggtgtg ttttcatttc tcagtcacca acagatgaat aattatgctt aataataaag 60
 tattttattaa gactttcttc agagtatgaa agtacaaaaa gtctagttac agtggattta 120
 gaatatatatt atgttgatgt caaacagctg agcaccgtag catgcagatg tcaaggcagt 180
 taggaagtaa atgggtgtctt gtagatatgt gcaaggtagc atgatgagca acttgagttt 240
 gttgccactg agaagcaggc ggggtgggtg ggaggaggaa gaaaggggaag aattaggttt 300
 gaattgcttt ttaaaaaaaa aagaaaagaa aaagacagca tctcactatg ttgccaaggc 360
 tcactcttgag aagcaggcgg gttgggtggg 390

<210> 106
 <211> 515
 <212> DNA
 <213> human

<220>
 <221> misc_feature

VDX5009WOPCT.11.30.ST25.txt

<222> (89)..(89)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (110)..(110)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (227)..(227)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (250)..(250)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (276)..(276)
 <223> n is a, c, g, or t

<400> 106
 aattgccaca ttttcttatg gcattaaaaa ttttacaaaa acataatddd aatggctata 60
 ttatatcca tttaatggat gcaactcang tttatttaac cattcccatn gttgttaact 120
 atttaggttg tttctaattd tcattattat aaagttgcag aaatttggtg tacataaaac 180
 tgtctccata taattgatta ttaggatata ttcccatgaa ggattcndtt ttttaaaaaa 240
 atgtgaaatn tcattcttgta cttacacctt tcatgnaaag ggatttcctg cttttgtact 300
 gcatgggttg cagttgtgag gaaaagccag tcaaatgacc tttttacaaa agaaatgcag 360
 tgggtcacttc agttgagagt gactttttta tacaacaaga tcaactagaa gaattcaact 420
 gtctcaagaa tcaaggtacc ccaatatatc tcgcaattcc aaactttggt tgagggactc 480
 gttatccagc tcttggttagc cacacctgca atgta 515

<210> 107
 <211> 430
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (43)..(44)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (46)..(46)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (120)..(120)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (358)..(358)
 <223> n is a, c, g, or t

<400> 107
 ggggtccatct gtagcaaatg ggttgagtgt gtcagtatgt ggnntnggtt actgtgtatt 60
 cgccaggaat caccgccgata ggctgccacc ctattaggtg atacctgttt aatatgttgn 120
 ccaggtagac tagtagttgc atcagtttgc tgtaacaagt aaccagtga gtaacacagt 180
 ggtgaagcag gtcaggggag gtcaggagga tgtctgagag aaagaagtcc gggagatgaa 240
 tggctgtcta ggaaggagga tgtcagtga cggttagtgt ttgagcagag ggcagacttg 300
 taaagtacct gtagtgaaaa gaatgtggg acccgattag cagaaagggtg tttgcacnta 360
 ctttatacaa aatacagaat actttatatt ggaagtga gaaatgaacg tggactttta 420
 cacatgtgca 430

<210> 108
 <211> 427
 <212> DNA
 <213> human

<400> 108
 aatgagcgcc acctttaggc agatcctctg ctgccagcgc agtgagaacc ccaccggccc 60
 cacagaaagc tcagaccgct cggcttcctc cctcaaccac accatcttgg ctggagttca 120
 cagcaatgac cactctgtgg tttagaacgg aaactgagat gaggaaccag ccgtcctctc 180
 ttggaggata aacagcctcc ccctaccaa ttgccagggc aagggtggggt gtgagagagg 240
 agaaaagtca actcatgtac ttaaacta accaatgaca gtatttggtc ctggacccca 300
 caagacttga tatatattga aaattagctt atgtgacaac cctcatcttg atccccatcc 360
 cttctgaaag taggaagttg gagctcttgc aatggaattc aagaacagac tctggagtgt 420
 ccattta 427

<210> 109
 <211> 414
 <212> DNA
 <213> human

<400> 109
 ggatcagtgcc attactgcct cagacactcc agttgtcctc gtcagcggtg gagctgacct 60
 gcccgtctct gccttagacc caagtcagct tctttgggct gaagagccga cgaacagaac 120
 cactctctac tcaggcactg gcttaagtgt taacagagaa aatgcaaat gtttcacaac 180
 caaagaggag ctggggaaga cagtgacctca gctactgact cctgggctga tgggcgaatc 240
 ttcagaatcc tttagtgcct cagaagatga aggccacagg gaataccaag ccaatgactc 300

VDX5009WOPCT.11.30.ST25.txt

tgactcggac gggcctatct tgtacaccga tgatgaggac gaagacgaag atgaggatgg 360
 cagtggagaa agtgcttttg caagtaaaat acgccggagg gatactcttg ctat 414

<210> 110
 <211> 541
 <212> DNA
 <213> human

<400> 110
 cacctagagt ctgttgtcat ttcactaata ggataagaca aatTTTTtgc tttgaaaaaa 60
 tttttctgca tgcccagggtg tctgtctctg gctgagggtt tgtctatTTt acagtgtttc 120
 aatccagcca taaaaattaa cttgtgattt tttttttccc aaagtcatgc ttttccttaa 180
 ttatatTTTT attttattat tttagtgtct tgagaaaaat accaagagat ataatgtttc 240
 ttttaattgt ctatgcttaa tcattcttaa acactTTTT aatttctaac cacaagacct 300
 ctctataatg gtaaatgtaa gacatcacca ttttatcact caaagtatgt tattgaaagt 360
 ttctatttgg ttgataaaag gaacaatttt tttccacttt tgatgcctgt gatgcaattt 420
 tttattgcct acaatgagat acacttagta caaaaaatga aaatctggta tttcaaaatt 480
 gcatttcttg tataataggt cagatttatt aactactcat actttttctt tacactaatc 540
 g 541

<210> 111
 <211> 306
 <212> DNA
 <213> human

<400> 111
 gaggcccaga taatgagctg agattcagca tcccctggag gagtcggggg ctcagcagaa 60
 cccactgtc cctccccttg gtgctagagg cttgtgtgca cgtgagcgtg cgagtgcacg 120
 tccgttattt cagtgacttg gtcccgtggg tctagccttc ccccctgtgg acaaaccccc 180
 attgtggctc ctgccaccct ggcagatgac tctgtgtggg ggggtggctg tgggcagtga 240
 gcggatgtga ctggcgtctg acccgcccct tgaccaagc ctgtgatgac atgggtgctga 300
 ttctgg 306

<210> 112
 <211> 490
 <212> DNA
 <213> human

<400> 112
 tctggttgcc tatagtgtc tgggatccca ccgagaagaa ccatgggtgg acccgaactc 60
 cccggtgtc ttggaggacc cagtcctttg tgccttggca aaaaagcaca agcgaacccc 120
 agccctgatt gccctgcgt accagctaca gcgtgggggt gtggtcctgg ccaagagcta 180

VDX5009WOPCT.11.30.ST25.txt

caatgagcag cgcatcagac agaacgtgca ggtgtttgaa ttccagttga cttcagagga	240
gatgaaagcc atagatggcc taaacagaaa tgtgcatat ttgacccttg atatTTTTgc	300
tggccccct aattatccat tttctgatga atattaacat ggagggcatt gcatgaggtc	360
tgccagaagg ccctgcgtgt ggatggtgac acagaggatg gctctatgct ggtgactgga	420
cacatcgctt ctggttaaat ctctcctgct tgggtatttc agcaagctac agcaaagccc	480
attggccaga	490

<210> 113
 <211> 491
 <212> DNA
 <213> human

<400> 113 aagcaaatag tgccctcagc tactgcagaa gaaaagtccc actgaggaaa agaaagtctt	60
gtgatTTTTa aaggcaagtt ttcaagtgtc ctcatagttc tctcctctaa ttccattaaa	120
tccatactag gagcgtcagt gagggTTTTc atagctTTTg gaaatacttt ggtctctgaa	180
ctgtaattag caagaagtaa aaacagaaac gtcaaacgtc aaatgTTTgc tttgttacct	240
ggaggactaa atgtagatgt ctttagtata ctttgtatgt tcttaaatat tggaagataa	300
TTTTgtgaat ctgtagattt tTTTTTTca gtcttacctt acaaatttct tttctatgaa	360
taatagagga actcacggca ctctgccact tgttaatgaa aggaagtgca gaggatttag	420
aaaagtacat gatccccaga ccacaacaaa ccaaacata aactcatgtc tgtgtcccat	480
ggtcatagtc a	491

<210> 114
 <211> 503
 <212> DNA
 <213> human

<400> 114 ctctcatgcg tgttttacct tttgatgttc agagtggctc actggctggg agtccttacc	60
tcggggagga gggggagggt gggttccttg ggggccaaag aaggcaggga atgcctggag	120
ggtaactggg gccacatga accccttttc tccagaaaag ctgcttctcc ccccatcccc	180
ggtcccaccc ccaaaccccc agaggtggcc cttgtttaca gtgaggactc ggccactgtg	240
tctctgtttc ctgaaatata aactgtagcg accccagact gtagagattt ttatgtgttt	300
ggaacatctg ctgtgtggaa aaaaaaaaaa actacaaaaa ccctaatttt gtacatactg	360
tatttttact attgaactgt attctagtgg ctgttcatgc tccaagactt tagttaccga	420
gacatgaata ctatccatgt aataagcact tgcctggaat aaaatataaa actgaaataa	480
acctgcactg aaacctgaga tgg	503

VDX5009WOPCT.11.30.ST25.txt

<210> 115
 <211> 379
 <212> DNA
 <213> human

<400> 115
 cctgggtctgc cacagatcca tgatgtgcag ttctctggag caggcgctgg ctgtgctggt 60
 cactaccttc cacaagtact cctgccaaga gggcgacaag ttcaagctga gtaaggggga 120
 aatgaaggaa cttctgcaca aggagctgcc cagctttgtg ggggagaaaag tggatgagga 180
 ggggctgaag aagctgatgg gcagcctgga tgagaacagt gaccagcagg tggacttcca 240
 ggagtatgct gttttcctgg cactcatcac tgtcatgtgc aatgacttct tccagggctg 300
 cccagaccga ccctgaagca gaactcttga cttcctgcca tggatctctt gggcccagga 360
 ctgttgatgc ctttgagtt 379

<210> 116
 <211> 344
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (173)..(173)
 <223> n is a, c, g, or t

<400> 116
 gcgtgttttc ctcttgatcg ggaactcctg cttctccttg cctcgaaatg gacccaact 60
 gctcctgctc gcctgttggc tcctgtgcct gtgccggctc ctgcaaatgc aaagagtgca 120
 aatgcacctc ctgcaagaag agctgctgct cctgctgccc tgtgggctgt gcnaagtgtg 180
 cccagggctg catctgcaaa gggacgtcag acaagtgcag ctgctgtgcc tgatgccagg 240
 acagctgtgc tctcagatgt aaatagagca acctatataa acctggattt tttttttttt 300
 ttttttgtac aaccctgacc cgtttgctac atcttttttt ctat 344

<210> 117
 <211> 512
 <212> DNA
 <213> human

<400> 117
 gagaacgttg ccttatactc tctacttcag atgatgaaca ctgtgtactg tgtgtgcttt 60
 aaagaagttt tatttaattg ctcccttctt cttttccttg ttattcacct ccctgatgcc 120
 tgctttcagt tgagggttgg gggcaatgat gagcatatga attttttctc actctagcaa 180
 ttcccttttc taaatgacac agcattttaa ctcaaacttg gattcagata acagcacctg 240
 cacatcctgc acctcctccc tctcccttca cctcaccctt gcccggccca agctctactt 300
 gtgtacagtg tatattgtat aatagacaat tgtgtctact acatgtttta aaacacattg 360

VDX5009WOPCT.11.30.ST25.txt

cttggtatatt ttgaggcttt taaattaaac aaaaatccaa ctttattttt agttgtaact 420
gcttgaggta tgttttatga attaagtac agatttgta tcctttatta acgtactttg 480
ttggtcagca ctgggctgac aaaaattttt tc 512

<210> 118
<211> 396
<212> DNA
<213> human

<400> 118
attcttctaa ttgctgtgtg tcccaggcag ggagacgggt tccagggagg ggccggccct 60
gtgtgcagggt tccgatgtta ttagatgtta caagtttata tatactata tatataattt 120
attgagtttt tacaagatgt atttggttga gacttaacac ttcttacgca atgcttctag 180
agttttatag cctggactgc tacctttcaa agcttgagg gaagccgtga attcagttgg 240
ttcgttctgt actgttactg ggccctgagt ctgggcagct gtcccttgct tgcctgcagg 300
gccatggctc aggggtgtct cttcttgggg ccagtgcat ggtggccaga ggtgtcaccc 360
aaaccggcag gtgcgatttt gttaaccag cgacga 396

<210> 119
<211> 117
<212> DNA
<213> human

<400> 119
gatttaagat ggataacaaa ctgcagttaa tccctgggggt ctgtggattc cgaatttcaa 60
atcctcccat tttgttggtc tgttccttgc atgctagttt agagatcttt aagcaag 117

<210> 120
<211> 318
<212> DNA
<213> human

<400> 120
ttccacatca gtaactgcc tggggtttgt gctgtacaaa tacaagctcc tgccacggtc 60
ttgaagttct gttcttatgc tctctgctca ctggttttca ataccaccaa gaggaaaata 120
ttgacaagtt taaaggctgt gtcattgggc catgtttaag tgtactggat ttaactacct 180
ttggcttaat tccaatcatt gttaaagtaa aaacaattca aagaatcacc taattaattt 240
cagtaagatc aagctccatc ttatttgcgt gtgtagatca actcatgtta attgatagaa 300
taaagccttg tgatcact 318

<210> 121
<211> 503
<212> DNA
<213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 121
 tatcggctac atatgcagtc tgtgaattat gtaacatact ctatttcttg agggctgcaa 60
 attgctaagt gctcaaaata gagtaagttt taaattgaaa attacataag atttaatgcc 120
 cttcaaatgg ttctatttag ccttgagaat ggttttttga aacttgacca cactaaaatg 180
 tttttttttt ttacgtaga atgtgggata aacttgatga actccaagtt cacagtgatca 240
 tttcttcaga actccccttc attgaatagt gatcatttat taaatgataa attgcactcg 300
 ctgaaagagc acgtcatgaa gcaccatgga atcaaagaga aagatataaa ttcgttccca 360
 cagccttcaa gctgcagtgt ttttagattgc ttcaaaaaat gaaaaagttt tgcctttttc 420
 gatatagtga ctttctttgc atattaaaat gtttaccaca atgtcccatt tctagttaag 480
 tcttcgcact tgaaagctaa cat 503

<210> 122
 <211> 506
 <212> DNA
 <213> human

<400> 122
 actgcacttc gaatgtgtta ccaaggttat ggttaccctt tgatgctgtt cctggaagaa 60
 ggaggagtgg tgacagtctg caaaatcaat acacaggaac ctgaggagac cctggacttt 120
 gattttctgca gcaccaatgt tattaataaa attattctgc agtcagaggg gctccgtgaa 180
 gcattttctg aattggatat gacgagtga gtcctacaaa ttaccatgtc tcctgacaag 240
 ccttattttca ggttatctac ttttggaat gcaggaagtt cccaccttga ctatcccaaa 300
 gattctgatt tgatggaagc atttcattgt aatcagaccc aagtcaacag atacaagatt 360
 tccttactga aacctctac aaaggcatta gtcctatctt gtaaggatc tattcggaca 420
 gataacagag gcttcctttc attacagtat atgattagaa atgaagatgg acaaatatgt 480
 tttgtggaat attactgctg ccctga 506

<210> 123
 <211> 358
 <212> DNA
 <213> human

<400> 123
 gtaaataaaa cactcttcca tatgatattc aacattttac aactgcagta ttcacctaaa 60
 gtagaaataa tctgttactt attgtaaata ctgccctagt gtctccatgg accaaattta 120
 tatttataat tgtagatttt tatattttac tactgagtca agttttctag ttctgtgtaa 180
 ttgttttagtt taatgacgta gttcatttagc tggcttact ctaccagttt tctgacattg 240
 tattgtgtta cctaagtcac taactttggt tcagcatgta attttaactt ttgtggaaaa 300
 tagaaatacc ttcatTTTTga aagaagtttt tatgagaata acaccttacc aaacattg 358

VDX5009WOPCT.11.30.ST25.txt

<210> 124
 <211> 117
 <212> DNA
 <213> human

<400> 124
 gaaaatgtcc atttacacgt atttgaatgg cttcatatc atccacacat gaatctgcac 60
 atctgtaaat ctacacacgg tgcctttatt tccactgtgc aggttcccac ttaaaaa 117

<210> 125
 <211> 357
 <212> DNA
 <213> human

<400> 125
 attaatcagc cccagagtgc tttaaaaaat tctcttaaata aaaaataata gactcgctag 60
 tcagtaaaga tatttgaata tgtatcgtgc cccctccggt gtctttgatc aggatgacat 120
 gtgccatttt tcagaggacg tgcagacagg ctggcattct agattacttt tcttactctg 180
 aaacatggcc tgtttgggag tgcgggattc aaaggtggtc ccaccgctgc ccctactgca 240
 aatggcagtt ttaatcttat cttttggctt ctgcagatgg ttgcaattga tccttaacca 300
 ataatgggtca gtcctcatct ctgtcctgct tcataggtgc caccttgtgt gtttaaa 357

<210> 126
 <211> 553
 <212> DNA
 <213> human

<400> 126
 tgttcaatat aggacacccc agcttgtcct tggctcatcc aagaactctt ctgtatctaa 60
 aacaatacat ctcaatcttg gccaaaggaa aatggactgc tttgctggat tggcactgag 120
 caacttttagg aaatgtcggg ggagtgttca gcaagatcag acagcagtcc aggtcaaagg 180
 caaacacaca cgctccagcc caaatcctcc tgggtggcaca tcctaccca gatgctaaag 240
 tgattcaagg actccaggac acctcttaag agcctttcta agaactgat aggccttactt 300
 ctgctccata ataaagtggg agaaaaaagc cagaatataa cttaagacta gataactgag 360
 tacatgatgg accatTTTTT ttttttttgg ctgggtagag aaatcatata aaacgcaggc 420
 tgtttagcat ggagatgact ctcagaacac tgggagggtc tggcacttga tgggggttag 480
 ttgcttggca gcctgcctgc cactgagggg agtcccatta gagatgtatc accaccttgt 540
 caccaacagg atg 553

<210> 127
 <211> 514
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

```

<400> 127
gctcttggtt tcgatgtgtg tttgtaaagg gaaaattagt actctgctcg actcttggtta 60
acatgaaatt ctgaatgtta ctttatcatg attgcactgc aacttttttc cttaaaataa 120
ctgcttttgt aagaacggtg atattggagt gattagtata aattcaatgg aatttgagaa 180
gcaatggcag cgggataatt tagagtcact gatattacga gaggggtctt tttgtaaacc 240
tccttttcaa tgtcaaagca ccaatttata aaacgctgca gatgtagagg ttatgtgcaa 300
ctgatctgtc cagtttgtgt atgaaatgga tttgataaag tttttgctag ttatttacta 360
cattttggga ttaataagtg atttatatgc atatttttct gtaaacttac agttttttgt 420
acaagatatt ctacaagtta tgaagctaag ggaagaaaat gccaaagata cctctagtta 480
tgttgaacac agccagcaca gtttcgacag gtca 514

```

```

<210> 128
<211> 465
<212> DNA
<213> human

```

```

<400> 128
ttcctcaccc taaaactaag cgtgctgctt ctgcaaaaga tttttgtaga tgagctgtgt 60
gcctcagaat tgctatttca aattgccaaa aatttagaga tgttttctac atatttctgc 120
tcttctgaac aacttctgct acccactaaa taaaaacaca gaaataatta gacaattgtc 180
tattataaca tgacaaccct attaatcatt tggctttcta aaatgggatc atgcccattt 240
agattttcct tactatcagt ttatttttat aacattaact tttactttgt tattttattat 300
tttatataat ggtgagtttt taaattattg ctactgcct atttaatgta gctaataaag 360
ttatagaagc agatgatctg ttaatttcct atctaataaa tgcctttaat tgttctcata 420
atgaagaata agtaggtacc ctccatgccc ttctgtaata aatat 465

```

```

<210> 129
<211> 531
<212> DNA
<213> human

```

```

<220>
<221> misc_feature
<222> (280)..(280)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (367)..(368)
<223> n is a, c, g, or t

```

```

<400> 129
agagggggca agtcacatgg gcagagatag ccgtgtgagc agtctcagct caagctgccc 60

```

VDX5009WOPCT.11.30.ST25.txt

```

cccatttctg taaccctcct agcccccttg atccctaag aaaacaaaca aacaaacaaa 120
aactgttgct atttcctaac ctgcaggcag aacctgaaag ggcatttttg ctccggggca 180
tcctggattt agaacatgga ctacacacaa tacagtggta taaacttttt attctcagtt 240
taaaaatcag tttgtttgtt agaagaaaga ttgctataa gtataatggg aaatgttttg 300
ccatgcttggt ttgtttgcagt tcagacaaat gtaacacaca cacacataca cacacacaca 360
cacacannga gacacatctt aaggggaccc acaagtattg ccctttaaca agacttcaaa 420
gttttctgct gtaaagaaag ctgtaataa tagtaaaact aaatgttgcg tgggtggcat 480
gagttgaaga aggcaaaggc ttgtaaattt acccaatgca gtttggcttt t 531

```

<210> 130
 <211> 418
 <212> DNA
 <213> human

```

<400> 130
ggtgggcaca agtattacac atcagaaaat cctgacaaaa gggacacata gtgtttgtaa 60
caccgtccaa cattccttgt ttgtaagtgt tgtatgtacc gttgatgttg ataaaaagaa 120
agtttatatc ttgattattt tgttgtctaa agctaaacaa aacttgcatt cagcagcttt 180
tgactgtttc cagagtgttt ataataata taactccctg gaaataactg agcactttga 240
atTTTTTTT tgtctaaaat tgtcagttaa tttattattt tgtttgagta agaattttaa 300
tattgccata ttctgtagta tttttctttg tatatttcta gtatggcaca tgatatgagt 360
cactgccttt ttttctatgg tgtatgacag ttagagatgc tgattttttt tctgataa 418

```

<210> 131
 <211> 474
 <212> DNA
 <213> human

```

<400> 131
cagtgatcca ttgcaccttt attccctcag catatgcctg aggcgatctt ttatgctttt 60
aaaaatgttt cccgttgggt tcattggaat ctgcctccta atgatttttt ttcaggaaaa 120
cctgttttgt tttcctcatt caaaagcact ggacagagaa tgttactgtg aatagagcac 180
atattactct ttttagcaac ctagcatgat gccacaaga ctatttttga aagagcaaag 240
gttcctgtaa atttaattag ggctagattt gagctgcttg taagtcacag gttttccaga 300
tgtctgcca caagaaatga ctcatctgt gatgatacct tttgctttgc cttgtggaca 360
atgtgggttt ttgaaatttg cacccttcaa acaatgattt atcagagaaa ggggtctgtt 420
ttcaaaaaag attctgtaat gaattttatg tgtggcatat acttatttct tgag 474

```

<210> 132
 <211> 563

VDX5009W0PCT.11.30.ST25.txt

<212> DNA
 <213> human

<400> 132
 gtgcaggcgg tgccttttggg gaagctgcag gagacagggg tccctatggc actgacatcg 60
 gccagggcgg aggctatggg gcagcagcag aaggcggcat gtatgctggc aatggcggac 120
 tattgggagc tgacttttggc ggagatctgg attacaatga gctggctgtg aggggtgtcag 180
 agagcatgca gcgtcagggc ctactgcaag ggatggccta cactgtccag ggcccaccag 240
 gccagcctgg gccacagggg ccacccggca tcagcaaggt cttctctgcc tacagcaacg 300
 tgactgcgga cctcatggac ttcttccaaa cttatggagc cattcaagga ccccctgggc 360
 aaaaaggaga gatgggcact ccaggaccca aagggtgacag gggccctgct gggccaccag 420
 gtcacctctgg gccacctggc cctcaggagc acaagggaga aaaaggagac aaagggtgacc 480
 aagtctatgc tgggaggaga aggagaagaa gtattgctgt caagccgtga gctagccatg 540
 gcaggacagc tcctggacca ggt 563

<210> 133
 <211> 273
 <212> DNA
 <213> human

<400> 133
 acagaacagg ctcagtcagc atcctcacc agagatggca acatctatta agaccaatgc 60
 aatacctttt catcttcagc aaatgtttgtt tcattctgttt ttgatccttg gcattgtcaa 120
 aaacttaact gcagggtccag tgtatatattt tccttatattt tcccttttag ctatctgcta 180
 aagcgagtaa atgccacaac tgtacttttc caaagaaaaa gaactattga caacttatag 240
 cctgtcatgc aggtcatggt tcaaatacaag gct 273

<210> 134
 <211> 543
 <212> DNA
 <213> human

<400> 134
 tggccgagac agagtgccgc tatgccacgc agctgcagca gatccagggg ctcattgggtg 60
 gcctggaggc ccagctgagt gagctccgat gcgagatgga ggctcagaac caggagtaca 120
 agatgctgct tgacataaag acacggctgg agcaggagat cgctacttac cgcagcctgc 180
 tcgagggcca ggatgccaaag atggctggca ttggcatcag ggaagcctct tcaggagggtg 240
 gtggtagcag cagcaatttc cacatcaatg tagaagagtc agtggatgga cagggtggttt 300
 cttcccacaa gagagaaatc taagtgtcta ttgcaggaga aacgtccctt gccactcccc 360
 actctcatca ggccaagtgg aggactggcc agagggcctg cacatgcaaa ctccagtccc 420
 tgccttcaga gagctgaaaa ggggtccctcg gtcttttatt tcagggtttt gcatgcgctc 480

VDX5009WOPCT.11.30.ST25.txt

tattccccct ctgcctctcc ccaccttctt tggagcaagg agatgcagct gtattgtgta 540
aca 543

<210> 135
<211> 360
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (250)..(250)
<223> n is a, c, g, or t

<400> 135
attttaagcc ctatcactga cacatcagca tgttttctgc tttaaattaa aattttatga 60
cagtatcgag gcttgtgatg acgaatcctg ctctaaaata cacaaggagc tttcttgttt 120
cttattaggc ctcagaaaga agtcagttaa cgtcacccaa aagcacaaaa tggatttttag 180
tcaaatatatt attggatgat acagtgtttt ttaggaaaag catctgccac aaaaatgttc 240
acttcgaaan tctgagttcc tggaatggca cgttgctgcc agtgccccag acagttcttt 300
tctaccctgc gggcccgcac gttttatgag gttgatatcg gtgctatgtg tttggtttat 360

<210> 136
<211> 538
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (314)..(319)
<223> n is a, c, g, or t

<400> 136
gtcaattaga gcgatcccaa ggcattgggac caggcctgct tgcctatgtg tgatggcaat 60
tggagatctg gatttagcac tgggggtctca gcaccctgca ggtgtctgag actaagtgat 120
ctgccctcca ggtggcgatc accttctgct ctaggtacc ccactggca aggccaaggt 180
ctcctccacg ttttttctgc aattaataat gtcatttaaa aaatgagcaa agccttatcc 240
gaatcggata tagcaactaa agtcaatata ttttgagga ggctaagtgt aagagtgtgt 300
gtgtgtgtgt gtgnnnnnnc gtgcatgtgt gtgtgtgtgt atgtgtgtga ataagtcgac 360
ataaagtctt taattttgag caccttacc aacataacaa taatccatta tccttttggc 420
aacaccacaa agatcgcatt tgttaaagag gtacaagttg acatgagggt agtttaattg 480
tacaccatga tattggtggt atttatgctg ttaagtccaa acctttatct gtctgtta 538

<210> 137

VDX5009WOPCT.11.30.ST25.txt

<211> 521
 <212> DNA
 <213> human

<400> 137
 atgggatattt ctagtttcct gccttcagag tatctaatacc tttaatgatac tgggtggtctc 60
 ctcgtcaatc catcagcaat gcttctctca tagtgtcata gacttgggaa acccaaccag 120
 taggatattt ctacaagggtg ttcattttgt cacaagctgt agataacagc aagagatggg 180
 ggtgtatttg aattgcaata cattgttcag gtgaataata aaatcaaaaa cttttgcaat 240
 ctttaagcaga gataaataaa agatagcaat atgagacaca ggtggacgta gagttggcct 300
 ttttacaggc aaagaggcga attgtagaat tgtagatgg caatagtcac taaaaacata 360
 gaaaaatgat gtccttaagt ggagaattgt ggaaggattg taacatggac catccaaatt 420
 tatggccgta tcaaatggta gctgaaaaaa ctatatattga gcactgggtct ctcttggaat 480
 tagatgttta tatcaaatga gcatctcaaa tgttttctgc a 521

<210> 138
 <211> 547
 <212> DNA
 <213> human

<400> 138
 cttcgttcgc agagcttttc agattgtgga atgttggata aggaattata gacctctagt 60
 agctgaaatg caagacccca agaggaagtt cagatcttaa tataaattca ctttcatttt 120
 tgatagctgt cccatctggt catgtggttg gcactagact ggtggcaggg gcttctagct 180
 gactcgaca gggattctca caatagccga tatcagaatt tgtgttgaag gaacttgtct 240
 cttcatctaa tatgatagcg ggaaaaggag aggaaactac tgcctttaga aaatataagt 300
 aaagtgatta aagtgtcac gttaccttga cacatagttt ttcagtctat gggtttagtt 360
 actttagatg gcaagcatgt aacttatatt aatagtaatt tgtaaagttg ggtggataag 420
 ctatccctgt tgccggttca tggattactt ctctataaaa aatatatatt taccaaaaaa 480
 ttttgtgaca ttcttctcc catctcttcc ttgacatgca ttgtaaatag gttcttcttg 540
 ttctgag 547

<210> 139
 <211> 483
 <212> DNA
 <213> human

<400> 139
 ggtagtacta gttcacctaa ggccttatca cctctctctt ctgtggattc aaattaccca 60
 acgagagata gagcatcttt caacagaatg gtcacgcata gtgctgcttc tccaacacag 120
 gcaccaatcc ttaatccctc tatggttaca aatgaaggac ttggtcttac aactacagct 180

VDX5009WOPCT.11.30.ST25.txt

tctggaacag acatctcttc taatagtcta aaagattgtc ttcctaaatc agcacaactt 240
 ttgaaatctg tttttgtgaa aaatgttggt tgggctacac agttaactag tggagctgtg 300
 tgggttcagt ttaatgatgg gtcccagttg gttgtgcagg caggagtgtc ttctatcagt 360
 tatacctcac caaatggtca aacaactagg tatggagaaa atgaaaaatt accagactac 420
 atcaaacaga aattacagtg tctgtcttcc atccttttga tgttttctaa tccgactcct 480
 aat 483

<210> 140
 <211> 373
 <212> DNA
 <213> human

<400> 140
 tgcgctggtt tgcggctttg ggaaataaaa taccgttgta tatattctgg caggggtggt 60
 ctagcttttt gaggacagct cctgtatcct tctcatcctt gtctctccgc ttgtcctctt 120
 gtgatgttag gacagagtga gagaagtcag ctgtcacggg gaagggtgaga gagaggatgc 180
 taagcttcct actcactttc tcctagccag cctggacttt ggagcgtggg gtgggtggga 240
 caatggctcc ccactctaag cactgcctcc cctactcccc gcatctttgg ggaatcggtt 300
 ccccatatgt cttccttact agactgtgag ctctcgagg gcagggaccg tgccttatgt 360
 ctgtgtgtga tca 373

<210> 141
 <211> 364
 <212> DNA
 <213> human

<400> 141
 gccaaaatga tacctggagg cttatctgag gccaaacccg ccactccaga aatccaggag 60
 attgttgata aggttaaacc acagcttgaa gaaaaaaca atgagactta tggaaaattg 120
 gaagctgtgc agtataaaac tcaagttggt gctggaacaa attactacat taaggtagca 180
 gcaggtgata ataaatatat gcacttgaaa gtattcaaaa gtcttcccgg acaaaatgag 240
 gacttggtac ttactggata ccaggttgac aaaaacaagg atgacgagct gacgggcttt 300
 tagcagcatg tacccaaagt gttctgattc cttcaactgg ctactgagtc atgatccttg 360
 ctga 364

<210> 142
 <211> 523
 <212> DNA
 <213> human

<400> 142
 aacagagatg tccccaggg agcacatcaa gggcaaagag accaccccct ctagcctagc 60

VDX5009WOPCT.11.30.ST25.txt

```

agtgacccag accatggcca ccaaagctcc cgagtgtgtg gaggacccag atatggcaaa 120
ccagaggaag actgccctgg agttctgtgg agagacttgg agctctctct gcacattctt 180
cctcagcata gtgcaggaca cgtcatgcta atgagggtcaa aagagaacgg gttcctttaa 240
gagatgtcat gtcgtaagtc cctctgtata ctttaaagct ctctacagtc cccccaaaat 300
atgaactttt gtgcttagtg agtgcaacga aatattttaa caagttttgt attttttgc 360
tttgtgtttt ggaatttgcc ttatttttct tggatgcat gttcagaggc tgtttcctgc 420
agcatgtatt tccatggccc acacagctat gtgtttgagc agcgaagagt ctttgagctg 480
aatgagccag agtgataatt tcagtgaac gaactttctg ctg 523

```

<210> 143
 <211> 389
 <212> DNA
 <213> human

```

<400> 143
cttgtggcac caggcatctg atggtgccag gaaagccact ggaattgtca cacggcgagc 60
acagagggcc ggccaccagt cctcgatgct tctgaaccct gaaccccgat gacatcttac 120
gaggtggacg ttggactgtt catgcgcata ggggtgtcagt gactcatgga gaagaaatgg 180
ggtaaatatt tagtgatgtt gctaatacatt gaattctgtt ctctattaaa ttaagaaaat 240
gttccaaaag ccataagcct gaagattggc cctgtgcacg cacgcacaca cacacacaca 300
cacacacaca cacacacaca cacacgaagg agagagagag aaaactgatg gggaaaacaa 360
gctgtgtctt cttaactgcc caagtgaag 389

```

<210> 144
 <211> 512
 <212> DNA
 <213> human

```

<400> 144
tcttccgtgc catgtatgac tatatggctg ctgatgcaga tgagggtgtcc ttcaaggatg 60
gagatgccat cataaatgtt caagcaattg atgaaggctg gatgtatggc actgtgcaga 120
ggactggcag gaccggaatg ctcccagcca actacgttga agctatttag gcatttcaaa 180
gcatcacact tgtctgcagg acttacagat cctgcagtca atgtttcggg ttagactctc 240
cactgttacc taagtcttca agctgcctat ggtttttctg tgtcaatgtg atttatggta 300
gtaccatcct ttctcctttg ggtttttaaa taagttgcag aacagacact ttaaaagctt 360
ctgcaatatt atttctgtgc ctagagtctt tctccattat aaacatgttt taacattatt 420
tcttttctaa aacagggatt ttgaatatgc caaacacatt aaaggaaaaa tagcagagat 480
gttcaccttt tccttgctga ttgctaattg tt 512

```

VDX5009WOPCT.11.30.ST25.txt

<210> 145
 <211> 530
 <212> DNA
 <213> human

<400> 145
 tacagagtat tcctctcttc acaccaggac cagccactgt tgcagcatga gttcccagca 60
 gcagaagcag ccctgcatcc caccctctca gcttcagcag cagcaggtga aacagccttg 120
 ccagcctcca cctcaggaac catgcatccc caaaaccaag gagccctgcc accccaaggt 180
 gcctgagccc tgccacccca aagtgcctga gccctgccag cccaagcttc cagagccatg 240
 ccaccccaag gtgcctgagc cctgcccttc aatagtcact ccagcaccag cccagcagaa 300
 gaccaagcag aagtaatgtg gtccacagcc atgcccttga ggagccggcc accagatgct 360
 gaatccccta tcccattctg tgtatgagtc ccatttgcct tgcaattagc attctgtctc 420
 cccccaaaaa gaatgtgcta tgaagctttc tttcctacac actctgagtc tctgaatgaa 480
 gctgaaggctc ttagtaccag agctagtttt cagctgctca gaattcatct 530

<210> 146
 <211> 193
 <212> DNA
 <213> human

<400> 146
 gtcccaagtg caacaaggag gtgtacttcg ccgagagggg gacctctctg ggcaaggact 60
 ggcacgggcc ctgcctgaag tgcgagaaat gtgggaagac gctgacctct gggggccacg 120
 ctgagcacga aggcaaacc tactgcaacc acccctgcta cgcagccatg tttgggccta 180
 aaggctttgg gcg 193

<210> 147
 <211> 495
 <212> DNA
 <213> human

<400> 147
 gataactcca ggtacacaca cttcctgacc cagcactatg atgccaaacc acagggccgg 60
 gatgacagat actgtgaaag catcatgagg agacggggcc tgacctcacc ctgcaaagac 120
 atcaacacat ttattcatgg caacaagcgc agcatcaagg ccatctgtga aaacaagaat 180
 ggaaaccctc acagagaaaa cctaagaata agcaagtctt ctttccaggt caccacttgc 240
 aagctacatg gaggttcccc ctggcctcca tgccagtacc gagccacagc ggggttcaga 300
 aacgttggtg ttgcttgatg aaatggctta cctgtccact tggatcagtc aattttccgt 360
 cgtccgtaac cagcggggcc ctggtcaagt gctggctctg ctgtccttgc cttccatttc 420
 ccctctgcac ccagaacagt ggtggcaaca ttcattgcc aaggcccaaa gaaagagcta 480
 cctggacctt ttggt 495

VDX5009WOPCT.11.30.ST25.txt

<210> 148
 <211> 335
 <212> DNA
 <213> human

<400> 148
 gcagagtggc aagagtgaga tctcggagct ccggcgcacc atgcaggcct tggagataga 60
 gctgcagtcc cagctcagca tgaaagcatc cctggagggc aacctggcgg agacagagaa 120
 ccgctactgc gtgcagctgt cccagatcca ggggctgatt ggcagcgtgg aggagcagct 180
 ggcccagctt cgctgcgaga tggagcagca gaaccaggaa tacaaaatcc tgctggatgt 240
 gaagacgcgg ctggagcagg agattgccac ctaccgccgc ctgctggagg gagaggatgc 300
 ccacctgact cagtacaaga aagaaccggt gacca 335

<210> 149
 <211> 464
 <212> DNA
 <213> human

<400> 149
 attggaatct cctgtgcatc acattttctta aaaagagaaa tgcagaaaac caaagaacta 60
 atgacaaaag tgaataaaca aaaactgttt gaaaagagta caggacttcc tcacaaagca 120
 tcacgtcatc ttgacagcta tgaattcctt aaagccattt taaactgagg cattaagaag 180
 aaatgcactc accatgagca ccaacttctg catctgcctg atcatattta aaggaacaga 240
 gaaatatattg taattaatct gcccagtaaa taccagctcg tagcagttgg cagggtgcatg 300
 tctagataaa atttcttgca gctaatttaa actttctaca cgcaccagta gataatctca 360
 atgtaaataa tacatttctt cttggctctt taatgtaagc caacatggag aggaagatct 420
 tgacttatat tctgtaccac atacacttct gtggactttt agca 464

<210> 150
 <211> 545
 <212> DNA
 <213> human

<400> 150
 tgccgtgggt tttcaagttt actcatttct atggttgcaa ataactctaa aacttattat 60
 ataaactttc atattatagg cagaacacaa tggctaaata tctgttgcatt gtactttaaa 120
 gtttattata aaatataaac agatatataa agatgttgac tcttacctgt gatatttgcatt 180
 ggtcagactc ggtgtcagggt acggagagga ttctcatgac tgtcttacct ctactgaata 240
 ttctagttag ttatatgatt tacggagtga ttaacagagg tctatataaa gttacttttc 300
 ccctttactt aatttatattg tagtgtgcag ataacaaaac tgctaccttc tcatccaagt 360
 ggtctgtaga attcatgtcc cttacagtgg tcatttaaag tcaatattta tttatgtatg 420

VDX5009WOPCT.11.30.ST25.txt

taataaaaaa agttggattt ttgtgtatgt ctgtcacatt atttagagag aagtaatctt	480
gtaaaaatgt ttgtaaaaa acaaaaaagt attgtaaata gtcttgatat tctgtgactc	540
attat	545

<210> 151
 <211> 243
 <212> DNA
 <213> human

<400> 151	
gatctgcagg tgtctgggaa ttagcctgga ggaactccga acccaaatcc tgagtccaaa	60
cactcaagat gtgctcatct tcaaactcta tcagcgggca aagcatgtgt acagcgaggc	120
tgcgcgagtg ctccagttta agaagatatg tgaagaagca cctgaaaaca tgggccagct	180
gctgggagag ttgatgaacc agagccacat gagctgccgg gacatgtatg agtgcagctg	240
ccc	243

<210> 152
 <211> 388
 <212> DNA
 <213> human

<400> 152	
gcacccagcc ttttaccatg tgggtttctt tagtgtctta aaagcgtcca taagccacca	60
ttctgtggaa ccaaggcccc ctccacgcaa acaccctccc tcctggggac ctctggagcc	120
tcagccagaa gtaccattag gtttaatttt aatttgtttt gctggagaaa catcaggttt	180
gtaggagact gagttgttag caggtgtgct tagctcttga tagtgaacgt gtaccttggg	240
aactggctca cccacctgct aatagcacca tcgtcactat taagcagaca ttccagttgg	300
tagaatccat gtagaagtca tggacttttc tgggaaatga cttttctggg aaatgacagt	360
ttctttgaca tattttcttt gccacctt	388

<210> 153
 <211> 472
 <212> DNA
 <213> human

<400> 153	
gccagtgtca cgtacagcat ctgtggttcc agtctgtgct tgacatgctc cgccacttcc	60
acacacaccc catccactg gagtcagggg gctcggccga catcaccctt cgcagctatg	120
tgcgggccca ggacccccca ccagagccgg gccccacgcc ccctgccgcg cccgcgtccc	180
cggcctgctg gagcgactcg cccggccagc actacttctc cagcctcgcc gcggccgcct	240
gccccgcctgc ctgcacctcc gacgccgccg gcgcctcctc gtcttccgcc tcgtcgtcct	300
ctgccgcgtc ggggcccgcc cccccgcgcc ccgtcgaggg ccagctcagc gcgcggagcc	360

VDX5009WOPCT.11.30.ST25.txt

gcagcaacag cgccgagcgc ctgctggagg ccgtggccgc caccgccgcc gaggagcccc 420
 cggaggccgc gcccgccgc gcgcgcgcg tggagaacca gtactccttc ta 472

<210> 154
 <211> 527
 <212> DNA
 <213> human

<400> 154
 tgttactaac agccctttga atttaacaaa aactgggaat ccattaggaa acggattgca 60
 tcatacctga acataagctg gactgctgaa attgtatttt tagctaataa aaaagtgttt 120
 ggactagtac tctaaaaatg ttctaataat aaagtgttga gtcaaaatag aaaagaaaaa 180
 aatctgcatt ccaggccgaa ttttgtatat ttttattgca tttaaaattg ctatttctgta 240
 atattgggaa atcaagtggc ttatcatgta tatcgtgtac ttaaaatgta ttcacaaact 300
 actgttgtat ttgtataaaa tatagacaaa gatcatattt tttgtgtgtg tataagctct 360
 gtaaaatagc aatcacatta tgaagctgca gtgatactac attttaacaa ttcacatcca 420
 aagaagcaga ctatttattg tccatatacc agatttaaaa tattaatttg ctgctaatta 480
 aataatagta ctgcagcttc ttgtggccta cagtgttatg tttgctg 527

<210> 155
 <211> 515
 <212> DNA
 <213> human

<400> 155
 tattgccaat gacttggttc ttcaagaaca gaaaaccctt ggcgagatg ataccatggt 60
 ggcaaaggat ccgcacatct gcatctgtac tcttctgtat gacagtgcac ccagtggcag 120
 gtttggcacc atgacctacc tctccaaggc agccgccacc tacgtgcagg agttcctgcc 180
 ccacagcatc tgtgccatgc aatgagggct ttggttcctg gcttctggga gccttttgac 240
 agctggtccc tgcctcgggt gattgtgcat ggaactaaaa tgttattgcc taatcactcc 300
 aaccctgccc ctttctgtcc catccttccc aagaagagag aactttttcg ataaactaac 360
 tactgtagaa gaagtgaaca cttacctgga ggctcacctt gcagaaccag tgacaatctt 420
 atgagtataa tgaacactca gccaggcctg tcatgattgg ctttatttct ttcacatcc 480
 ataaaagttt gcatgtgttt ttatttctta gatct 515

<210> 156
 <211> 493
 <212> DNA
 <213> human

<220>

VDX5009WOPCT.11.30.ST25.txt

<221> misc_feature

<222> (87)..(87)

<223> n is a, c, g, or t

<400> 156

```

cactgctagc agggcttcaa ccaggaaggg atcaaccag gaagggatga tcaggagagg      60
cttccctgag gacataatgt gtaaganagg tgagaagtgc tccaagcag acacaacagc      120
agcacagagg tctggaggcc acacaaaaag tgatgctcgc cctgggctag cctcagcaga      180
cctaaggcat ctctactccc tccagaggag cgcgccagat tcctgcagtg gagaggaggt      240
cttccagcag cagcagggtct ggagggctga gaatgaacct gactagaggt tctggagata      300
cccagaggtc cccaggtca tcacttggtc cagtgggaagc cctctttccc caaatcctac      360
tccctcagcc tcaggcagtg gtgctcccat cttcctcccc acaactgtgc tcaggctggt      420
gccagccttt cagaccctgc tcccagggac ttgggtggat gcgctgatag aacatcctca      480
agacagtttc ctt                                     493

```

<210> 157

<211> 469

<212> DNA

<213> human

<400> 157

```

agcctatcct taataaatcc tccactctct ggaaggagac tgaggggctt tgtaaaacat      60
tagtcagttg ctcatTTTTta tgggattgct tagctgggct gttaaagatga aggcataaaa      120
taaactcaaa gtatTTTTta atTTTTtga taatagagaa acttcgctaa ccaactgttc      180
tttcttgagt gtatagcccc atcttggtgt aacttgctgc ttctgcactt catatccata      240
tttcctattg ttcactttat tctgtagagc agcctgcaa gaattttatt tctgctgttt      300
tttttgctgc taaagaaagg aactaagtca ggatgttaac agaaaagtcc acataaccct      360
agaattctta gtcaaggaat aattcaagtc agcctagaga ccatgttgac tttcctcatg      420
tgtttcctta tgactcagta agttggcaag gtcctgactt tagtcttaa                    469

```

<210> 158

<211> 545

<212> DNA

<213> human

<400> 158

```

ccatcccata gaagtccagc agacaggatt tggttaagtgc cagactttgt caggaagtca      60
aggagcttct gctttgtccg cctctgggtc tgtccagcca gctgtttcca tccctgaccc      120
tctgcagcat ggtaactatt tagtaacgga gacttactcg gcttctgggt ccctcgtgca      180
accttccact gcaggctttg atccacttct cacacaaaat gtgatagtga cagaaaggggt      240
gatctgtccc atttccagtg ttcctggcaa cctagctggc ccaacgcagc tacgagggtc      300

```

VDX5009WOPCT.11.30.ST25.txt

acatactatg ctctgtacag aggatccttg ctcccgctta atatgaccag aatgagctgg 360
aataccacac tgaccaaatc tggatctttg gactaaagta ttcaaaatag catagcaaag 420
ctcactgtat tgggctaata atttggcact tattagcttc ttcataaac tgatcacgat 480
tataaattaa atgtttgggt tcatacccca aaagcaatat gttgtcactc ctaattctca 540
agtac 545

<210> 159
<211> 444
<212> DNA
<213> human

<400> 159
gtctttctta cctgattgat attacattca cctttgattg ttttttaaaa gtttattttt 60
acagaatata tttagtacct ttcttaagga gtaactgaat tgaatcaacc agtttgcatt 120
taaataaaaag aacagggtca gtggctcttc tgtagaatgg ttacatgcc tgcattgtgca 180
gtagtttgtg ctggaatcct agaattggca ctttctgcct ccttgctcta aatgtcacaa 240
aaaattatac ttccttaaag taaatgtaat gatttcttct ttcctattg accagtacag 300
atagatatgt tgtgtttgct tcatttttaa tgatgacttc aagattgatg atgtgatcca 360
ataactgtgg aggtagcttt aacttgggtc tgtgtaaata gtatgtattt tattataata 420
tttctcattt taagatgctt gggt 444

<210> 160
<211> 355
<212> DNA
<213> human

<400> 160
tcaaccagcg tgagaagccc ctggccctct acatgttctc cagcaacgac aaggtgatta 60
agaagatgat tgcagagaca tccagtgggtg ggggtggcggc caacgatgtc atcgtccaca 120
tcaccttgca ctctctgccc ttcgggggcg tggggaacag cggcatggga tcctaccatg 180
gcaagaagag cttcgagact ttctctcacc gccgctcttg cctgggtgagg cctctgatga 240
atgatgaagg cctgaagggtc agataccccc cgagcccggc caagatgacc cagcactgag 300
gaggggttgc tccgcctggc ctggccatac tgtgtcccat cggagtgcgg accac 355

<210> 161
<211> 565
<212> DNA
<213> human

<400> 161
tatgaaaccc gctacatcta tggcccaata gaatcaacaa ttaccgatg atcaggttct 60
tcttttagact gggcttatga cctgggcatc aaacacacat ttgcctttga gctccgatg 120

VDX5009WOPCT.11.30.ST25.txt

aaaggcaaat ttggttttct ccttccagaa tcccggataa agccaacgtg cagagagacc 180
 atgctagctg tcaaatttat tgccaagtat atcctcaagc atacttccta aagaactgcc 240
 ctctgtttgg aataagccaa ttaatccttt tttgtgcctt tcatcagaaa gtcaatcttc 300
 agttatcccc aaatgcagct tctatttcac ctgaatcctt ctcttgctca ttttaagtccc 360
 atgttactgc tgtttgcttt tacttacttt cagtagcacc ataacgaagt agctttaagt 420
 gaaacctttt aactaccttt ctttgctcca agtgaagttt ggacccagca gaaagcatta 480
 ttttgaaagg tgatatacag tggggcacag aaaacaaatg aaaaccctca gtttctcaca 540
 gattttcacc atgtggcttc atcaa 565

<210> 162
 <211> 462
 <212> DNA
 <213> human

<400> 162
 gtcattgaggc agctttcatc acaccctttt aacatttatc taaaagaatt taaattcttt 60
 .ttcaaaaatt aactacaag tttataagcc caaatggctc tgtgaaatca gaagtgcaaa 120
 ggtgtgcaaa cttgtatctg aagacctacc agggacaagc aggtaagagc tgatgtgagt 180
 gtgtgtgatg ggatctgtaa ggaactggaa cacacatgtc ctatccaaag gaatcagctg 240
 cagctgcttg ttgtcaagta taaagtcagg acctggcttg gctttaaccg tttttcaaga 300
 aaactggaaa tctggatttt cagcgaacat gcctgatttt aaaaggttga ctcaagtttt 360
 tacaaaatac tatgtgggac acctcaaata catacctact gactgatgac aaaccagga 420
 gtttgtgtgt cttttataaa aagtttgccc tggatgtcat at 462

<210> 163
 <211> 498
 <212> DNA
 <213> human

<400> 163
 cactggattt tattggagcc ccatctcccc agcgggcagg cgggcggagc ctgtatatat 60
 gtatatactc agtgcctcag ttcagcttcc tccacctcgc ttccactgca caggcccagg 120
 aaggagaaaag gccaagccaa agtgggcccc acctgcccc cgtcgtgctc catccttccc 180
 tgccggggcc tgctggcccc tgtaagggtc cgccccaaa gaccctgggg ccagcggggc 240
 cgaaagcgga gttgggtttg cttattttgc tcattggatt caagtctttt tgcatagttt 300
 ttttctaacc cctgttggag tccaggggct ggagaaaagg acagatttat gcagctattt 360
 tcatacatc cctgttcaga gtggggtagg ggttttccgc cgttaccga tccaatccat 420
 cccccaccct ttgaggggtg agtgtgtctt tgcattgttc ctttgctgtg gtgggagata 480
 gtttgactga accccac 498

VDX5009WOPCT.11.30.ST25.txt

<210> 164
 <211> 298
 <212> DNA
 <213> human

<400> 164
 aaccttgat ttaccagact gtcttttcac tgtttggtggg ttttgtagaa gttacacatt 60
 tttatggttag ataaaatggt acttctatac aagtactcac tcccttttta tcaaaagtta 120
 attttaatat cacagtctac attgtgctac attatccagc ttctttggaa caatgtgtgc 180
 tctgtatggt ttttttgggt atgacaacta attaagcaac tgacattgaa ctgagaattc 240
 tacaaactat aaaacattaa tttttgaagg taatttagtt ttgtggctgg gcattcag 298

<210> 165
 <211> 477
 <212> DNA
 <213> human

<400> 165
 attgtggtga gcgatcctga ctccacagat gcttcaagca ttgaagacaa tgaggacatt 60
 tgtaacacca cctccttgga gaattgcaca gcaaaatgag cgggggtggt tgtgcctggt 120
 tctcttatcc tttcccaaca ttaggttaac acagctttat aaacctcagt gggttcgtta 180
 aaatcattta attctcaggg tgtacctttc cagccatagt tggacattca ttgctgaatt 240
 ctgaaatgat agaattgtct ttatttttct ctgtgaggtc aattaaatgc cttgttctga 300
 aatttatattt ttacaagaga gagttgtgat atagtttgga atataagata aatggatttg 360
 ggtgggggttt gtggctacag cttatgcatc attctgtggt tgtcatttac tcacattgag 420
 ctaactttta attactgaca agtagaatca aagggtgcagc tgactgagac gacatgc 477

<210> 166
 <211> 474
 <212> DNA
 <213> human

<400> 166
 ggttcctaga tgtgagggca gcccctttgt tggctgatga caacaaatta cgtggcttac 60
 ccctgaccta tgtcatcacc tgtcaatatg atctcttaag agatgatgga ctcatgtatg 120
 tcacccgact tcgcaacact ggggttcagg tgactcataa ccatgttgag gatggattcc 180
 atggagcatt ttcatttctg ggacttaaaa ttagtcacag acttataaat cagtatatg 240
 agtggctaaa ggaaaatcta tagtaaaaca tgtagctata acatatatta aaaataaaat 300
 ctgaaaacct cagaaaattt cgattagaaa ttggctcttc ttagaatggt ctagttaagt 360
 tccacatgta gcataattct taaataggca ctttctgttt ttttttttct tactgtggga 420
 tttcatttca attttctaca ttgtctatct gctttttcgg agattttcct tctt 474

VDX5009WOPCT.11.30.ST25.txt

<210> 167
 <211> 438
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (195)..(195)
 <223> n is a, c, g, or t

<400> 167
 atcactat ttt tgaagcacag ctttacagat gagtatctat gatacatatg tataataaat 60
 tttgattggg tattaaaagt attagaaggt gggtataatt gcagagtatt ccatgaatag 120
 tacactgaca cagggggtttt actttgagga ccagtgtagt caagggaaaa catgagttaa 180
 aaagaaaagc aggcnatatt gcagtcctga ttctgccact tacaggatag ataacgcctg 240
 aactttaatg acaagatgat ccaaccataa aggtgctctg tgcttcacag tgaatctttt 300
 ccccatgcag gagtgtgctc ccctacaaac gtttaagactg atcatttcaa aaatctatta 360
 gctatatcaa aagccttaca ttttaataata gggtgaacca aaatttcaat tccagtaact 420
 tctattgtaa ccattatt 438

<210> 168
 <211> 388
 <212> DNA
 <213> human

<400> 168
 ccccaagact ttactagtgc cgataaactt tctcaaagag caaccagtat cacttccctg 60
 tttataaaac ctctaaccat ctctttgttc tttgaacatg ctgaaaacca cctgggtctgc 120
 atgtatgccc gaatttgtaa ttcttttctc tcaaatgaaa atttaatttt agggattcat 180
 ttctatat ttt tcacatatgt agtattatta tttccttata tgtgtaaggt gaaatttatg 240
 gtatttgagt gtgcaagaaa atatattttt aaagctttca tttttccccc agtgaatgat 300
 ttagaatttt ttatgtaaat atacagaatg ttttttctta cttttataag gaagcagctg 360
 tctaaaatgc agtgggggtt gttttgca 388

<210> 169
 <211> 385
 <212> DNA
 <213> human

<400> 169
 aaacagttgc tcacctacag acagtgaac ataaattagc agaattaaaa acacatatat 60
 gtgtaacccg agcatttggtg gacaactgtc tccagctgca tgaagcgaaa cgtttggtgact 120
 ccgccactgc ttgcatggcg aaatattggg catctgagtt acaaaatagt gtagcttacg 180

VDX5009WOPCT.11.30.ST25.txt

actgtgtaca gctccatgga ggttggggat acatgtggga gtaccaatt gcaaaagctt 240
 atgtggatgc cagagttcag ccaatctatg gtggtacaaa tgaaataatg aaggagctga 300
 ttgcaagaga gattgtcttt gacaagtaga catctgcccc catcctggag tcctattaca 360
 gctaattctcg ttttaaattct gctca 385

<210> 170
 <211> 268
 <212> DNA
 <213> human

<400> 170
 tatttgaata tgtatcgtgc cccctccgga gtctttgatc aggatgacat gtgccatttt 60
 tcagaggacg tgcagacagg ctggcattct agattacttt tcttactctg aaacatggcc 120
 tgtttgggag tgcgggattc aaagggtgtc ccacggctgc ccctactgca aatggcagtt 180
 ttaatcttat cttttggctt ctgcagatgg ttgcattgat ccttaaccaa taatggtcag 240
 tcctcatctc tgtcctgact tcataggt 268

<210> 171
 <211> 479
 <212> DNA
 <213> human

<400> 171
 gaccttcccg ctgcgagacag ggaagaggca acctggccag cggcgggccc ctctgggggc 60
 cggggtacgc gaccacccaa ccgagcagag gctttgggta cagaccccc agctactcga 120
 cagcctacct gcctggcagc tatggctctt cccactgcaa actggaagcc ccctaccgt 180
 gctccctccc tcagagtgc cctaggctcc agggggaact gctgcccacc tatacccact 240
 acctgcccc tggtctctcc actccataca accctcccct tgctggtgcc cccatgcccc 300
 taaccacact ctaaccctca tggacgcaga cctcacggga cgggcctcat cctccttttt 360
 taatccagca gcatccccta cccaggtg tcaacccttt ctctgttg actacagttc 420
 agaggcagcc tgcagtcctc ccatgatagc caggagagc cgcacaacat acaattata 479

<210> 172
 <211> 552
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (487)..(487)
 <223> n is a, c, g, or t

<400> 172
 gatcaacaat tctttttggg ggtagattag aaaaccctta cactttggct atgaacaat 60

VDX5009WOPCT.11.30.ST25.txt

```

aataaaaatt attctttaaa gtaatgtctt taaaggcaaa gggaagggtta aagtcggacc 120
agtgtcaagg aaagtttggt ttattgaggt ggaaaaatag cccaagcag agaaaaggag 180
ggtagggtctg cattataact gtctgtgtga agcaatcatt tagttacttt gattaatttt 240
tcttttctcc ttatctgtgc agtacagggt gcttggttac atgaagatca tgctatatatt 300
tatatatgta gcccctaatt caaagctctt tacctcttgc tattttgtta tatatatattc 360
agatgacatc tccctgctaa tgctcagaga tcttttttca ctgtaagagg taaccttta 420
caatatgggt attacctttg tctcttcata ccggttttat gacaaagggtc tattgaattt 480
atttgtntgt aagtttctac tcccatcaaa gcagctttct aagtttattg ccttgggtta 540
ttatggaatg at 552

```

<210> 173
 <211> 173
 <212> DNA
 <213> human

```

<400> 173
gcccctaatt caaagctctt tacctcttgc tattttgtta tatatatattc agatgacatc 60
tccctgctaa tgctcagaga tcttttttca ctgtaagagg taaccttta caatatgggt 120
attacctttg tctcttcata ccggttttat gacaaagggtc tattgaattt att 173

```

<210> 174
 <211> 451
 <212> DNA
 <213> human

```

<400> 174
gaattgaccc tatcttgga agcacctgga gaagactttg atcagggccca ggctacaagc 60
tatgaaataa gaatgagtaa aagtctacag aatatccaag atgacttta caatgctatt 120
ttagtaaata catcaaagcg aaatcctcag caagctggca tcaggagat atttacgttc 180
tcacccaga tttccacgaa tggacctgaa catcagccaa atggagaaac acatgaaagc 240
cacagaattt atgttgcaat acgagcaatg gataggaact cttacagtc tgctgtatct 300
aacattgccc aggcgcctct gtttattccc cccaattctg atcctgtacc tgccagagat 360
tatcttatat tgaaaggagt tttacagca atgggtttga taggaatcat ttgccttatt 420
atagttgtga cacatcatac tttagcagg a 451

```

<210> 175
 <211> 497
 <212> DNA
 <213> human

```

<400> 175
cctgtcctcc agcaccatag agaggcgcta gagccatttc ctctttctcc accgtcacc 60

```

VDX5009WOPCT.11.30.ST25.txt

```

aacatcaatc ctttaccact ctaccaaata atttcatatt caagcttcag aagctagtga 120
ccatcttcat aatttgctgg agaagtgtat ttcttccctt tactctcaca cctgggcaaa 180
ctttcttcag tgtttttcat ttcttacgtt ctttcacttc aaggggagaat atagaagcat 240
ttgatattat ctacaaacac tgcagaacag catcatgtca taaacgattc tgagccattc 300
acacttttta tttaattaaa tgtatttaat taaatctcaa atttatttta atgtaaagaa 360
cttaaattat gttttaaaca catgccttaa atttgtttaa tttaaatttaa ctctggtttc 420
taccagctca tacaaaataa atgggttctg aaaatgttta agtattaact tacaaggata 480
taggtttttc tcatgta 497

```

<210> 176
 <211> 311
 <212> DNA
 <213> human

```

<400> 176
ctttttgtaa ctaccctctc aaatggacaa taccagaagt gaattatccc tgctggcttt 60
cttttctcta tgaaaagcaa ctgagtacaa ttgttatgat ctactcattt gctgacacat 120
cagttatata ttgtggcata tccattgttg aaactggatg aacaggatgt ataatatgca 180
atcttacttc tatatcatta ggaaaacatc ttagttgatg ctacaaaaca ctttgtcaac 240
ctcttcctgt cttaccaaac agtgggaggg aattcctagc tgtaaataa aattttgccc 300
ttccatttct a 311

```

<210> 177
 <211> 386
 <212> DNA
 <213> human

```

<400> 177
cgccctggca cggtgctgag aattcgcggc ttggttcctc ccaatgccag caggttccat 60
gtaaacctgc tgtgcgggga ggagcagggc tccgatgccg ccctgcattt caacccccgg 120
ctggacacgt cggaggtggt cttcaacagc aaggagcaag gtcctgggg cgcgaggag 180
cgcgggccgg gcgttccttt ccagcgcggg cagcccttcg aggtgctcat catcgcgtca 240
gacgacggct tcaaggccgt ggttggggac gccagtagc accacttccg ccaccgcctg 300
ccgctggcgc gcgtgcgcct ggtggaggtg ggcggggacg tgcagctgga ctccgtgagg 360
atcttctgag cagaagccca ggcggc 386

```

<210> 178
 <211> 244
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 178
 gccggctcct gcaagtgcaa aaagtgcaaa tgcacctcct gcaagaagag ctgctgctcc 60
 tgttgccccc tgggctgtgc caagtgtgcc cagggctgca tctgcaaagg ggcgtcagag 120
 aagtgcagct gctgtgcctg atgtcgggac agccctgctg tcagatgaaa acagaatgac 180
 acgtaaaatc cgagggttttt tttttctaca actccgactc atttgctaca ttcctttttt 240
 tctg 244

<210> 179
 <211> 557
 <212> DNA
 <213> human

<400> 179
 ttccctgctg gaggatccca agattaagga gattgctgca aagcacaaaa aaaccgcagc 60
 ccaggttctg atccgtttcc atatccagag gaatgtgatt gtcattccca agtctgtgac 120
 accagcacgc attgttgaga acattcaggt ctttgacttt aaattgagtg atgaggagat 180
 ggcaaccata ctacagttca acagaaactg gagggcctgt aacgtgttgc aatcctctca 240
 tttggaagac tatcccttca atgcagaata ttgaggttga atctcctggt gagattatac 300
 aggagattct ctttcttcgc tgaagtgtga ctacctcac tcatgtccca ttttagccaa 360
 gcttatttaa gatcacagt aacttagtcc tggtatagac gagaatcgag gtgctgtttt 420
 agacatttat ttctgtatgt tcaactagga tcagaatatc acagaaaagc atggcttgaa 480
 taaggaaatg acaatttttt ccacttatct gatcagaaca aatgtttatt aagcatcaga 540
 aactctgcca acactga 557

<210> 180
 <211> 397
 <212> DNA
 <213> human

<400> 180
 gtgaacattt caaccagcct tatagctggt ctcatcatca ctttctgcat tgtgaccgtg 60
 cttggaaggg aggctctcac caaaggggag ctgtgggag tctttctgct cgcagggtct 120
 gccctcctct gtgccgtggt cacgggagtc atctggaggc agcccgagag caagaccaag 180
 ctctcattta aggttccctt cctgccagtg ctcccatcc tgagcatctt cgtgaacgtc 240
 tatctcatga tgcagctgga ccagggcacc tgggtccggt ttgctgtgtg gatgctgata 300
 ggcttcatca tctactttgg ctatggcctg tggcacagcg aggaggcgtc cctggatgcc 360
 gaccaagcaa ggactcctga cggcaacttg gaccagt 397

<210> 181
 <211> 463
 <212> DNA

VDX5009WOPCT.11.30.ST25.txt

<213> human

<400> 181
gagagattat ttctgtgggc taaagggttaa aaagccaaca acctgttacc aattattttca 60
gcttttttttg ttttaataag tgtgacaact taaaacttgt ttctatttta agtgaaatgt 120
atctttcaac tgtttagtta ccagctgtt taatattcca gtcttcccaa agtgaaaaga 180
tttgatata aatgttttct atgatttaaat aaaaatatat ggcacaaaaa accacttcgc 240
cgggtcgcgc ccgacggcc gggcccggga gacgcgccgg cagccccggc accttgccaa 300
agtttcaaac ccgggaaaat aaacgtaagc taaggatccc ccccatgtat ccaacctcat 360
gctctatggg acccaggcca tccccgtgag gttctccaga tcctccatgc cttggacgaa 420
aggtgttggg tcaactggtgc atcatgacac caaatctata gtt 463

<210> 182

<211> 482

<212> DNA

<213> human

<400> 182
atctcttttg cagttttcgt gctaattgtt ttgctaagga agataagctc tgaaccatta 60
aaggacgagt ttaaaaacac aggatcaggc ctctgggca tggctaacat tgacctggaa 120
aagagcagga ctggtgatga aattattctt ccgagaggcc tcgagtacac ggtggaagaa 180
tgcacctgtg aagactgcat caagagcaaa ccgaaggctg actctgacca ttgctttcca 240
ctcccagcta tggaggaagg cgcaaccatt cttgtcacca cgaaaacgaa tgactattgc 300
aagagcctgc cagctgcttt gagtgctacg gagatagaga aatcaatttc tgctaggtaa 360
ttaaccattt cgactcgagc agtgccactt taaaaatctt ttgtcagaat agatgatgtg 420
tcagatctct ttaggatgac tgtatttttc agttgccgat acagcttttt gtcctctaac 480
tg 482

<210> 183

<211> 391

<212> DNA

<213> human

<220>

<221> misc_feature

<222> (295)..(295)

<223> n is a, c, g, or t

<400> 183
gataaccact tgaaccaggc aaatacactg aagataaagg ttattttctt ttttagcttt 60
gaatttgtca tgaccatttt agtcttgacg atagcagggc agccccttgg ggcaaggatt 120
tactctggga ggtaccgtta agagccttct ttcccccttt gaaagatcct ttacaatgt 180

VDX5009WOPCT.11.30.ST25.txt

taaagtatac tagttgcaag aacaagcagg atttgcagg	tgctttacca gcatgagtct	240
catttttctg gcttaaaatc tgggactgtg aaattattcc	ataggaaagt gaatnttatt	300
ttgcagaatt agcctcttac ataaaagtat ttgttgaagt	gtctttaaaa ttgctatcat	360
gagcaaaaact ggttgctgta atgcttgttt t		391

<210> 184
 <211> 477
 <212> DNA
 <213> human

<400> 184		
ctccttcatg ggcaagcgct acatgaccca ccacatccca	cccagcgagg ccgccacact	60
gccggtgggc tgcaagcctg gcctggaccc cctccccagc	ctcagcccct agcctggcct	120
ctttgcatgg ggctggggga gatggggcgc cgggagtgag	tgcatggtgc tttgtcccag	180
ctcctgcacc cacaggcccc ctcagggctc cttgcctttc	ccccccacca gcacaccccg	240
taccctgcct ggaatcccag caccagcccc cctgcctctc	ctctgccttt ctggtttctc	300
tccctctcca agcatctgta agttgcactc aggagggttt	aggggagggc catgggcagg	360
ctggtctcgt gatagtgagt gagtgctcat gggatctggt	tgtttagaag catgcagcac	420
ctcctgcttc actctctctg tctctcctgc tccaccatgg	ccagaaacgt gcctgct	477

<210> 185
 <211> 546
 <212> DNA
 <213> human

<400> 185		
ggcaatctgt cacactctca gagtctggga cttgacttgc	taccaacaac tgctgtgcaa	60
ttctgctgag caggaatatc atgagctgtt caataatgac	ggacgcattg gttgagatga	120
agtttccagt aaggaagtga cagtgcaatg tggatattta	tggctgtaaa ataggaagag	180
ctttagttcc caggctgaac ctgccactgc tggagccatt	tcaacaaggc atcctcacia	240
caaagaagag atgtgatttg gtaccatttc acaccagcag	gtgtctggac gaaaacatca	300
atgtgaataa gggccaagtg cagtcctgtc ttgattaaat	tacttaataa tattattaaa	360
taataatagg tctgggcagt attgttttta acctgactca	tccagctgtc cttcaaatag	420
ctccgtctcc ctctaccag aactgatttt taaaaagaag	taatttttct ccctgggctg	480
ggaaaaccct aatgaactga aacacacttt tactttaaaa	tttttctgtc tggcggtttt	540
gtaatc		546

<210> 186
 <211> 409
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 186
 ttaacttcat tttgtatctt gcttaagtag caggctcact aaaattagag aaagtccaat 60
 aactctcccc ctttcccttg agaaatcttt aagtttcgat tctggagcaa aaactttcag 120
 cattaaatat ttcagaggct ccattcacag ctttcagata aactggagtg ttcagatgga 180
 ctgttttaat aaaaatcttt gagcaagtga gttatggcaa gagaaactca gcctctttct 240
 gtataaactt aacaggggaag ggctgggggtg tgaaaaagaa gattgtatga aaaccattgg 300
 taatttttat tttttatttt tgggactgca ctatcctgtt cacgaagaca tgtgaacttg 360
 gttcagtcca aatgggggatt tgtataaacc agtgctctcc attagaaat 409

<210> 187
 <211> 339
 <212> DNA
 <213> human

<400> 187
 ggcttgtatc aacactgtta ctttcgtaca ttggctggta acagttcatg tttgcttcat 60
 aaatgaagca gctttaaaca aattcatatt ctgtctggag tgacagacca catctttatc 120
 tgttcttgct acccatgact ttatatggat gattcagaaa ttggaacaga atgttttact 180
 gtgaaactgg cactgaatta atcatctata aagaagaact tgcattggagc aggactctat 240
 ttttaaggact gcgggacttg ggtctcattt agaacttgca gctgatgttg gaagagaaag 300
 cacgtgtctc agactgcatg taccatttgc atggctcca 339

<210> 188
 <211> 287
 <212> DNA
 <213> human

<400> 188
 tatttgaata tgtatcgtgc cccctccggt gtctttgatc aggatgacat gtgccatttt 60
 tcagaggacg tgcagacagg ctggcattct agattacttt tcttactctg aaacatggcc 120
 tgtttgggag tgcgggattc aaagggtggtc ccaccgctgc ccctactgca aatggcagtt 180
 ttaatcttat cttttggctt ctgcagatgg ttgcaattga tccttaacca ataatggtca 240
 gtcctcatct ctgtcctgct tcataggtgc caccttgtgt gtttaaa 287

<210> 189
 <211> 460
 <212> DNA
 <213> human

<400> 189
 agctcttgca acgtttactg gacatgggag agactgacct catgctggcg gctctgcgta 60
 cgctgggttg catttgctct gagcatcagt cacgggtagg tggagtggag aggctgggta 120

VDX5009WOPCT.11.30.ST25.txt

cagcttcagt ccctttgtct gtctgtccat ccattcctcc atccacccat ctgtccatcc 180
 gcccattctgc ccgtccatcc atccatccac tcttccaccc tctaccctt accttattct 240
 aaaaagaact taggtagggt atggtgcctc acacctgtaa tcccagcact ttggggggct 300
 gaggcaggtg gatcacttga ggtcaggagt tcaagaccag cctggccaac aaggcgaaac 360
 cctgtctcta ctaaaaataa aaaaattagc cgggcatggt agtgcacgcc tgtaatccca 420
 gctactcagg aggctgaggc acgagacttg cttgaaccca 460

<210> 190
 <211> 444
 <212> DNA
 <213> human

<400> 190
 gaaagccatt tgtttggcat gtgagttaaa ggcagttcca atgcctgatg gttccccaga 60
 tctatgaaat ggggtggacca ttaaccttac atgtaaagat tatgttagta attaagaaac 120
 cctaacaaag gtgttaccaa ggaacctttg ggagtgcctt ttttgttttt caagatggac 180
 ccaaaaaaag tggaggaaga tattgttctt ttgtgccctc ctacctgtga gagatatttg 240
 tagtcctatg tgaatgagct tatccctcca caaccaggtg catatgaaag tgtacatatt 300
 atgactgcca agtattggaa atgaaaagac ctggagtcta tgctaggaag ctgagatatt 360
 ttggtattgc attggttttt atggtaacta ggttttgcat gcaattaaaa atccttattt 420
 cttgttctag ggcttccctt agtt 444

<210> 191
 <211> 376
 <212> DNA
 <213> human

<400> 191
 ggagcctcag gcaactgaagg tcctgagaac tgcagagttt gtccttttg ttgttttcat 60
 tgctgcacca actattactc caggtttaaa tgaggatgaa tctcttcagc gtctgcagaa 120
 ggagtctgac atcttacaga gaacatatgc aactacttc gatctcacia ttatcaacia 180
 tgaaattgat gagacaatca gacatctgga ggaagctggt gagctcgtgt gcacagcccc 240
 acagtgggtc cctgtctcct ggggtctatta ggcctctccc cagatatctg agcataactg 300
 ggagcacctc atttgtggaa aagcctcttt gttatcggtc ttgtgtcagc aggtcatggt 360
 ccctagagac taccta 376

<210> 192
 <211> 537
 <212> DNA
 <213> human

<400> 192

VDX5009WOPCT.11.30.ST25.txt

gagaacacgg tggcagagac ggagtgccgc tatgccctgc agctgcagca gatccaggga 60
 ctcatcagca gcatcgaggc ccagctgagc gagctccgca gtgagatgga gtgccagaac 120
 caagagtaca agatgctgct ggacatcaag acacgtctgg agcaggagat cgccacctac 180
 cgcagcctgc tcgagggcca ggacgccaag aagcgtcagc ccccgtagca cctctgttac 240
 cacgacttct agtgcctctg ttaccaccac ctctaattgcc tctggtcgcc gcacttctga 300
 tgtccgtagg ccttaaattct gcctggcgct ccctccctct gtcttcagca cccagaggag 360
 gagagagccg gcagttccct gcaggagaga ggaggggctg ctggacccaa ggctcagtcc 420
 ctctgctctc aggacccctt gtcctgactc tctcctgatg gtggggccctc tgtgctcttc 480
 tcttccggtc ggatctctct cctctctgac ctggatacgc tttggtttct caacttc 537

<210> 193
 <211> 467
 <212> DNA
 <213> human

<400> 193
 ttaggcactt tttgaccttg ctgtctggat gagtttcctc aatgggattt ttcttcccta 60
 gacacaagga agtctgaact cctatttagg gccggttgga agcagggagc tggaccgcag 120
 tgtccaggct ggacacctgc cattgcctcc tctccactgc agacgcctgc ccatcaagta 180
 ttacctgcag cgactcaacc ctatgcatgg aggggtcaatg tgggcacatg tctacacatg 240
 tgggtgcca tggatagtac gtgtgtacac atgtgtagag tgtatgtagc caggagtggg 300
 ggggaccaga agcctctgtg gcctttgggtg acctcaccac tccctccac ccagtccctc 360
 cctctgggtc actgcctttt catatgtgtt gtttctggag acagaagtca aaaggaagag 420
 cagtggagcc ttgccacag ggctgctgct tcatgcgaga gggagat 467

<210> 194
 <211> 358
 <212> DNA
 <213> human

<400> 194
 ggagcagtgg actgccacaa gccaccatgt aaccctctc acctgccgtg cgttctggct 60
 gtggaccagt aggactcaag gtggacgtgc gttctgcctt cttgttaat tttgtaataa 120
 ttggagaaga tttatgtcag cacacactta cagagcacia atgcagtata taggtgctgg 180
 atgtatgtaa atatattcaa attatgtata aatatatatt atatatttac aaggagttaa 240
 tttttgtatt gattttaaat ggatgtccca atgcacctag aaaattgggtc tctctttttt 300
 taatagctat ttgctaaatg ctgttcttac acataatttc ttaattttca ccgagcag 358

<210> 195
 <211> 467

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 195
 ttaggcactt ttgaccttg ctgtctggat gagtttcctc aatgggattt ttcttcccta 60
 gacacaagga agtctgaact cctatttagg gccggttgga agcagggagc tggaccgcag 120
 tgtccaggct ggacacctgc cattgcctcc tctccactgc agacgcctgc ccatcaagta 180
 ttacctgcag cgactcaacc ctatgcatgg aggggtcaatg tgggcacatg tctacacatg 240
 tgggtgcca tggaatgtac gtgtgtacac atgtgtagag tgtatgtagc caggagtgggt 300
 ggggaccaga agcctctgtg gcctttggtg acctcaccac tccctccac ccagtcctc 360
 cctctggtcc actgcctttt catatgtgtt gtttctggag acagaagtca aaaggaagag 420
 cagtggagcc ttgcccacag ggctgctgct tcatgcgaga gggagat 467

<210> 196
<211> 218
<212> DNA
<213> human

<400> 196
 atgtcttatc aacagcagca gtgcaagcag ccctgccagc cacctcctgt gtgccccacg 60
 ccaaagtgcc cagagccatg tccacccccg aagtgccctg agccctgccc accaccaaag 120
 tgtccacagc cctgcccacc tcagcagtgc cagcagaaat atcctcctgt gacaccttcc 180
 ccacctgcc agccaaagta tccaccgaag agcaagta 218

<210> 197
<211> 233
<212> DNA
<213> human

<400> 197
 gcgtgttttc ctcttgatcg ggaactcctg cttctccttg cctcgaaatg gacccaact 60
 gctcctgctc gcctgttgcc tcctgtgcct gtgccggctc ctgcaaatgc aaagagtgc 120
 aatgcacctc ctgcaagaag agctgctgct cctgctgccc tgtcggctgt gccaagtgtg 180
 cccagggctg catctgcaaa gggacgtcag acaagtgcag ctgctgtgcc tga 233

<210> 198
<211> 578
<212> DNA
<213> human

<400> 198
 cccgaccatc gaatcttgcg aacaacacga tacttggtta gtggctaccc caaacgatc 60
 tgcttggtca cccgatgacc cgtgccttta tcacccatgc tggttcccat ggtgtttatg 120
 aaagcatatg caatggcggt cccatggtga tgatgccctt gtttggtgat cagatggaca 180

VDX5009WOPCT.11.30.ST25.txt

atgcaaagcg catggagact aagggagctg gaggtagcct gaatgttctg gaaatgactt	240
ctgaagattt agaaaatgct ctaaaagcag tcatcaatga caaaagttac aaggagaaca	300
tcatgcgctt ctccagcctt cacaaggacc gcccggtgga gccgctggac ctggccgtgt	360
tctgggtgga gtttgtgatg aggcacaagg gcgcgccaca cctgcgcccc gcagcccacg	420
acctcacctg gtaccagtac cattccttgg acgtgattgg tttcctcttg gccgtcgtgc	480
tgacagtggc cttcatcacc tttaaattgt gtgcttatgg ctaccgaaa tgcttgggga	540
aaaaagggcg agttaagaaa gccacaaaat ccaagacc	578

<210> 199
 <211> 277
 <212> DNA
 <213> human

<400> 199	
aagaggggccc tgatgagact ccactcaggt gcacacatca ccaggtgcat ctgcaggcac	60
cgggctggct gcttgcagcc aggagaaggc cagcgagaag gagggtatga gtgtgagtgt	120
gtgtgcatgg aagttggggc actgggcgtc tgactccctc cccacccaag agaggaagga	180
cccccacca cccccactgg cgagacagtt tactttgccg acttgccatg tttttgcaa	240
aaccaagatt ttgaaggaaa tgagtggcca gcgccag	277

<210> 200
 <211> 332
 <212> DNA
 <213> human

<400> 200	
tggtgagaag ggccggcgga ttcgggaact gactgctgta gttcagaaga ggtttggctt	60
tccagagggc agtgtagagc tttatgctga aaaggtaggc actagaggctc tgtgtgccat	120
tgccaggca gaggctctgc gttacaaact ctaggagggc cttgctgtgc ggagggcctg	180
ctatggtgtg ctgcggttca tcatggagag tggggccaaa ggctgagagg ttgtggtgtc	240
tgggaaactc cgaggacaga gggctaaatc catgaagttt gtggatggcc tgatgatcca	300
cagcgagagac cctgttaact actacgttga ca	332

<210> 201
 <211> 537
 <212> DNA
 <213> human

<400> 201	
tgaacagtac cgcttcgaga gggagaaaga attcaaggcc aaggagctg cggcattggg	60
atcccgtggc agttgcagca ctgaagtgga gaaggagacc caggagaaga tgaccatcct	120
ctagacatac ttccggcaga acagggatga agtcttggac aacctcttgg cttttgtctg	180

VDX5009WOPCT.11.30.ST25.txt

tgacattcgg ccagaaatcc atgaaaacta ccgcataaat ggatagaaga gagaagcacc	240
tgtgctgtgg agtggcattt tagatgccct cacgaatatg aagcttagca cagctctagt	300
tacattctta tgatatggca ttaaattatt tccatatatt atataatagg tccttccact	360
ttttggagag tagcaaatct agcttttttg tacagactta gaaattatct aaagatttca	420
tctttttacc tcatatttct taggaattta atggttatat gttgtctttt tttcctatgt	480
cttttggctc aagcaacatg tatatcagtg ttgacttttt ctttcttaga tctagtt	537

<210> 202
 <211> 527
 <212> DNA
 <213> human

<400> 202	
tcagtctaac tctgtgtgct acgccaagaa cgggcagggt atcggcattg gagcaggaca	60
gcagtctcgt atacactgca ctcgccttgc aggagataag gcaaactatt ggtggcttag	120
acaccatcca caagtgcctt cgatgaagtt taaaacagga gtgaagagag cagaaatctc	180
caatgccatc gatcaatatg tgactggaac cattggcgag gatgaagatt tgataaagtg	240
gaaggcactg tttgaggaag tccctgagtt actcactgag gcagagaaga aggaatgggt	300
tgagaaactg actgaagttt ctatcagctc tgatgccttc ttccctttcc gagataacgt	360
agacagagct aaaaggagtg gtgtggcgta cattgcggct ccctccggtt ctgctgctga	420
caaagttgtg attgaggcct gcgacgaact gggaaatcatc ctcgctcata cgaaccttcg	480
gctcttccac cactgatttt accacacact gttttttggc ttgctta	527

<210> 203
 <211> 564
 <212> DNA
 <213> human

<400> 203	
tagaccatct ccatttttag cacttggcag cctcatgac cttttataaa tgtgagatta	60
acaggagagc agcaatacga ttttgccaat ggaataacag atttgccggc attcactgaa	120
agagggcaga tattgggtcc ttgtaacttc aactgactct tccaaattgt atgaatttat	180
caatgtatta cacaaatcca gtttcagaat gataaaaaat gtttagacca ataatgcggc	240
taattaacag tcgtatgatt tctagcccat gggtttataaa ctgtatctta aagagtcatt	300
ttaaaataat ataaatatta aaaaatgtaa ctgctatctt aatgttctga aataaaacat	360
tttaaaatat aaatcctgta gttttaaagg aagaaatggg ggggaaggaaa agtagagaaa	420
gaaatgccaa ttacaggcca aagcggttatt tgccaagttt tcttagaatg aattttacca	480
atgtatgagt tcttgtaaac agaattgtga acggaaatac tgaaagactt ttgcttaaag	540
tggcattatt gactgctgat gtga	564

VDX5009WOPCT.11.30.ST25.txt

<210> 204
 <211> 464
 <212> DNA
 <213> human

<400> 204
 aatctccagg ggcaccattg aaatcctgag tgatgtgcag ctgatcaaga ctggagacaa 60
 agtgggagcc agcgaagcca cgctgctgaa catgctcaac atctccccct tctcctttgg 120
 gctgggtcatc cagcagggtgt tcgacaatgg cagcatctac aaccctgaag tgcttgatat 180
 cacagaggaa actctgcatt ctgccttcct ggagggtgtc cgcaatgttg ccagtgtctg 240
 tctgcagatt ggctacccaa ctggttgcac agtaccctat tctatcatca acgggtacaa 300
 acgagtcctg gccttgtctg tggagacgga ttacaccttc ccacttgctg aaaagggtcaa 360
 ggcccttcttg gctgatccat ctgcctttgt ggctgctgcc cctgtggctg ctgccaccac 420
 agctgtcct gctgtgtctg cagccccagc taagggtgaa gcca 464

<210> 205
 <211> 536
 <212> DNA
 <213> human

<400> 205
 cccccactt ttggagatgc gtcagtcatt gcccttgaat tactaaattc tggatatgaa 60
 tttgatgaag gctccatcat ctttaataaa ttcagggtctg tcatctccta taagacagaa 120
 gaaaagccca tcttttccct taataccgtt gcaagtgtctg acagcatgag tatctatgac 180
 gatattgatg ctgacgtgct gcaaaattac caagaatata atctggccaa catcatctac 240
 tactctctga aggagtccac cactagttag cagagtgtcca ggatgacagc catggacaat 300
 gccagcaaga atgtctctga gatgattgac aaattgacat tgacattcaa ccgtaccgcg 360
 caagctgtca tcacaaaaga gttgattgaa attatctctg gtgctgcagc tctggattaa 420
 tgaaaatcaa gttccatcct cagacaagag gtaaagaagg aaaattcagc cagttgattt 480
 tgttttttagc ttactgtctg ctttgtccga agaaaccgtt cctccattat ttgaat 536

<210> 206
 <211> 540
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (373)..(373)
 <223> n is a, c, g, or t

<400> 206
 tgcctgtatt tgagactgga gctgcctgta tgaggactgg atcaactgct agtcacgtta 60

VDX5009WOPCT.11.30.ST25.txt

tatccaaatc tgcattatca ttgggcacat tttcacagaa ttttactgaa ttattcctta	120
attgtttaat gggtgggaat agtttgggaa ttaccttcca tcaactctgc taagaaagga	180
atggattctg gtagcaagac aatataattc tccttttagtt tttcagccag tgctaacaca	240
gtaatcaaag cagcaaatcg aacctgaaag ggataaaaga gcaaagaaat aaaaagtagt	300
gttactgtat ttattatctt aagagctgta ctgacttgag acaagctcta actttttaaa	360
cattagttca cangcgttta ttcacttcat tatgttcatt aagctttcat cttagaatac	420
cagtttcacc atttgggagc tgtttgtaat atgtgcaacc ttataaatag tgttttccaa	480
actgtgtccc aggactgcaa atctttaatg tgaaatgtct ttttataatc tcttccttta	540

<210> 207
 <211> 445
 <212> DNA
 <213> human

<400> 207	
gagcaacttt gagtgaatc tgcaacatgg ataccatgta tgtaagatac tgctgtacag	60
aagagttaag gcttacagtg caaatgaggc gtcagctttg ggtgctaaaa ttaacaagtc	120
taatattatt accatcaatc aggaagagat aataaatgtt taaacaaaca cagcagtctg	180
tataaaaata cgtgtatatt tactctttct gtgcacgctc tatagcatag gcaggagagg	240
cttatgtggc agcacaagcc aggtggggat tttgtaaaga agtgataaaa catttgtaag	300
taatccaagt aggagatatt aaggcaccaa aagtaacatg gcaccaaca cccaaaaata	360
aaaatatgaa atatgagtgt gaactctgag tagagtatga aacaccacag aaagtcttag	420
aaatagctct ggagtggctc tccca	445

<210> 208
 <211> 337
 <212> DNA
 <213> human

<400> 208	
gaagaggtct ttgcatggaa taatgaagta aaacagggac tttcaagtag catctttacc	60
aaagatctgg gcagaatctt tcgctggctt ggacctaaag gatcagactg tggcattgta	120
aatgtcaaca ttccaacaag tggggctgag attggagggtg cttttggagg agaaaagcac	180
actggtggtg gcaggagagtc tggcagtgat gcctggaaac agtacatgag aaggtctact	240
tgtactatca actacagtaa agaccttcct ctggcccaag gaatcaagtt tcagtaaagg	300
tgtttttagat gaacatccct taatttgagg tgttcca	337

<210> 209
 <211> 355
 <212> DNA

VDX5009WOPCT.11.30.ST25.txt

<213> human

<400> 209

gagcttcccc aactcataaa tgccaatttt ccagtggatc cccaaaggat gtctattttt	60
ggccactcca tgggaggtca tggagctctg atctgtgctt tgaaaaatcc tggaaaatac	120
aaatctgtgt cagcatttgc tccaatttgc aaccctgtac tctgtccctg gggcaaaaaa	180
gccttttagtg gatatttggg aacagatcaa agtaaattga aggcttatga tgctaccac	240
cttgtgaaat cctatccagg atctcagctg gacatactaa ttgatcaagg gaaagatgac	300
cagtttcttt tagatggaca gttactccct gataacttca tagctgcctg tacag	355

<210> 210

<211> 528

<212> DNA

<213> human

<220>

<221> misc_feature

<222> (472)..(472)

<223> n is a, c, g, or t

<400> 210

aaggaattgt agcaggcccc atgaatgaag agaacttttt tgaatgggag gcattgatca	60
tgggcccaga agacacctgc tttgagtttg gtgtttttcc tgccatcctg agtttccac	120
ttgattaccc gttaagtccc ccaaagatga gattttacctg tgagatgttt catcccaaca	180
tctaccctga tgggagagtc tgcatttcca tcctccacgc gccaggcgat gacccccatg	240
ggctacgaga gcagcgccgg agcgggtggag tcctgtgcag agtgtggaga agatcctgct	300
gtcgggtggtg agcatgctgg cagagcccaa tgacgaaagt ggagctaacg tggatgcgtc	360
caaatgttg cgcatgacc gggagcagtt ctataagatt gccaagcaga tcgtccagaa	420
gtctctggga ctgtgagacc tggcctcgca caggcgca cacaccgcca ancagctcag	480
cattctcccc cggcacactt agtgacagtg atgctctgtg ctggtacc	528

<210> 211

<211> 364

<212> DNA

<213> human

<400> 211

cacttcagac cagccagggtg tcttcccggg ccctgccaga ccctgctcac attccctctg	60
ctggtctgtg ctggtctcag aaggccaccg cgcccgcatc ccactcagcc agggctcagc	120
tgcagcccc gccacccttc ctcccttcc ctgtcctggg tcatgttggt gccaccctgt	180
gtgacttttg aagctgtaaa atgagcttcc agggcttggg tggcgctcggg gcagggccgc	240
cgaggctggg aggaagccct tctgcctttt gctggtgttt ctggaatttg ctttccctca	300

VDX5009WOPCT.11.30.ST25.txt

cctctcactt ccttctagaa ggagcttcct gactggaacc agagaatgca tgtctgtcca 360

cttg 364

<210> 212
 <211> 488
 <212> DNA
 <213> human

<400> 212
 gagtctcaga atgctcagga ccaaggtgca gagatggaca agagcagcca ggagaccag 60
 cgatctgagc ataaaactca ttaaacctgc ccctatcact agtgcattgct gtggccagac 120
 agatgacacc ttttgttatg ttgaaattaa cttgctaggc aaccctaaat tgggaagcaa 180
 gtagctagta taaaggccct caattgtagt tgtttccagc tgaattaaga gctttaaagt 240
 ttctggcatt agcagatgat ttctgttcac ctggtaagaa aagaatgata ggcttgtcag 300
 agcctatagc cagaactcag aaaaaattca aatgcactta tgttctcatt ctatggccat 360
 tgtgttgccct ctgttactgt ttgtattgaa taaaaacatc ttcatgtggg ctggggtaga 420
 aactggtgtc tgctctggtg tgatctgaaa aggcgtcttc actgctttat ctcatgatgc 480
 ttgcttgt 488

<210> 213
 <211> 318
 <212> DNA
 <213> human

<400> 213
 tgctcaccat cagatcaacc tctgatttta catcatgatg taatcaccac tggagcttca 60
 ctttgttact aaattattaa tttcttgcct ccagtgttct atctctgagg ctgagcatta 120
 taagaaaatg acctctgctc cttttcattg cagaaaattg ccaggggctt atttcagaac 180
 aacttccact tactttccac tggctctcaa actctctaac ttataagtgt tgtgaacccc 240
 caccaggca gtatccatga aagcacaagt gactagtcct atgatgtaca aagcctgtat 300
 ctctgtgatg atttctgt 318

<210> 214
 <211> 385
 <212> DNA
 <213> human

<400> 214
 gccgccattg ctgatgctga gcagcgtggg gagatggccc tcaaggatgc taagaacaag 60
 ctggaagggc tggaggatgc cctgcagaag gccaaagcagg acctggcccg gctgctgaag 120
 gagtaccagg agctgatgaa cgtcaagctg gccctggacg tggagatcgc cacctaccgc 180
 aagctgctgg agggcgagga gtgcaggctg aatggcgaag gcgttggaca agtcaacatc 240

VDX5009WOPCT.11.30.ST25.txt

tctgtagtgc agtccaccgt ctccagtggc tatggcgggtg ccagcgggtgt cggcagtggc	300
ttaggcctgg gtggaggaag cagctactcc tatggcagtgt gtcttggcgt tggaggcggc	360
tttagttcca gcagcggcag agcca	385

<210> 215
 <211> 177
 <212> DNA
 <213> human

<400> 215	
gccgggagg ggaatataca aagtgaagcc acattgccaa acttgacagca gcgattgcag	60
cagttgctgc cgctgcgccg cgcctgaagc cgcgccgcgc gggccgaggg ctctgcagc	120
tgctcgcgcg cagtcggagg cggagaagga cgaagactga gactgacact tctgctc	177

<210> 216
 <211> 497
 <212> DNA
 <213> human

<400> 216	
gtgaaacaat tccagggcat gcccccttgc acatacaca tgccaagtca gtttcttcca	60
caacaggcca cttactttcc cccgtcacca ccaagctcag agcctggaag tccagataga	120
caagcagaga tgctccagaa ttttaaccca cctccatcct atgctgctac aattgcttct	180
aaactggcaa ttcacaatcc aaattttacc accaccctgc cagttaactc aaaaaacatc	240
caacctgtca gatacaatag aaggagtaac cccgatttgg agaaacgacg catccactac	300
tgcgattacc ctggttgac aaaagtttat accaagtctt ctcatctaaa agctcacctg	360
aggactcaca ctggtgaaaa gccatacaag tgtacctggg aaggctgcga ctggagggtc	420
gcgcgatcgg atgagctgac ccgccactac cggaagcaca caggcgcca gcccttcag	480
tcgggggtgt gcaaccg	497

<210> 217
 <211> 432
 <212> DNA
 <213> human

<400> 217	
ctggctatgg ctcaccaggg cagaaggcca cggatcatggg tacactgcgc agcctaggtg	60
ctctggccag ggccgcgggg cccctgggtg ccgcttcagt gtactggctg gccggggccc	120
aggcctgctt caccacgtgg tccgggctct ttttgctccc cttcttcctc ctgcagaagc	180
tgagttaccc ggcacagacg ctcaaggctg agtagctgag cactgtgcc caggctgtgg	240
gcaccaggca gagtgggagc ctaggctcagg cccctgcccc ctgcctgacc cccaccccc	300
gccagtccag ggagaccctg tgggtggggg ccggccccta agcaggaagc tcaggcagct	360

VDX5009WOPCT.11.30.ST25.txt

cctccagact tacttactcc ttcagtgact ccgagctgca gcactccaag gctgtcaggg 420

cttctgtttg tt 432

<210> 218
 <211> 399
 <212> DNA
 <213> human

<400> 218
 taaccagctc ctgagaacca tgtctatgcc caaaggtaga gttctggata aaaacctgga 60
 tgaggaaggg ttgaaagtg gagactgcgg tgatgatgaa gatgagtgc ttggaggctc 120
 tggatgatgga atgataaaag tgaagaatca gctccgcttc cttgcagaac tggcctatga 180
 tctggatgtg gatgatgcgc ctggaaacag tcagcaggca actccgaagg acaacgagat 240
 aagcaccttt cacaacctcg ggaacgttca ttccccgctg aagctttctca ccagcatggc 300
 catctcggtg gtgtgcttct tcttcctggt gcactgactg cctgggtgcc agcacatgtg 360
 ctgccctaca gcacctgtg gtcttcctcg ataaaggga 399

<210> 219
 <211> 560
 <212> DNA
 <213> human

<400> 219
 agacaacctg acactgtgga cggccgacaa cgccggggaa gaggggggag aggctcccca 60
 ggagccccag agctgagtgt tgcccgcac cgccccgcc tgccccctcc agtccccac 120
 cctgccgaga ggactagtat ggggtgggag gccccacct tctcccctag gcgctgttct 180
 tgctccaaag ggctccgtgg agagggactg gcagagctga ggccacctgg ggctggggat 240
 cccactcttc ttgcagctgt tgagcgcacc taacctgtg tcatgcccc accctgtctc 300
 tccgcacccg cttctctccg accccaggac caggctactt ctcccctct cttgcctccc 360
 tcctgcccct gctgcctctg atcgtaggaa ttgaggagt tcccgcttg tggctgagaa 420
 ctggacagtg gcaggggctg gagatgggtg tgtgtgtgtg tgtgtgtgtg tgtgtgtgcg 480
 cgcgcgccag tgcaagaccg agattgaggg aaagcatgtc tgctgggtgt gaccatgttt 540
 cctctcaata aagttcccct 560

<210> 220
 <211> 391
 <212> DNA
 <213> human

<400> 220
 atgtaattgc ctttgtgtgt agttaaaatg agtcatcatc tggctccttg tgaaatggaa 60
 ttcatggtat tttctgtaac gttttcctga agctgtttct ggagagccac acatttaa 120

VDX5009WOPCT.11.30.ST25.txt

acagacagct ttcctgatca ttgatttat tgtgcacctg atttttggtc taaaaggaat 180
 tattgccaca atatatttta ttatttcttt agatttttagc cttgtaagtt aaagtgcctt 240
 acatgatgat gtgaaaagct gtttgtccct ttactgggtt tgggggggtg ttaaaagata 300
 gggaatgaag aatgcaaaaat ggtttatcgt tcaaactgtc cactctgatc caaccctgta 360
 ctgatagtac ttcccagtat gatattgtga t 391

<210> 221
 <211> 541
 <212> DNA
 <213> human

<400> 221
 gcggaaatac ctgaaatata gcaaaaatat cctggaccgg caagatcctc cctctgtggt 60
 ggtcaccagc caccaggccc caggagaaaa gaagaaactg aagtgcctgg cctacgactt 120
 ctaccaggg aaaattgatg tgcactggac tcgggcccggc gaggtgcagg agcctgagtt 180
 acggggagat gttcttcaca atggaaatgg cacttaccag tcctgggtgg tgggtggcagt 240
 gccccgcag gacacagccc cctactcctg ccacgtgcag cacagcagcc tggcccagcc 300
 cctcgtggtg ccctgggagg ccagctagga agcaagggtt ggaggcaatg tgggatctca 360
 gaccagtag ctgcccttcc tgcctgatgt gggagctgaa ccacagaaat cacagtcaat 420
 ggatccacaa ggcctgagga gcagtgtggg gggacagaca ggagggtgat ttggagaccg 480
 aagactggga tgcctgtctt gagtagactt ggacccaaaa aatcatctca ccttgagccc 540
 a 541

<210> 222
 <211> 488
 <212> DNA
 <213> human

<400> 222
 tctggcttcg acccaacaaa gttcattaac ctgggatgaa tggggttggc ctgttggtga 60
 tttggatgct gttctgtgat ctaaaacaac tcttattgaa ttgtatttac tccctaaaca 120
 acacttgaca ggctgttgca cagggtctct atagatcagt gtgttaggaa tgggaggccc 180
 cttcctgcct gccttcccat attggtccct tgacattgac aaaagcacag tgactgtcag 240
 cagattcctt tacttttgtt tgtgggaggt aggaattgtt ttaatgcatt ttaaacagtg 300
 tttctgaaat tggatggctg gctaatagac actgaatcac ccggagtgtc tatcttaaaa 360
 ttgcagattt agggagcctg ccaatttaac agtctcatca gtgatctttc aacagtaatg 420
 tttgagaatt actgggttaa attgtggaaa ggggtccagat tttaaagggtg ctttaagggtt 480
 gccctctg 488

VDX5009WOPCT.11.30.ST25.txt

<210> 223
 <211> 262
 <212> DNA
 <213> human

<400> 223
 ggatcgcagt catccagaga tgtgacctcc tccagccgcc aaatccgcac caaggtcatg 60
 gatgtgcacg atggcaagggt ggtgtccacc cacgagcagg tccttcgcac caagaactga 120
 ggctgcccag ccccgctcag gcctaggagg ccccccgtgt ggacacagat cccactggaa 180
 gatccccctct cctgcccgaag cacttcacag ctggaccctg cttcacccctc accccctcct 240
 ggcaatcaat acagcttcat ta 262

<210> 224
 <211> 418
 <212> DNA
 <213> human

<400> 224
 cagctccaag acctgttggt tccaagccct ggagccaact gctgcttttt gaggtggcac 60
 tttttcattt gcctattccc acacctccac agttcagtgg cagggctcag gatttcgtgg 120
 gtctgttttc ctttctcacc gcagtcgtcg cacagtctct ctctctctct cccctcaaag 180
 tctgcaactt taagcagctc ttgctaata gttgtctcaca ctggcgtaga agtttttgta 240
 ctgtaaagag acctacctca ggttgctgggt tgctgtgtgg tttggtgtgt tcccgcaaac 300
 cccctttgtg ctgtggggct ggtagctcag gtgggcgtgg tctactgctgt catcagttga 360
 atggtcagcg ttgcatgtcg tgaccaacta gacattctgt cgccttagca tgtttgct 418

<210> 225
 <211> 579
 <212> DNA
 <213> human

<400> 225
 agtgatgagt tgtgtgcttg tccctggcag tggcaggctg tgtcctatgg acatcttggc 60
 aggacatgga atttggcctc atgacaggcc caactagggga taggaaggaa aatgaagaga 120
 gccagtattt ccccttctcc agaagcagggt actcagcttt ctgggaaaag cgtgcctcca 180
 gccgtgggga caggccatcc tactgactac ctcttgcttg gcatgaaata aactgctatc 240
 ctcccccttg aatctaccgc cactctacat cctactgctt tggcctccct ctctctcac 300
 cagatggcat gtggtgtggc acctgtggct ggacacagga ggcctcagga tcacaaatgt 360
 tacactagac atatgtccta atgtgtgcc cagaaacctc aactgttccc cagctactga 420
 ggggcactgt cagcgagatg ttgggtctgg aggtgatgag atcgggccac acttgagctg 480
 agtcaccaga ccctattgct tcaacagtgc ttggcccccg ccagcttgct ccagccactc 540
 tagctgctgg atgtgatcct gggacatgta ctccaagcc 579

VDX5009WOPCT.11.30.ST25.txt

<210> 226
 <211> 423
 <212> DNA
 <213> human

<400> 226
 ttcactatgt atcctgttac tgggcttaaa cagctttcag agaagagatg tcatttctat 60
 taaatgctct ttcagtagcg aactgagttc acacttgact aaggatattt tccggactgt 120
 ctgtcatcag catccttagt gggtttcccc atattttaa tggtagaggc cagggatggg 180
 ggctcacacc tgtaatctca gtactttggg aggccaaggt aggtggattg cttgagctca 240
 gaagaccagc ctgggcaacc tggtgaaacc ctgtctctac taaaaattca agttagctag 300
 ctgggcatgg tgatgcactt ctgtagtccc agctacttgg agaggggggtg gtgctggggc 360
 agcaggatcg cttgaaccca ggaggttgag gttgcagtga gccaagatgg taccagccta 420
 ggt 423

<210> 227
 <211> 505
 <212> DNA
 <213> human

<400> 227
 ggaagcacaa tttccacctt attttttgaa ctttggcagt ttcaatgtct gtctctgttg 60
 cttcggggca taagctgac accgtctagt tgggaaagta accctacagg gttttagagg 120
 acatgatcag catcctgatt tgaaccctga aatgtttgtg agacaccctc ttgggtccaa 180
 tgaggtagtt ggttgaagta gcaagatgtt ggcttttctg gatTTTTTTT gccatggggt 240
 cttcactgac cttggacttt ggcatgattc ttagtcatac ttgaacttgt ctattccac 300
 ctcttctcag agcaactctt ctttgggaa aagagttctt cagatcatag accaaaaaag 360
 tcataccttc gaggtggtag cagtagattc caggaggaga agggacttgg ctaggtatcc 420
 tgggtcagtg gcggtgcaaa ctggtttcct cagctgcctg tccttctgtg tgcttatgtc 480
 tcttgtgaca attgttttcc tccct 505

<210> 228
 <211> 510
 <212> DNA
 <213> human

<400> 228
 tctccattcg atatcagctc gttcgactct tctatgatgt ctgagtcctt tgatcattgt 60
 cctttacctc acagtctcta ggattcctga ctcaggctga cctctctctc tgggtccaga 120
 ctgcctcctt gcccaggcct ctctcactct tcatactcct ccagattttg ttctcagcat 180
 tttcctttct ctgtgatcat tggcatcctg ggcgtttctt gccctctgct gactactgat 240

VDX5009WOPCT.11.30.ST25.txt

tggattttac ctatggcttt ctgcaacttg ctactctctc cctctccatc ccatctttgc	300
agcctcatag ggtgggatac agcagctttt tttgcagtta tccacactca catttcagag	360
tcctgactct caaggaacca ctggtttttg ggatagaact tgggccaggg ctaggaacac	420
aggctccacg gtgacatgtc atttgattgt aaattaagtg ttctgattag taagaactaa	480
gcagggggcc acatgctctc aatggagaca	510

<210> 229
 <211> 350
 <212> DNA
 <213> human

<400> 229	
ccgagagcgc cttaactcga gtcggatccg tgttggggcg ggcgttgggt ttggggggac	60
ggtgccccca gccaggatc gggcactcag tggagccgca cacggcccgg cgcgcctggt	120
agagcctcgc tggccccgcg ccccgagacc ctatattaag gccacggagc gacagcgggc	180
agtgcggggc tggcgggagg tgggggaggt ccatctcaga acaccccagc cttgagctta	240
gctgcaggcc caggccctct gctctgctcc cgggctagga ggtggccctc tgtctgggcg	300
aacagccccc tcctcaccgc ccgccgtgca agagtcgagc cggcagagca	350

<210> 230
 <211> 440
 <212> DNA
 <213> human

<400> 230	
atttcagtgc agttcattct taatggaaaa tctgaaacct aaattgcaga tttaaaaggt	60
actgtacaac cattatatct gtaaataact tagcaccttt ttgtcactta gaataatatg	120
tactactact tgagttagcg cttttggaag ttatatcaag ttctagtgtt tgcttcttag	180
taactgaact gaatttacag ttctgtccta gacattttgc actaaagtag ccgaatccac	240
tctcatgtct tttcgttaat gtgctctgta ccaactggta gtgctccata gtttccttac	300
ctgctgctac agaatgttat ttacatccc tatggctatt gccaaaggcta caaaaaagga	360
aagctatatt tgtatgcaac actaaccttt tgactgctaa tgtatgtttc tgcttgctgt	420
gccttggttat ggctgctttt	440

<210> 231
 <211> 496
 <212> DNA
 <213> human

<400> 231	
tctggttgcc tatagtgtc tgggatccca tcgagaagaa ccatgggtgg acccgaactc	60
cccgggtgctc ttggaggacc cagtcctttg tgccttggca aaaaagcaca agcgaacccc	120

VDX5009WOPCT.11.30.ST25.txt

```

agccctgatt gccctgcgct accagctgca gcgtgggggt gtggtcctgg ccaagagcta 180
caatgagcag cgcacagac agaacgtgca ggtgtttgaa ttccagttga cttcagagga 240
gatgaaagcc atagatggcc taaacagaaa tgtgcgatat ttgacccttg atatTTTTgc 300
tgcccccct aattatccat tttctgatga atattaacat ggagggcatt gcatgaggtc 360
tgccagaagg cctgcgtgt ggatgggtgac acagaggatg gctctatgct ggtgactgga 420
cacatcgctt ctggttaaat ctctcctgct tggcgacttc agtaagctac agctaagccc 480
atcggccgga aaagaa 496

```

<210> 232
 <211> 363
 <212> DNA
 <213> human

```

<400> 232
gtcgatttac acttacctcg gttcaaagtg gaagagagct atgacctcaa ggacacgttg 60
agaaccatgg gaatgggtgga tatcttcaat ggggatgcag acctctcagg catgaccggg 120
agccgcggtc tcgtgctatc tggagtccta cacaaggcct ttgtggaggt tacagaggag 180
ggagcagaag ctgcagctgc caccgctgta gtaggattcg gatcatcacc tacttcaact 240
aatgaagagt tccattgtaa tcaccccttc ctattcttca taaggcaaaa taagaccaac 300
agcatcctct tctatggcag attctcatcc ccgtagatgc aattagtctg tctctcatt 360
tgg 363

```

<210> 233
 <211> 336
 <212> DNA
 <213> human

```

<400> 233
gcaacaacag attctcttgg ctcatatttc ttttctttct catcttgatg atgatcgctg 60
tcatcaagaa tttaatgatt aaaatagcat gcctttctct ctttctctta ataagcccac 120
atataaatgt actttttctt ccagaaaaat tctccttgag gaaaaatgtc caaataaga 180
tgaatcactt aataccgtat cttctaaatt tgaaatataa ttctgtttgt gacctgtttt 240
aatgaacca aaccaaatac tactttttct ttgaatttag caacctagaa acacacattt 300
ctttgaattt aggtgatacc taaatccttc ttatgt 336

```

<210> 234
 <211> 388
 <212> DNA
 <213> human

```

<400> 234
aaagaaggaa cctactcact gcccaagagc gaattcgttg tgcttgacct ggagctgccc 60

```

VDX5009WOPCT.11.30.ST25.txt

```

agttggctca ccaccgggaa ctaccgcata gagagcgtcc tgagcagcag tgggaagcgt 120
ctgggctgca tcaagatcgc tgcctctcta aagggcatat aacatggcat ctgccacagc 180
agaatggagc ggtgtgagga aggtcccttt tcctctgttt tgtgtttgcc aaggccaaac 240
tcccactctc tgcccccttt taatccccctt tctacagtga gtccactacc ctcactgaaa 300
atcattttgt accacttaca ttttaggctg gggcaagcag ccctgacctt agggagaatg 360
agttggacag ttcttgatag cccagggc 388

```

<210> 235
 <211> 470
 <212> DNA
 <213> human

```

<400> 235
atgacttaga ttgtgacctt ttagattcgg tgttgagctc tgtgttgtat tacttcctaa 60
aagataatgc ttaaacatta agcattagtg tgctcttcat gttaatatgg cagagttttg 120
taaactaaat taaaacttac tgatatattg gactttgagc caagggaaaag aatgagtact 180
atctttccag atatcttaag ggtaaaagct tattctaaga cagtctgtcc attgagaata 240
ttagatttct gacttgcaaa tatgtttgta ctccagaaga attagaggaa aagcagatac 300
tagaattcta atttaattac atatacagcc gtctttgttt atagtgtaga attctttata 360
ttttgtacaa aaactaattc ttttggtaaa atgaaccatt tacagttcgg ttttggaactc 420
tgagtcaaag gatcttcctt taaatgcttg tctcaatttt agtctggtct 470

```

<210> 236
 <211> 531
 <212> DNA
 <213> human

```

<400> 236
tcctctcgtg ggggtgtttac ccctgtggct ctgcccagca tccagctgtc tacaccaga 60
tctgcaaata catgtcctgg atcaataaag tcatacgctc caactgatcc agatgctacg 120
ctccagctga tccagatggt atgctcctgc tgatccagat gccagaggc tccatcgtcc 180
atcctcttcc tccccagtcg gctgaactct ccccttgtct gcaactgttc aacctctgcc 240
gccctccaca cctctaataca tctccccctt cacctcattc cccacctat cccattctc 300
tgctgtact gaagctgaaa tgcaggaagt ggtggcaaag gtttattcca gagaagccag 360
gaagccggtc atcaccagc ctctgagagc agttactggg gtcaccaaac ctgacttcct 420
ctgccactcc ccgctgtgtg actttgggca agccaagtgc cctctctgaa cctcagtttc 480
ctcatctgca aaatgggaac aatgacgtgc ctaccttta gacatgttgt g 531

```

<210> 237

VDX5009WOPCT.11.30.ST25.txt

<211> 337
 <212> DNA
 <213> human

<400> 237
 agagcagccg cagtgaggtg acggagctcc ggaggggtgct ccagggcctg gagattgagc 60
 tgcagtccca gctcagcatg aaagcatccc tggagaacag cctggaggag accaaaggcc 120
 gctactgcat gcagctgtcc cagatccagg gactgattgg cagtgtggag gagcagctgg 180
 cccagctacg ctgtgagatg gagcagcaga gccaggagta ccagatcttg ctggatgtga 240
 agacgcggct ggagcaggag attgccacct accgccgcct gctggagggc gaggatgccc 300
 acctttcctc ccagcaagca tctggccaat cctattc 337

<210> 238
 <211> 528
 <212> DNA
 <213> human

<400> 238
 aacactaggg ccttggaat tcctgtactg tgtctcatgg atttggcact agccaaagcg 60
 aggcaccctt actggcttac ctctcatgg cagcctactc tccttgagga tgagtagcca 120
 gggtaagggg taaaggatag taagcataga aaccattaga aagtgggctt aatggagttc 180
 ttgtggcctc agctcaatgc agttagctga agaattgaaa gtttttgttt ggagacgttt 240
 ataacagaaa tggaagcaga gttttcatta atccttttac cttttttttt ttcttggtaa 300
 tcccctaaaa taacagtatg tgggatattg aatgttaaag ggatattttt tctattattt 360
 ttataattgt acaaaattaa gcaaattgta aaagttttat atgctttatt aatgttttca 420
 aaaggtatta tacatgtgat acatttttta agcttcagtt gcttgtcttc tgggtactttc 480
 tgttatgggc ttttggggag ccagaagcca atctacaatc tctttttg 528

<210> 239
 <211> 556
 <212> DNA
 <213> human

<400> 239
 ggtgtttcct tctgggcaga tcagccaggc ctcggccttg gccccggccc ctccccaagt 60
 cctgccccag gctccagccc ctgcccctgc tccagccatg gtatcagctc tggcccaggc 120
 cccagcccct gtcccagtc tagccccagg ccctcctcag gctgtggccc cacctgcccc 180
 caagcccacc caggctgggg aaggaacgct gtcagaggcc ctgctgcagc tgcagtttga 240
 tgatgaagac ctgggggcct tgcttggcaa cagcacagac ccagctgtgt tcacagacct 300
 ggcattccgtc gacaactccg agtttcagca gctgctgaac cagggcatac ctgtggcccc 360
 ccacacaact gagcccatgc tgatggagta ccctgaggct ataactcgcc tagtgacagg 420

VDX5009WOPCT.11.30.ST25.txt

ggcccagagg cccccgacc cagctcctgc tccactgggg gccccggggc tccccaatgg 480
 cctcctttca ggagatgaag acttctcttc cattgcggac atggacttct cagccctgct 540
 gagtcagatc agctcc 556

<210> 240
 <211> 541
 <212> DNA
 <213> human

<400> 240
 gaccaatgac ccttgccttg gaaataaatg cgtacatggc acctgcttgc ccatcaatgc 60
 gttctcctac agctgtaagt gcttggaggg ccatggaggt gtcctctgtg atgaagagga 120
 ggatctgttt aacccatgcc aggcgatcaa gtgcaagcat gggaagtgca ggctttcagg 180
 tctggggcag ccctactgtg aatgcagcag tggatacacg ggggacagct gtgatcgaga 240
 aatctcttgt cgaggggaaa ggataagaga ttattaccaa aagcagcagg gctatgctgc 300
 ttgccaaaca accaagaagg tgtcccgatt agagtgcaga ggtgggtgtg caggagggca 360
 gtgctgtgga ccgctgagga gcaagcggcg gaaatactct ttcgaatgca ctgacggctc 420
 ctcctttgtg gacgaggttg agaaagtggg gaagtgcggc tgtacgaggt gtgtgtccta 480
 aacacactcc cggcagctct gtcttttgaa aagggtgtat acttcttgac catgtgggac 540
 t 541

<210> 241
 <211> 441
 <212> DNA
 <213> human

<400> 241
 ttttattttt acacccatca gatttaagga aaagactttt tagccattat aatctagtgg 60
 ttggaaggaa tgaagaagct tttttagtaa taggtccaga tatgagtgtc aaaaataaag 120
 atgatagcat gttcttctgt cttccatagt tattacaact atgagagcct cccaagtcac 180
 cttatcaact caaccccctt ttttttgtct taatgttgca cataagttta tacagagtgg 240
 atgaccacac tagcacagaa gagaacaaca tgtattaaag cagggtgattc ctcccttggc 300
 gggagagctc tctcagtgtg aacatgcctt ctgtgggcgg aaatcaggaa gccaccagct 360
 gttaatggag agtgccttgc ttttatttca gacagcagag ttttccaaag tttctctgct 420
 cctctaacag cattgctctt t 441

<210> 242
 <211> 532
 <212> DNA
 <213> human

<400> 242

VDX5009WOPCT.11.30.ST25.txt

```

ggcagtggag ccggggacag atgatgaggg cccctgctg gagccagtgg gcagtgagca    60
tgcccaggat acctatcttg tgctggacaa atggttgctg ccccggaacc cgcccagtga    120
ggacctccca gggcctggtg gcagtgtgga catagtggcc atggatgaag gctcagaagc    180
atcctcctgc tcatctgctt tggcctcgaa gccagccca gagggagcct ctgctgccag    240
ctttgagtac actatccttg accccagctc ccagctcttg cgtccatgga cactgtgccc    300
tgagctgccc cctacccac cccacctaaa gtacctgtac cttgtggtat ctgactctgg    360
catctcaact gactacagct caggggactc ccaggagacc caagggggct tatccgatgg    420
cccctactcc aacccttatg agaacagcct tatccagacc gctgagcctc tgccccccag    480
ctatgtggct tgctcttagg acaccaggct gcagatgac agggatccaa ta          532

```

<210> 243
 <211> 460
 <212> DNA
 <213> human

```

<400> 243
atctgaatga cacggaacgc tcccactgca ggcaaaccgt gacgccctcc ccactcgga    60
gaagcagagc tgaccttagg accgagcacc agggcagggt gcgctgactc tgcggccctc    120
caggacggac accgggtgac cccttaggca ccaggcaaga tccctaagag gcacccaatg    180
cccaggccag ggggctgcag ccctcagccc ccgccaggat tccgcaggct cctggactgg    240
aagctccctc cgcggtcgga ttctggagtg tgggaggcat cttggcctgc agtaagcgg    300
gctgacgggg actctggcca cagaggtcag gcctcctgaa aacagcactg ctttcgcgc    360
tgccccagct tgccccattc cttgtccgcc aaccaccgt gattcatctt ctgaagctgg    420
gagtgaaact gggtcagctg taacctgttc ctattcatct          460

```

<210> 244
 <211> 409
 <212> DNA
 <213> human

```

<400> 244
agtcaagtga ccagcctctg actgtgcctg tatctccaa attctccact cgattccact    60
gctaaactca gctgtgagct gcggataccg cccggcaatg ggacctgctc ttaacctcaa    120
acctaggacc gtcttgcttt gtcattgggc atggagagaa ccattttctc cagactttta    180
cctaccctg cctgagaaag catacttgac aactgtggac tccagttttg ttgagaattg    240
ttttcttaca ttactaaggc taataatgag atgtaactca tgaatgtctc gattagactc    300
catgtagtta cttcctttaa accatcagcc ggccttttat atgggtcttc actctgacta    360
gaatttagtc tctgtgtcag cacagtgtaa tctctattgc tattgcccc          409

```

VDX5009WOPCT.11.30.ST25.txt

<210> 245
 <211> 497
 <212> DNA
 <213> human

<400> 245
 tggcctcgtc aatgctgtgt tatgaacaat cttaaagaac ctctcaacct ggaggcttgt 60
 aaactaggcg tgcctggttt ttatcacaat cagggctgct atgaactgat ctctgggtcca 120
 atgaaccgac acgcctgggg gggtgcctgg tttggatttg ccattctctg ctggactttt 180
 tgggttctcc tgggtaccat gttctactgg agcagaattg aatattaagc ataaagtgtt 240
 gccaccatac ctcttcccc gagtgactct ggatttggtg ctggaaccag ctctctccta 300
 atattccacg tttgtgcccc aactaacgt gtgtgtctta cattgccaag tcagatggta 360
 cggacttcct ttaggatctc aggcttctgc agttctcatg actcctactt ttcacctag 420
 tctagcattc tgcaacattt atatagactg ttgaaaggag aatttgaaaa atgcataata 480
 actacttcca tccctgc 497

<210> 246
 <211> 565
 <212> DNA
 <213> human

<400> 246
 gtttagtagc ctcaattctc cattaattaa aagtgtgggc tgggcgtggg ggctcatgcc 60
 tgtaatccca gcactttggg aggccgaggt gggcagatca cctgaggta ggagttcaag 120
 accagcctgg ccaacatggt gaaaccccgt ctctacaaaa atacaaaaat tagccaggcg 180
 tgatggcagg tgcctgtaat cctagctact tggcaggcta acgcaggaga atcacttgac 240
 cgggagacag aggttgcagt gagctgagat cgtacctatt gcactccatc ctggatgaaa 300
 gagccagact ctgtctcaaa acaaacaaaa aagcgtgggg acttctgggg acagacaagg 360
 tgcctgttat atatttactc agtctttgcc ctgaatggtc tcagcttgag accatttcaa 420
 actggagaga agcaagccag ccaatagaat ggggtgattt acagggattt ctgtttactg 480
 tcaaaatatt tctcatctgc actatgtttc catttggtgt cctgaaggaa attcttataa 540
 ctcaacattt gtctggtctt ataag 565

<210> 247
 <211> 538
 <212> DNA
 <213> human

<400> 247
 ccggtcagca ggatcatcgt gcacccacag ttctacatca tccagactgg agcggatatc 60
 gccctgctgg agctggagga gcccgatgaac atctccagcc gcgtccacac ggtcatgctg 120
 cccctgcct cggagacctt cccccgggg atgccgtgct gggtcactgg ctggggcgat 180

VDX5009WOPCT.11.30.ST25.txt

```

gtggacaatg atgagcccct cccaccgcca tttcccctga agcagggtgaa ggtccccata 240
atggaaaacc acattttgtga cgcaaaatac caccttggcg cctacacggg agacgacgtc 300
cgcatcatcc gtgacgacat gctgtgtgcc gggaacaccc ggagggactc atgccagggc 360
gactctggag ggcccctggt gtgcaagggt aatggcacct ggctacaggc gggcgtgggtc 420
agctgggacg agggctgtgc ccagcccaac cggcctggca tctacaccg tgtcacctac 480
tacttggact ggatccacca ctatgtcccc aaaaagccgt gagtcaggcc tgggggtgt 538

```

<210> 248
 <211> 461
 <212> DNA
 <213> human

```

<400> 248
accccttcag cgactagaga gctacaggag aatcaccagt ggcaaagtgc cccagaaagc 60
tgtgatcttc aagaccaaac tggccaagga tatctgtgcc gacccaaga agaagtgggt 120
gcaggattcc atgaagtatc tggacaaaa atctccaact ccaaagccat aaataatcac 180
catttttgaa accaaaccag agcctgagtg ttgcctaatt tgttttcct tcttacaatg 240
cattctgagg taacctcatt atcagtccaa agggcatggg ttttattata tatatatata 300
tttttttttt aaaaaaaaac gtattgcatt taattttatt aggctttaaa acttatcctc 360
catgaatatc agttatTTTT aaactgtaaa gctttgtgca gattctttac cccctgggag 420
ccccaattcg atccctgtc acgtgtgggc aatgttcccc c 461

```

<210> 249
 <211> 522
 <212> DNA
 <213> human

```

<400> 249
tctatcccgt caaattcacc tttaaataaca cccagctaga tacaggcact aggtttgtgt 60
aagatatgtt gatacacacg aacaaagttt attttgacta taatgtgtgg actgactttc 120
aacatttgca ttttatctca caaagggtgta tctattcaag taaccttttt tttttgttt 180
gtttgtttct tttttgtttt tttttttctt ttggttgttt gtttcaattc atgtagctat 240
ttaaactggg ataccttgga ctaagccagt ctgtatccca attcgctagc aagcctaagt 300
ttgtgggggt ttgtttttgt ttttgtttta ctttctaatt tacaagaaag aggaaaagct 360
cttctaactg aacttttgga tgcggttgag ctttgtaact atttgttctc catgaaaaca 420
aaattatttta tatttgacat atttttttct agtgtattaa gttattttta acaaaagatg 480
ttatctcatg acgtgttgtc agtacaaaat gtgtcgcctc ca 522

```

<210> 250

VDX5009WOPCT.11.30.ST25.txt

<211> 492
 <212> DNA
 <213> human

<400> 250
 gcgccttgta cataaccagc aagctctcag atgccaaactg ctgcctggac gccatctgct 60
 actactacat ggccaaggag ttccaggagg cgtctgcact ggccgtggct cccagtgcta 120
 agggccacaa aagccaggac tctctgtgcg tgaccctcgc ctaagaggcg tgctgtgggc 180
 gctgtggggc aggtctcggg ggctccggga ggtgctgcct gccaggggaa gctggaacca 240
 gtagcaagga gcccgggac agccctgaac tctactgtgta ttctcttgga gccttgggtg 300
 ggcagggagc gcccaggtac ctgctctctt gggaagagag agggacaggg acaagggcaa 360
 gaggactgag gccagagcaa ggccaatgtc agagaccccc gggatggggc ctcacacttg 420
 ccacccccag aaccagctca cctggccaga gtgggttcct gctggccagg gtgcagcctt 480
 gatgacacct gc 492

<210> 251
 <211> 445
 <212> DNA
 <213> human

<400> 251
 gagctcgatt cacggaggca ttgaaatctt cagcagagac cttccaagga catattgcag 60
 gattctgtaa tagtgaacat atggaaagta ttagaaatat ttattgtctg taaatactgt 120
 aaatgcattg gaataaaact gtctcccca ttgctctatg aaactgcaca ttggtcattg 180
 tgaatatctt tttttttgcc aaggctaata caattattat tatcacattt accataattt 240
 attttgtcca ttgatgtatt ttttttgtaa atgtatcttg gtgctgctga atttctatat 300
 tttttgtaac ataatgcact ttagatatac atatcaagta tgttgataaa tgacacaatg 360
 aagtgtctct attttgtggg tgattttaat gaatgcctaa atataattat ccaaattgat 420
 tttcctttgt gcatgtaaaa ataac 445

<210> 252
 <211> 527
 <212> DNA
 <213> human

<400> 252
 gatgtttcgt tgaatctatt tagagcttca ccatggcaat atgtatttcc cttaaaacac 60
 tgcaaacaaa tatactagga gtgtgccctt ttaatcttta ctagttattg tgagactgct 120
 gtgtaagcta ataaacacat ttgtaaaaac attgtttgca ggaagaaaac ttcgagttac 180
 aggtcaggaa aagcctgctg aatttatgtt gtaaacgtta cttaacacag tataaagatg 240
 aaaagacaac aaaagtatct tcatacttcc tcatcccctc attgcaacaa aaccttaaac 300

VDX5009WOPCT.11.30.ST25.txt

tgggagaacc ttagtcccct ctctttcctc ttcctcctcc acttcccact tattgccact	360
ttgtaatat cagagagcac ttggattatg gatctgaata gagaaatgct tacagataat	420
cattagccca cataccagta acttatactt aaagatggga tggagttata aagtgccttt	480
ataatccaat ataattgcta aaggcaaggg ttgactcttt gttttat	527

<210> 253
 <211> 543
 <212> DNA
 <213> human

<400> 253 gcaggagggtc tgtgttgtca tgggtgaactg gagtttctct tgtgagagtt ccctcatctg	60
aaatcatgta tctgtctcac aaatacaagc ataagtagaa gatttggtga agacatagaa	120
cccttataaa gaattattaa cctttataaa catttaaagt cttgtgagca cctgggaatt	180
agtataataa caatgttaat atttttgatt tacattttgt aaggctataa ttgtatcttt	240
taagaaaaca tacacttgga tttctatggt gaaatggaga tttttaagag ttttaaccag	300
ctgctgcaga tatatatctc aaaacagata tagcgtataa agatatagta aatgcatctc	360
ccagagtaat attcacttaa cacattgaaa ctattatctt ttagatttga atataaatgt	420
attttttaaa cacttggtat gagttaactt ggattacatt ttgaaatcag ttcattccat	480
gatgcatatt actggattag attaagaaag acagaaaaga ttaaggggacg ggcacatttt	540
tca	543

<210> 254
 <211> 511
 <212> DNA
 <213> human

<400> 254 atgagatgta tcttttgctc tctcttgctc tcttatttgt accgggtttt gtatataaaa	60
ttcatgtttc caatctctct ctccctgac ggtgacagtc actagcttat cttgaacaga	120
tattttaattt tgctaacact cagctctgcc ctccccgac ccctggctcc ccagcacaca	180
ttcctttgaa agagggtttc aatatacatc tacatactat atatatattg ggcaacttgt	240
atgtgtgtgt atatatatat atatatgttt atgtatatat gtgacctga aaaaataaac	300
atcgctattc tgttttttat atgttcaaac caaacaagaa aaaatagaga attctacata	360
ctaaatctct ctcttttttt aattttaata tttgttatca tttatttatt ggtgctactg	420
tttatccgta ataattgtgg ggaaaagata ttaacatcac gtctttgtct ctagtgcagt	480
ttttcgagat attccgtagt acatatttat t	511

<210> 255
 <211> 278

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 255
gggtcagatg gtcccatggg tggattagga ggaatggagt cacatcacat gaatggctct 60
ttaggctcag gagatatgga cagtatttcc aagaattctc ccaataatat gagcctgagt 120
aatcaaccgg gcactccaag ggatgatggc gaaatggggg gaaatttctt aaatcctttt 180
cagagtgaga gttactcccc tagcatgaca atgagcgtgt gatccattac caagtctcct 240
catgaaaacc acagtgagtc agcccttcac agaactac 278

<210> 256
<211> 306
<212> DNA
<213> human

<400> 256
cggctgtacg actccataat gggcatgggg actcaagata aggtcctgat cagaatcatg 60
gtctcccaca atgaagtgga catgttgaaa attaggtctg aattcaagag aaagtatagc 120
aagtcctgt actactatat ccagcaagac actaaggggtg ctgtacctgt gtggtggaga 180
tggctgaagt ccgacacagc acgagcgtcc agaaatgggtg ctcccatgc ttccagctaa 240
caggtctaga aaacccgctt gtgactagca gtccctgtgg ctgttcctgt gaggatgacg 300
ttagca 306

<210> 257
<211> 512
<212> DNA
<213> human

<400> 257
atttcaacaa tctctatggc accaaaggta actacacctc ccgggtctgg gagtactcct 60
ccagcattca gaactctgac aatgacctgc ccgtcgtcca aggcagctcc tccttctccc 120
tgaaaggcta tccctccctc atgcggagcc aaagcccca gggccagccc cagacttgga 180
aatctggcaa gcagactatg ctggtgggtt aagcaagggtc tgagcatccc tcaagtcctg 240
ctgtggacca cacaaggca aggagctgac caggaggtgt cagttccctg agagacaggg 300
ccaaaggcag tgtacccttg agtctcacta ccggccattc tacgtcaaca aaggcaacgg 360
gattgggtcc aacgaagccc catgagctcc tggcggaagg gtgctcaagg attggagagg 420
agacaaaacc aggagcagca cagtggggac atctcccgtc tcaacagccc caggcctatg 480
ggggctctgg aaggatgggc cagcttgacg gg 512

<210> 258
<211> 528
<212> DNA
<213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 258
agccctgcgt tgtgtgtttt cagatgagtt actgttaaca ggtaggttcg tgtaggcctt 60
gctgggcact ctgtacaatt agttgcttat tacgtatgat tactcgcagc gatctattgt 120
tccatataac caaaaagcat ggtttattca ttgaaacacg gttgacctga actcgtgcct 180
taggaattaa tgccccctta tggaacctgc ctgaattgca cctgcgggtg gaggctccgg 240
ctgtgaagtc actgaacaga acgtcgtgta tggagaaagg gctcccgcag aaggaacggc 300
ctgtaccgtg cgctccggca caatcgctc tcttgtgtct cactcacgga aagaaacaac 360
ctgaaggcca tcccgctcgg ctgcacgtaa ccgtgaagac gtgtggccgc gtcccacctg 420
cggctgggta ccctgcaccc ggcaactgtg gagtcacgtg cagcctttct caggggactg 480
tcattgaaaa ggaaacgttt gatgtctgtg tcagctgtct ttgtagtt 528

<210> 259
<211> 452
<212> DNA
<213> human

<400> 259
gagttgcact tattgaccat tttttaattt acttgttttg gatggcttgt ctatactcct 60
tcccttaagg ggtatcatgt atggtgatag gtatctagag cttaatgcta catgtgagtg 120
cgatgatgta cagattcttt cagttctttg gattctaaat acatgccaca tcaaaccctt 180
gagtagatcc atttccattg cttattatgt aggtaagact gtagatatgt attcttttct 240
cagtgttggg atattttata ttactgacat ttcttctagt gatgatgggt caggttgggg 300
tgatttaatc cagttataag aagaagttca tgtccaaacg gtcctcttta gtttttggtt 360
gggaatgagg aaaattctta aaaggcccat agcagccagt tcaaaaacac ccgacgtcat 420
gtatttgagc atatcagtaa ccccttaaa tt 452

<210> 260
<211> 176
<212> DNA
<213> human

<400> 260
ggagtgaacc tcaccatgtg agctcttcct atccctctcc taactgccag ccccttaaaa 60
gcactcctgc ttaatcttca aagccttctc cctagctcct ccccttctc ttgtctgatt 120
tcttagggga aggagaagta agaggctacc tcttacctaa catctgacct ggcac 176

<210> 261
<211> 482
<212> DNA
<213> human

<400> 261

VDX5009WOPCT.11.30.ST25.txt

```

agcggtagggc catgagtgtg actgtgggct gctccgggat cacatcctgc ctccatcttc      60
catctatccc agtgtcctgg cctctggacc ggatcgtaaa aatagcaaaa caagccagaa      120
gaccatggat gatttaaatt tgagcacctc tgaggctctg cggattgacc ctgttcctaa      180
caccaccca cttctcgtct ttgtcaatcc taagagtggc ggaagcagg ggcagagggg      240
gctctggaag ttccagtata tattaaaccc tcgacagggt ttcaacctcc taaaggatgg      300
tcctgagata gggctccgat tattcaagga tgctcctgat agccggattt tgggtgtgtgg      360
tgagacggc acagtaggct ggattctaga gaccattgac aaagctaact tgccagtttt      420
gcctcctgtt gctgtgttgc ccctgggtac tggaaatgat ctggctcgat gcctaagatg      480
gg                                                                 482

```

<210> 262
 <211> 362
 <212> DNA
 <213> human

```

<400> 262
agttagcttt gtaagaaaca gtcaaaactgt tttcccaacg tgacatttta tattcccacc      60
aggaatgttt aaaactagtg tcttcaaadc ctcaccaaca tccaggattg tgtctttatg      120
attatagcca tttttgtagg tacaagtggt catctcatgg tggttttaat ttgcatttcc      180
ataatatcta attaggttga gcttttttta tgtgcttatt ggccatttgt ttgactttgt      240
ttggtgaaat gtatacaaat catttgctca tttttaattt gggttgtctg tcttgtcttc      300
tcattttatt gagttaaatg agttcttaat aatctctggc ttacaagtcc ttaatttatc      360
aa                                                                 362

```

<210> 263
 <211> 473
 <212> DNA
 <213> human

```

<400> 263
acttggtgtc atgcacctac cagctggcca gacggatgga gtacttggct tccccaaaat      60
gtattcatcg agatttagca gccagaaatg ttttggtaac agaaaacaat gtgatgaaaa      120
tagcagactt tggactcgcc agagatatca acaatataga ctattacaaa aagaccacca      180
atgggagggt tccagtcaag tggatggctc cagaagccct gtttgataga gtatacactc      240
atcagagtga tgtctgggtc ttcgggggtg taatgtggga gatcttcact ttaggggggt      300
cgccctaccc agggattccc gtggaggaaac tttttaagct gctgaaggaa ggacacagaa      360
tgataagcc agccaactgc accaacgaac tgtacatgat gatgagggaac tgttggcatg      420
cagtgccttc ccagagacca acgttcaagc agttggtaga agacttggat cga          473

```

VDX5009WOPCT.11.30.ST25.txt

<210> 264
 <211> 496
 <212> DNA
 <213> human

<400> 264
 aattacattt cctactgcag tatttgagca gggacagtca ttttttaa at gtttttgcc 60
 gggcgtggtg gctcatgcct gtaatctcag tacattggga ggccaaggca ggtggatcac 120
 ctgagggtcaa gagttcgagg ccagcctggc caacatggtg aaaccctgtc tctactaaaa 180
 atacaaaaaa ttggccgggc gtgatggtgg gcgcctgtaa tcccagccac tccagaggct 240
 gaggcaggag aatcgcttga acctgcgagg cagagattgc agtgagccaa gatcaagcca 300
 ttgtactcca gcctggacaa caagagcgaa actctgtcta aaaaaaaaaa aaaaaaaaaac 360
 acacacacac acaacacaat gttttcacgc ctgtaaacct agcacattgg gaagccaagg 420
 tgggaggatt gcttgaggcc aggagttcaa ggctgcagtg agctatgatt gcacactgta 480
 ctctagcctg ggagac 496

<210> 265
 <211> 195
 <212> DNA
 <213> human

<400> 265
 gccggctcct gcaagtgcaa aaagtgcaaa tgcacctcct gcaagaagag ctgctgctcc 60
 tgttgcccc tgggctgtgc caagtgtgcc cagggtgca tccgcaaagg ggcttcggaa 120
 aagtgcagct gctgtgcctg atgtcgggac tgccctgctc tcggatgaaa acagaatgac 180
 acgtaaagtc cgga 195

<210> 266
 <211> 545
 <212> DNA
 <213> human

<400> 266
 atatgatcat catgcttccg gacgagacca ctgacttgag aacggtggag aaagaactca 60
 cttacgagaa gttcgtagaa tggacgaggc tggacatgat ggatgaagag gaggtggaag 120
 tgtccctccc gcggtttaaa ctagaggaaa gctacgacat ggagagtgtc ctgcgcaacc 180
 tgggcatgac tgatgccttc gagctgggca aggagactt ctctggaatg tcccagacag 240
 acctgtctct gtccaaggct gtgcacaagt cttttgtgga ggtcaatgag gaaggcacgg 300
 aggctgcagc cgccacagct gccatcatga tgatgcggtg tgccagattc gtccccgcct 360
 tctgcgccga ccaccccttc cttttcttca tccagcacag caagaccaac gggattctct 420
 tctgcggccg cttttctctt ccgtgaggac agggcagtct tgggtgtgcag cccctctcct 480
 ctctgtcccc tgacactcca cagtgtgcct gcaacccttgc tggccttatc cgtgcagtgg 540

VDX5009WOPCT.11.30.ST25.txt

tgcca 545

<210> 267
 <211> 518
 <212> DNA
 <213> human

<400> 267
 cgggtataagt cctggagcgt tccctgtggg ccttgctcag agcggagaaa gcatttgttt 60
 gtacaagatc cgcagacgtg taaatgttcc tgcaaaaaca cagactcgcg ttgcaaggcg 120
 aggcagcttg agttaaacga acgtacttgc agatgtgaca agccgaggcg gtgagccggg 180
 caggaggaag gagcctccct cagggtttcg ggaaccagat ctctcaccag gaaagactga 240
 tacagaacga tcgatacaga aaccacgctg ccgccaccac accatcacca tcgacagaac 300
 agtccttaat ccagaaacct gaaatgaagg aagaggagac tctgcgcaga gcactttggg 360
 tccggagggc gagactccgg cggaagcatt cccgggaggc tgaccagca cggtcctctt 420
 tggaattgga ttcgccattt tttttttctt gctgctaaat caccgagccc ggaagattag 480
 agagttttat ttctgggatt cctgtagaca caccacc 518

<210> 268
 <211> 403
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (40)..(40)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (107)..(107)
 <223> n is a, c, g, or t

<400> 268
 ttgtcatgac acatttgcca aatcagtagg atatatttgn ttttggcagc ctatcacgca 60
 gaggctagtg gtatatttat gtaagaaaat gactgtaaat ctcaagnaaa atctcagcag 120
 ctaatagcaa ctcatatttatt tcatttttggg cttaatgctt tgtaaacagg tcaaaaaata 180
 ctgtcatact ctaagcttct attttccaca ctggacatac ttctagttgt attctccata 240
 ctattagact gtgtagtgat gtgacttcca agtagaattt aatctcccca ttgagtgtgt 300
 catggtacaa atcactattc gtttttgggtg ttttttaggg atgtgcaatg tgcattacat 360
 aatgacagaa atactgagaa gggttctgtgt gccatttga aag 403

<210> 269
 <211> 476

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 269
gcttttttttg ttgtcagcta tcttaagaat cattaaatac acctgctttg ggtaaaactc 60
tttgcaagca gtaattaaca ctagtaacag tgaaagcaca agatttccaa atcagtcggt 120
ttctcaaaaa aatatcgat aagtgactca tcctgtctgc taactccaga cctcccagct 180
tgaagccaaa tctttccatg tgagattgat atggatttcc tagaagtact ggaatgttgt 240
catatcttgc cctattttta tcttgcctata gaaaacaatt gccttcactt ttaaggagta 300
atgtgaatat taataactct ggtctagatt ttcataataa gtattaaaga caaagtagtg 360
aacatcaatg aacatctgat agagataaac tgtaatcagg cataagcttg tttgtatggt 420
ctggcagtga ctaatcagta aatgatgtcg gtttgcccag tatcacttat cttctg 476

<210> 270
<211> 421
<212> DNA
<213> human

<400> 270
gagtattaca ttggccttgg gggacagaaa ggaggaagtt ctgacttttc agggctacct 60
tatttctact aaggaccag agcaggcctg tccatgccat tccttcgcac agatgaaact 120
gagctgggac tggaaaggac agcccttgac ctgggttctg ggtataattt gcacttttga 180
gactggtagc taaccatctt atgagtgcc aatgtgtcatt tagtaaaact taaatagaaa 240
caaggctcct caaatgttcc tttggccaaa agctgaaggg agttactgag aaaatagtta 300
acaattactg tcagggtgtca tcaactgttca aaaggtaagc acatttagaa tttgttctt 360
gacagttaac tgactaatct tacttccaca aaatatgtga atttgctgct tctgagaggc 420
a 421

<210> 271
<211> 384
<212> DNA
<213> human

<400> 271
gttcatcacc atggactgga cctggagggt cctctttgtg gtggcagcag ctacaggtgt 60
ccagtcccag gtgcagctgg tgcagtctgg ggctgagggt aagaagcctg ggtcctcggt 120
gaagggtctc tgcaaggctt ctggaggcac cttcagcagc tatgctatca gctgggtgctg 180
acaggccccct ggacaagggc ttgagtggat gggagggatc atccctatct ttggtacagc 240
aaactacgca cagaagttcc agggcagagt cagcattacc gcggacgaat ccacgagcac 300
agcctacatg gagctgagca gcctgagatc tgaggacacg gccgtgtatt actgtgctgag 360
agtgtcgata tttggagtgg ttca 384

VDX5009WOPCT.11.30.ST25.txt

<210> 272
 <211> 406
 <212> DNA
 <213> human

<400> 272
 ggacctggag gttcctcttt gtggtggcag cagctacagg tgtccagtcc caggtgcagc 60
 tgggtgcagtc tggggctgag gtgaagaagc ctgggtcctc ggtgaaggct tcctgcaagg 120
 cttctggagg caccttcagc agctatgcta tcagctgggt gcgacaggcc cctggacaag 180
 ggcttgagtg gatgggaggg atcatcccta tctttgttac agcaaactac gcacagaagt 240
 tccagggcag agtcacgatt accgcggacg aatccacgag cacagcctac atggagctga 300
 gcagcctgag atctgaggac acggccgtgt attactgtgc gagggggcca agactattag 360
 ccgacgtatt actatggttc ggggagttat ccgagtttga ctactg 406

<210> 273
 <211> 532
 <212> DNA
 <213> human

<400> 273
 caggattggc caagtccatc ggggtgtcca acttcaacca caggctgctg gagatgatcc 60
 tcaacaagcc agggctcaag tacaagcctg tctgcaacca ggtggaatgt catccttact 120
 tcaaccagag aaaactgctg gatttctgca agtcaaaaga cattgttctg gttgcctata 180
 gtgctctggg atcccatcga gaagaacat ggggtggacc gaactccccg gtgctcttgg 240
 aggacccagt cttttgtgcc ttggcaaaaa agcacaagcg aaccccagcc ctgattgccc 300
 tgcgctacca gctgcagcgt ggggttgtgg tcctggccaa gagctacaat gagcagcgca 360
 tcagacagaa cgtgcagggtg tttgaattcc agttgacttc agaggagatg aaagccatag 420
 atggcctaaa cagaaatgtg cgatatttga cccttgatat ttttgctggc ccccctaatt 480
 atccattttc tgatgaatat taacatagag ggtgttgcac gacatctagc ag 532

<210> 274
 <211> 546
 <212> DNA
 <213> human

<400> 274
 tgaagctgca gaagcctctg actttcaacg acctagtga accagtgtgt ctgccaacc 60
 caggcatgat gctgcagcca gaacagctct gctggatttc cgggtggggg gccaccgagg 120
 agaaagggaa gacctcagaa gtgctgaacg ctgccaaggt gcttctcatt gagacacaga 180
 gatgcaacag cagatatgtc tatgacaacc tgatcacacc agccatgatc tgtgccggct 240
 tcctgcaggg gaacgtcgat tcttgccagg gtgacagtgg agggcctctg gtcacttcga 300

VDX5009WOPCT.11.30.ST25.txt

agaacaatat ctggtggctg ataggggata caagctgggg ttctggctgt gccaaagctt 360
 acagaccagg agtgtacggg aatgtgatgg tattcacgga ctggatttat cgacaaatga 420
 gggcagacgg ctaatccaca tgggtcttcgt ccttgacgtc gttttacaag aaaacaatgg 480
 ggctggtttt gcttccccgt gcatgattta ctcttagaga tgattcagag gtcacttcat 540
 ttttat 546

<210> 275
 <211> 286
 <212> DNA
 <213> human

<400> 275
 aaaggagcca tgtgccatgg catataagtc agtgtagact ggtgccattt gttgtcagac 60
 tatagggtgtg gaggtgaaat tacaggttca acagtaattg ggacagaaaac tccaggtaaa 120
 tggggagtgg agaagactgc agtaaattag atggaatgac tcttctaaaa gttcatctac 180
 aaattttcca gtgaatatgg ttgtgtagga tcagtgcata cagaaattct caggatcttc 240
 tgtttactat cgctgagatc attatcagaa aatagtctgg ccgggc 286

<210> 276
 <211> 378
 <212> DNA
 <213> human

<400> 276
 acatctccat tacaaatgcc acagttgaag acagtggaac ctactactgt acgggcaaag 60
 tgtggcagct ggactatgag tctgagcccc tcaacattac tgtaataaaa gctccgcgtg 120
 agaagtactg gctacaattt tttatcccat tgttggtggt gattctgttt gctgtggaca 180
 caggattatt tatctcaact cagcagcagg tcacatttct cttgaagatt aagagaacca 240
 ggaaaggctt cagacttctg aaccacatc ctaagccaaa ccccaaaaac aactgatata 300
 attactcaag aaatatttgc aacattagtt tttttccagc atcagcaatt gctactcaat 360
 tgtcaaacac agcttgca 378

<210> 277
 <211> 252
 <212> DNA
 <213> human

<400> 277
 aaaacttcac atttatgtgg cttgtttatc cttagctcac agattgaggt aataatgaca 60
 ctcttagact ttgggatcaa ataacttagg gccaaagtctt ggggtctgaat ttatttaagt 120
 tcacaaccta gggcaagtta ctctgccttt ctaagactca cttacatctt ctgtgaaata 180
 taattgtacc aacctcatag agtttggtgt caactaaatg agattatatg tggactaaat 240

VDX5009WOPCT.11.30.ST25.txt

atctgtcata ta 252

<210> 278
 <211> 265
 <212> DNA
 <213> human

<400> 278
 tgggagccaa cattcccatg atgggcaccc acatgccaat ggctggagac atgaatggac 60
 tcagccccac ccaggcactc cctccccac tctccatgcc atccacctcc cactgcacac 120
 cccacctcc gtatcccaca gattgcagca ttgtcagttt cttagcgagg ttgggctgtt 180
 catcatgtct ggactatttc acgaccagg ggctgaccac catctatcag attgagcatt 240
 actccatgga tgatctggca agtct 265

<210> 279
 <211> 498
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (47)..(47)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (115)..(115)
 <223> n is a, c, g, or t

<400> 279
 aactgttctg atgaccacac agtgtgattt ctttagcaga gaaagtnggt tttaaaaata 60
 aatagtacca cttttctaag actgtacagt ttacaaataa ggtttttttc tttgntgttt 120
 tcctcttcta ttaagtttta gtgaaaagcc taattacaga aaattgtgca gatactagt 180
 aagatactag tataagttta aaggaacatg tgactgtaaa atctcacatt taaaagtgc 240
 ttgatctctt catatttcac acgcatgttt tagaatagat tttaggaggat gtttaattca 300
 ttatcctttt gacttaaaat ttttgttacc aacttcctag gacttagata atatataaat 360
 aagtacaaat ccaggggaa gtgttgatgat gctagactaa aagggtggaa tgtgctgctg 420
 ttccgtgagc cttgttccat tgttgaaaat ttgatgcctc agtggtttatt cagtaccacc 480
 tcatggagct tcaatgta 498

<210> 280
 <211> 402
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (143)..(143)
 <223> n is a, c, g, or t

<400> 280
 aaagcttgct aatcactcat gtgttttaga gtaattactt ttaaaatggt gcatttgctgc 60
 ttctgaacta ttttgaagag tcacttctgt ttacctcaag tatcaattca tcctccatac 120
 atttgaattc aagttgtttt ttngtcaa at ttacagttgt caattgatct tcaagctgca 180
 ggggtgcctag aaatgggccg ttgtctgtag ccctggcatg tgcacacgga catttgccac 240
 cactgcaagc aaaagtctgg agaagttcac caacgacaag aacgattagg gaaaatatgc 300
 tgctgtgggt taacaactca gaaagtcctt gatccacatt tggctgttta ctaaagcttg 360
 tgattaactt tttggcagtg tgtactatgc tctattgcta ta 402

<210> 281
 <211> 466
 <212> DNA
 <213> human

<400> 281
 taagcatttt aggggtgggag ggactattaa gtaattttaa gtgggtgggg ttatttagaa 60
 tgttagaata atattatgta ttagatatcg ctataagtgg acatgcgtac ttacttgtaa 120
 ccctttaccc tataattgct atccttaaag atttcaaata aactcggagg gaactgcagg 180
 gagaccaact tatttagagc gaattggaca tggataaaaa cccagtgagg agaaagttca 240
 aagggtgatta gattaataat ttaatagagg atgagtgacc tctgataaat tactgctaga 300
 atgaacttgt caatgatgga tggtaaattt tcatggaagt tataaaagtg ataaataaaa 360
 acccttgctt ttaccctgt cagtagccct cctcctacca ctgaaccca ttgccctac 420
 cctccttct aactttattg ctgtattctc ttcactctat atttct 466

<210> 282
 <211> 476
 <212> DNA
 <213> human

<400> 282
 actactgtac ctttcattgg cgcattaccc cataaaactt tttgagacga ggtgagatct 60
 gagtataaag ataggtcaga agtattttta agggctta at gtgccaaaaa gaaaaaagc 120
 tagagaccct ttttgcaaac atttggtgac cacacatttg agggaagacg tggcgtagg 180
 tgaagcagaa gcaaaccctg ctcttagggg ctcacctagg tgagtgcaca gcctgtgacg 240
 ctacagggag aggctgagta aaccgagatc cagcgttctg tatggcaggg gtattgctta 300
 tcacagaggt tctgaagagt aggaagtaca taatgaagag ggctttaaaa attgccaaca 360
 aagtgagtca ccagggctgg cagtagtgtg acggggctgt cctgagctgt taggagagta 420

VDX5009WOPCT.11.30.ST25.txt

gatgcgggga gggctggtga cctccgtggg tttatatgtc ggaaactctt ctctcc 476

<210> 283
<211> 547
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (214)..(214)
<223> n is a, c, g, or t

<400> 283
gagatcctcg attactgggg acccaattcc ggcccattga cgtggcgcct caccctgct 60
gaagtgcgcc aggtgctggc cctgcggata gacttccgca gtgaagatat caagaggctg 120
cgctgtagc tgcctggatg agcacacctg gctcatcaca cttgcaggcc tgttccctaa 180
ggggccccag ccaaggagct gagcgaggct gtcnggcttg ggggagatct gacagcccag 240
acctttctac ggctggcagc agagaaacaa agtctggacc cactccatgc tctgccctca 300
gacctggcca ggtgatgctc tggggggcagc atctccccac cgagagaagc gggctcctaa 360
tgaggtggga aagccacggc aggcagcgag cagcccaggc cagctttctg catggatggt 420
cagtctcttg ccctcaaaca ctacagcaaa caagctaccc ctgccagtcc tagacaactt 480
gggtacatct ggggacctag cagttaggct tgactttgag gagaggctgt gatgtttatg 540
atccctg 547

<210> 284
<211> 466
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (111)..(111)
<223> n is a, c, g, or t

<400> 284
gccatccaca taacctggtg ttcacgagaa cactactaaag gactcctgag tcactaccac 60
agccacctgg aaaccacaag gcatttgatg ctaccgttct ggtcagggat ntgggctgct 120
tcttcagttc ctaataccag accaagcctc ctgatgcctt tctgcactgc aactgtgtga 180
ttgaaaaatg agatgttcat ccaagcagtc aagccacaga aaccagcat gtccctgtca 240
caatctcatg ggcaccttga tcatgtctta accttccctt aaccttgggg ctccaagcc 300
agagtcaagg tctgacgcca cctcaagggtg acagctcatc tccagcacag cacaggcgtg 360
tgcacacaga ggtgttcctt gcagccccct ccctctcagg tgtcctgaga tgctgctcct 420

VDX5009WOPCT.11.30.ST25.txt

gggagcccc tcagaaaact gcctcacctg agacaagtgc ctgctg 466

<210> 285
<211> 372
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (119)..(119)
<223> n is a, c, g, or t

<400> 285
tgcagtccca gctcagcatg aaagcatccc tggagggcaa cctggcggag acagagaacc 60
gctactgctg gcagctgtcc cagatccagg ggctgattgg cagcgtggag gagcagctng 120
gcccagcttc gctgcgagat ggagcagcag aaccaggaat acaaaatcct gctggatgtg 180
aagacgcggc tggagcagga gattgccacc taccgccgcc tgctggaggg agaggatgcc 240
cacctgactc agtacaagaa agaaccggtg accaccgctc aggtgcgtac cattgtggaa 300
gaggtccagg atggcaaggt catctcctcc cgcgagcagg tccaccagac caccgcgtga 360
ggactcagct ac 372

<210> 286
<211> 462
<212> DNA
<213> human

<400> 286
ttggtgtaag caacctgtgg cctgcacttg tggcctcgaa ggaagcaca accctccatc 60
catttcccat ttctctgtcc cttttccacc tcccccttcc atcccaccag ctgccagtgg 120
ctcccagaaa gccttattga gccccttggt gacacttggg gctgcggagg cctctcccta 180
ctggtctggc ctttctgtag aggcagggtc tccgtcctca gagcctttct ggaacaagga 240
gaatgcctgt gcaggtggac acacaggcct ggcctgtcgc tctcacttgt cttccagcgg 300
ggagcttcac gttgccgagt ggaagaacca tgacctccac ttgcttccaa ggtgctaggg 360
aagtttcagg gtacgctggg tcccctctcc agctggaggc cgagtttctg gggactgcag 420
atctttctac tctgtgatcg attcaatgcc cgatgcttct gt 462

<210> 287
<211> 538
<212> DNA
<213> human

<400> 287
gagaactttt taactattca ttgactaaaa atgaacatta atgttaaaga cttagactt 60
taacctgctg gcagtcccaa atgaaattat gcaactttga tatcatattc cttgatttaa 120

VDX5009WOPCT.11.30.ST25.txt

attggccttt gtgattgagt gaaactttat aaagcatatg gtcagttatt taattaaaaa 180
 ggcaaacct gaaccacctt ctgcacttaa agaagtctaa cagtacaaat acactatcta 240
 tcttagatag atatatTTTT ttttattttt aaatattgta ctatttatgg tgggtggggct 300
 ttcttactaa tacacaaata aatttaatca tttcaaaggc attctatttg gtttagaagt 360
 tgattcccag gagtgccata tttcagctac tgtatttcct ttttcttgta atgtaagcag 420
 ctcatatacc atgtgctatc atttttgtat caagtttttt gcacaggatg tgaccactgt 480
 cagatcactg ttcttttctt tctttttgtg attgaaaagc ctatactaca atttgaag 538

<210> 288
 <211> 390
 <212> DNA
 <213> human

<400> 288
 gtctcatgtt ttattggacc aaagtgtggtg tttgtatgga gtgtagtagt agtgtgtaca 60
 ggtagaaaac ttttaaatac agcatgcagg tgtttcagtt agcttgtttt catcaccata 120
 actgcaaaga tgtggccttag ttgtattgca tgcttcctat aatttaactc tccataattg 180
 atgcctgcag tagtgtaagg catttcatac tagtctcctc tagtagacct gtgacttact 240
 gtgttggaca tattatttag acttagtcat acaaagaaac ttagctcttt tttcatctca 300
 cagtaaagcc tatttcccca ggaaaaaat aaatgccttt gaatgaaaat tctgaaattg 360
 taaatgtcta ttttaattatt cacctatgaa 390

<210> 289
 <211> 429
 <212> DNA
 <213> human

<400> 289
 ggaaggtagc ataatccac accatatctt ggatttcttg gaaattgact caactctcca 60
 ttctaataac atctccattc tccaggaact gtacgaaagg tgctggagcc acagtaacga 120
 ggagtccttc agcccctgct ccttggcctg gctttacctg cacttgcggc ttctctgggg 180
 tgctatcctg cactcagccc tgatctactt tctgggaacc tttctgctat ccatattgat 240
 cgcctggact gtgcagtatt tccagtctgt ctgagcaagc gatccccctc caagaccatc 300
 ccaggcctcc ccagacactg ccacgtccac tgcaagtcca gctgtgactc cagctgcaga 360
 tgcctctgac caagaccagc ccacagtaac taataaccg gagccacgtg ggtgaactgt 420
 gcactccag 429

<210> 290
 <211> 535
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (327)..(327)
 <223> n is a, c, g, or t

<400> 290
 tatttttgta cctgtgcttg ccacagccct gttcctcaaa gctgaattga tagattttctc 60
 tttgacttcc aagacctagc agttataagg caccttgaaa taaattgttt gtgcctggaa 120
 atgcagggag ggcaatagct ttgtaaattg gtttacatth ttctccttga atttttctag 180
 ggtcctagtg cttccgaatc atttaatggc attgtcggat atctttttaca tttcaattgc 240
 aatccatgaa attacattta gaagattctt agtacttaac tgtagtcttc tccatgaatt 300
 acacgttaga atagactggc agcaacngaa tatgcagcaa gtaagcctct agcttatagt 360
 ttcatcccta cccctcatgc ctgctgtagt ctgtacaggg atatgtgtgt gtgtgtgtgt 420
 gtgtgtgtgt tagagaggaa gaggaagagc agaatgtctg tatactacat gctgctaagg 480
 tagtgaataa atcagtaatg caatattgtg ggtccaaact actctttgca ctact 535

<210> 291
 <211> 507
 <212> DNA
 <213> human

<400> 291
 tttccttatc tgaggctacc tggggattgt gggcagcagg cccctggact cccagaaatg 60
 ctgaggggtcc ctcttccagg ggagttccct ggggagcaag agtagagggg ctattcccgga 120
 gggtcctgtg gtcaggggtcc tgctttgtcc ctggcaggct gtcagtccag ctggaggggg 180
 tcagtaggct ccagggagtg ggccctcccc tccgatcttg gagtctcttg gtgttccttc 240
 agcctcagcc tactggtac ctcttgcctt ttaggggagg ctatgagtct gggacaggag 300
 gacaaattca gagcccagag ggggaaatgg agaaacctgg gctgctgagg aaagccacgg 360
 gtgttggcgt gaactgatga tgtctcatcc cagcccact atggccacat tacctaacct 420
 ctccatatct gggctattca aggtcttggg ggccagcaca gaccagcta gttgttgaag 480
 ccagttcttt tttgtcttgg tcatgag 507

<210> 292
 <211> 491
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (26)..(26)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

<400> 292
 gttaaattcct catatcacta cagtgnccgat tattctagaa atcgttgctt gtgtagcaaa 60
 gaccaaataa atagattttca gacacaacct tgagcacagt tgattttgga cagctgctgt 120
 ttattaggaa agggctccag gtggcaaagg tgcacacttc ctcagacaca ggtgagaaga 180
 tgcagcacct tccacagggtg aatgggacgg attcgaagtg agcaaaggga ttcacaaatt 240
 atgtattttat ttgtttttcat agttaagtag ctgaagctca gaggctttca gcaacagaga 300
 tgaaagtgtg gcttttttagt tttgtgaatg gatgatcaca aagaaaaagc atttttaaaa 360
 agttggcaaa cgctgaaacg cactgtggta tgaagcgcat tgcattttcca tagcactgaa 420
 gtaccagttt ccattcctgg gctgagattg tttttcccgt ggttgatttg ttctgatttc 480
 acgtacacca g 491

<210> 293
 <211> 405
 <212> DNA
 <213> human

<400> 293
 ctgttttttg tttgtcacct ctatttagtt gttacctgtt tctctcttct ttcacccctt 60
 gtcctttttcc acccttttaa gagttacgct agcagatctt actccacgta tacttttttg 120
 tttgtgaagg catcggttaa gggcacaaaag acagccatgg ggacatttat gtaaatacgt 180
 ctctaattgc cacactgcag ctgaacagtg tgtagtattt tcccagtcag ctttgccata 240
 ctgacgtcaa tcatttgaga gaaattattc agattttatt tttgtatctg tggttaacaaa 300
 acattaacca aaagattttc tgtccagaag cctccccgac cccccaagct atttgctcac 360
 attaacaaat taaagtcct gaagcataat tcattcttta cctgt 405

<210> 294
 <211> 379
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (99)..(99)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (212)..(212)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (350)..(350)
 <223> n is a, c, g, or t

<400> 294

VDX5009WOPCT.11.30.ST25.txt

```

tccccaagca tgactacaac taccctacg tggactcctc agactttggc ctaggcgagg      60
accccaaagg ccgcgggggc agcgtgatca agacgcagnc ctcccggggc aagtcgcggc    120
ggcgggaagga ggacggagag cgctcgcggt gcgtgtactg cagggacatg ttcaaccacg    180
aggagaaccg ccggggccac tgccaggacg cncctgactc cgtgagaact tgcattccgc    240
gggtgagctg catgtggtgc gcggacagca tgctctatca ctgtatgtcg gaccccgagg    300
gagactatac agacccttgc tcgtgcgata ctagcgacga gaagttttgn ctccggtgga    360
tggtctttat tgccttgtc                                     379

```

<210> 295
 <211> 515
 <212> DNA
 <213> human

```

<400> 295
ctgctctttg acactgcttt tgggtaccctg ggtggcctat ttcaggtggt ttttagtgct      60
tgcaagcggg ttggctacaa gggtactttt gacaattctg gggagttata aactcaaaaa    120
actaatagta tccagtcaca gtgaatttga aagctggaat agtttgtctt tacaatgggt    180
ttctgtttcac tgtcagttat cattatattt tggccttttg tggggatgtc tgcttgtttt    240
tgcaaaagaa gatggcagaa ttttagacttg acagaggaga aatgctcagg gtgagattag    300
gtgtagtaat ctgctgttta cctccagtta tatgtgcaaa ctccaagcc actaataact    360
tcagttatgc actctaacac agacgaccac ctgaaatgca ctggtattta tttctgataa    420
ttaaaaatta caggggaggg aagaactaga aaaagaacaa ctttagacca aagggtgtctg    480
agaaaaggag aaaggagact tgttcttccc attgc                                     515

```

<210> 296
 <211> 460
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (62)..(62)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (182)..(182)
 <223> n is a, c, g, or t

```

<400> 296
taaagatctt gctgtggctc tgttatgttc tgaggccttg ggattagcct cttcctcatt      60
anggagctga ttttctagtc tgtggatcag ctatgccttt ggacacttct cttttccatt    120
gtgccttttg aatgttgtct tctcactcag catcagcact tcgatctaaa tgcagactag    180

```

VDX5009WOPCT.11.30.ST25.txt

gnagttggga ggaggaacca aagtgaacca tccttcattt attcagtcatt tcgttcattt 240
 gtcaaacacg tatttggaaca tcaagggtgc agagatgaac aatgcatgga tttcatcttt 300
 gaggagttca aaacctagtg gagagaacac atgggtacaat cgtaacacat gaaggacaag 360
 taagtgtctgc agtaaaggta ctaataacat gttccttgga acagaggaag aaaaaccacg 420
 aaaccatgga aattagggaa gcctttacag aggggtgtgac 460

<210> 297
 <211> 415
 <212> DNA
 <213> human

<400> 297
 ctcccaatgc tgctcagctt gcagtcattg agggagccaa cgtcctcgta actcagcgga 60
 aggggaactt cttcatgggt ggttcagatg gtggctacac catctgggtga ggaaccaagg 120
 ccacctttgt gccgggaaag acatcacata cttcagcac ttctcacaat gtaactgctt 180
 tagtcatatt aacctgaagt tgcagtttag acacatgttg ttgggggtgtc tttctgggtgc 240
 ccaaactttc aggcactttt caaatttaat aaggaaccat gtaatggtag cagtacctcc 300
 ctaaagcatt ttgaggtagg ggaggtatcc attcataaaa tgaatgtggg tgaagccgcc 360
 ctaaggattt tcctttaatt tctctggagt aatactgtac catactgggtc tttgc 415

<210> 298
 <211> 418
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (223)..(224)
 <223> n is a, c, g, or t

<400> 298
 tcagacacac acaggtcgcc agtgacttca cacacacctc atgtgagaac catgcctttt 60
 ttagtggtgtc ctatttcata cctgtacaca cttcctcggt ttgtaatgag atttacttac 120
 acccaaacag atcctgaaag aaagcttcaa gttttctcag atgatggata tgttttcact 180
 gtattcaata actgacggat gtaaggtgca cgtttcctga tgnntgacgc actgtattcc 240
 agctgggtgat caagtctggg aacagccgta acaggtcaac cttgtggagc catcgcgagt 300
 tagaggggtga aagatggcag aaaaaaaagt cttgtgtgtg agtgtgtttt ttgagtttgc 360
 atcaatctta atgtctcttc ataatacttt tataatacat taagcctctt gtctacat 418

<210> 299
 <211> 372
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 299
 ggatacctaa tgtcagtgga gtcttctgag tgtttcctgg aagaagtcgg gtcccaggct 60
 ctagtgtctg gttcttacat gccaccatcc acagtccttc agcagattga ttcagtggct 120
 aatgctgata tcataaatgc ggcaaagaag tttgtttctg gccagaagtc aatggcagca 180
 agtggaatt tgggacatac accttttgtt gatgagttgt aatactgatg cacacattac 240
 aggagagagc tgaacgttct ctcagcccag agcagcaaac acatgaaagt cagaagtctc 300
 taatatatca tttgtctttt ttccagttag gtaaaataag gcataaatgc aggtaattat 360
 tcccagctga cc 372

<210> 300
 <211> 547
 <212> DNA
 <213> human

<400> 300
 tgcagccagc aagctgggac tggcaggaaa taaccacaa aagaagcaaa tgcaatttcc 60
 aacacaaggg ggaagggatg cagggggagg cagcgctgca gttgctcagg acacgctcct 120
 ataggaccaa gatggatgag acccaagacc caggaggccc agctgctcag tgcaactgac 180
 aagttaaaaa ggtctatgat cttgagggca gacagcagaa ttcctcttat aaagaaaact 240
 gtttgggaaa atacgttgag ggagagaaga cttggggcca agatgctaaa tgggaatgca 300
 aagcttgagc tgctctgcaa gagaaaataa gcaggacaga ggatttgctc tggacagaga 360
 tgggaagagcc gggaacagag aagtgtgggg aagagatagg aaccagcagg atggcagggg 420
 caaagggctc aaggggtgagg aggccagtgg gacccacag agttggggag ataaaggaac 480
 attggttgct ttggtggcac gtaagctcct tgtctgtctc cagcaccag aatctcatta 540
 aagctta 547

<210> 301
 <211> 344
 <212> DNA
 <213> human

<400> 301
 aggagtggat cctggagcag ctcacgcgcc tctacgactg ccaggaagag gagatcccag 60
 aactggagat tgacgtggat gagctcctgg acatggagag tgacgatgcc cgggctgcc 120
 ggggtcaagga gctgctgggt gactgttaca aaccacaga ggccttcatt tctggcctgc 180
 tggacaagat ccggggcatg cagaagctga gcacaccca gaagaagtga ggggtccccga 240
 cccaggagaa cgggtggctcc cacaggacaa tcgctgcccc ccaacctcgt agcaacagca 300
 ataccggggg accctgcggc caggcctggg gccatgagca gggc 344

VDX5009WOPCT.11.30.ST25.txt

<210> 302
 <211> 487
 <212> DNA
 <213> human

<400> 302
 ttgggattgt gctgactttg ggattaacat gagcttcttt agcaaccaag catgaacttg 60
 attaagacca gaagtttggg agatgagtcc tggcattatg tctaggacta aagcagtggc 120
 tttgtatagc aagctgagta aaggttgaca tattccaaaa cccttctttt taaaatgaaa 180
 aaggatggag agaaggatgg aaagcctgga cttaaaccctt tagaaaaaac ttctggagag 240
 aaatcccttt taaacagtta cttttgtcat tgcctctggt catttgtcta aataggaatg 300
 gaaaattaaa agaaaagcaa caatccaatc ttttttctaa aaattatgct ggggtctcga 360
 ctaaaactga atttgaattg gaaaattctg gtgttggttg gagttccatc ttgcaaggga 420
 taatacaaat cctatgatct ctatgcccaa tatgctgcct caactctgag ctgtctgcaa 480
 ggcttag 487

<210> 303
 <211> 549
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (225)..(225)
 <223> n is a, c, g, or t

<400> 303
 ggatgggctg gaccaggtgg gacagattag ctgatgccct tgtcacctgc cctctgtgca 60
 ccctgagagc tcacagtaac actgtgtgtg tcaccatata actgcacctc acccccgcac 120
 gtgtgcatga ctgcagaga atattccagc aattgtgtac ccctgggcca gtctctttga 180
 accctgaggg tggccaggat ctggagctgc atctctaagg ggccnaggct ttggggacca 240
 ttgccaaagg tggactcagg aggaaagaca cttaaagaca cttttacatg tctagtaatt 300
 cttgatgttc atcttcagca ccagtggaaa cacatgaact tcgatgcagg tccagagacc 360
 atggacactc ccacgaggct cagctctcag gcacccccta cacttcagtt gagggaaaag 420
 ctcaagtgcc ttaggcccgt ggaccacagt cttggctgag atcaaaggga tgagcaacag 480
 ggacttctgc cacagtgaca atggaattgt gttgtgcctt acttcagagg tggctctctc 540
 tttcttcta 549

<210> 304
 <211> 546
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (104)..(104)
 <223> n is a, c, g, or t

<400> 304
 ttctatgcat ccacaccaaa atcctgcaga atgtaagtaa gctctgcttt ataagatggg 60
 ttcaccttca tcgcagactg aaagtttcag tttttatttt tttncagaaa gcacgaaaaa 120
 ttattttataa tagtctggag aaaaaacaca ctgtaatat tcaagtgtat gcagtagaat 180
 gtactgtaac tgagcccttt cccacatgtc taggctccaa tgtctcctgt aggtccacct 240
 aactgtgtgt tttcagggac aatgccatcc atgtttgtgc tgtagacttg ctgctgctga 300
 atcctttctg gggactttct catcgggcag ggagcagagg gcttctcggt catgcaccct 360
 ttgcctgaac acccatgtag ctgctgtgtt gtgtatatat tactcttaag aggagtgtgt 420
 gtgtctgtgt ttgttttaaa agtcacttat ttcttacagt gatttcaatt gcaccatgac 480
 ttcttcacta aaaccacaaa gtcctgctta aaactatgga aaacctaacc tgattagagc 540
 cttgac 546

<210> 305
 <211> 351
 <212> DNA
 <213> human

<400> 305
 cccacccgc tttgaatgta gagaccctg ggcacttttc cttttgtggt ggggggtgcg 60
 gaggaggtag cccacccct ggcacagccg cctggaatgc aggactgtca ctgctgttcg 120
 ggtgatgacc tcgttgccaa gctcctcctg tccccttggt ctgggggcag gcgctgtgct 180
 tctgtgaggt ggtttagctt ttgctttcga agtggccagc tgcggccacc aggtctcagc 240
 acaagagcgc ttcctttgca cagaatgagc ttcgagcttt gttcagacta aatgaatgta 300
 tctgggaggg gtcgggggca cgagttgatt ccaagcacat gcctttgctg a 351

<210> 306
 <211> 508
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (26)..(26)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

<220>

<221> misc_feature

<222> (52)..(52)

<223> n is a, c, g, or t

<400> 306

```

gggagaagat ggttgagcac ttacnggttg agcacnggaa aaaacttaca cnggaaaaaa      60
cttacacaga aaaaacatac acttgtgtat gatggaatct gaagccactg aaaatcctac      120
ttgaaaagcc atgtctaact cacctattga attttttagtt aacagcaact atttttcata      180
cagtaaaatg ttactaatTT agattaaggg agtgctgggg gaagacactg atgccgaaac      240
tgaacaaatg ttttaaaaga aatgcagggtt tattatccag cactgagaga gttaacaagg      300
actggaaaaa taaggctaac aaagaatagg atgtgaatgt tttcaagggc caaattaatg      360
tatttatagg taaccagagc atatgttgca aaaagacaca ttttaagaat caaaatcaat      420
tctccaaaat gttttaaact ttactgtata ttctcgctag caacagtaat tctgtaaata      480
ccttttcccc ccataaacac tgcaaggg                                     508

```

<210> 307

<211> 266

<212> DNA

<213> human

<400> 307

```

ggttcacccg cagagtcgat tatatctccc catcacacgt ctgaggattc agaacttata      60
gcagaagcaa aactcctcag gcagcacaaa ggtcggctgg aggctaggat gcagatttta      120
gaagatcaca ataaacagct ggagtctcag ctccaccgcc tccgacagct gctggagcag      180
cctgaatctg attcccgaat caatgggtgtt tccccatggg cttctcctca gcattctgca      240
ctgagctact cgcttgatcc agatgc                                     266

```

<210> 308

<211> 383

<212> DNA

<213> human

<400> 308

```

agtgcaagag cccttcgtgg gagctgtccc atgtttccat ggtccccagt ctcccctcca      60
cttggtgggg tcaccaacta ctaccagaa gggggcttac caagaaagcc ctaaaaagct      120
gttgacttat ctgcgcttgt tccaactctt atgcccccaa cctgccctac caccaccag      180
cgctcagcct gatgtgttta catggtactg tatgtatggg agagcagact gcaccctcca      240
gcaacaacag atgaaagcca gtgagcctac taaccgtgcc atcttgcaaa ctacacttta      300
aaaaaaactc attgctttgt attgtagtaa ccaatatgtg cagtatacgt tgaatgtata      360
tgaacatact ttcttatttc tgt                                     383

```

VDX5009WOPCT.11.30.ST25.txt

<210> 309
 <211> 530
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (68)..(68)
 <223> n is a, c, g, or t

<400> 309
 gattaaacga ctgtgtcttt gtcacctctg cttaacttta ggagtatcca ttcctgtgat 60
 tgtagacntt tgttgatatt cttcctggaa gaatatcatt cttttcttga agggttggtt 120
 tactagaata ttcaaaatca atcatgaagg cagttactat tttgagtcta aaggttttct 180
 aaaaattaac ctacatccc ttctgttagg gtctttcaga atatctttta taaacagaag 240
 cttttgaagt cattgctttt gctacatgat ttgtgtgtgt gaaggacata ccacgtttaa 300
 atcattaatt gaaaaacatc atataagccc caactttggt tggaggaaga gacggaggtt 360
 gaggtttttt cttctgtata agcacctact gacaaaatgt agaggccatt caaccgtcaa 420
 acaccatttg gttatatcgc agaggagacg gatgtgtaaa ttactgcatt gctttttttt 480
 tcagtttgta taacctctaa tctccgtttg catgatacgc tttgttagaa 530

<210> 310
 <211> 519
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (112)..(112)
 <223> n is a, c, g, or t

<400> 310
 gcctaggcca cggatgcctc aagagacccg gtcagcccag actggaggag tgccccaac 60
 cagtccagtg tccacttgcc agaatttcag ctcctttttt ctgtggtgag gncaaaggct 120
 agaaataaaa tggaatccgc gcccaagtgg gacccaagca ggcatctttc ggtggagaaa 180
 cgccccccag tgctcttgac acagctgact gctggcatga gccaccctc tgcctgaaga 240
 tgcaggacca tttttgcctt aaaagttggg gaggagggac atgtagattg tgtgcattgt 300
 gcatagtcaa ggaaatccta gggccacctc cagttcattt gtgtgggaac aaggatattt 360
 tatagataca aattatTTTT atgctgtgtt gaattaatca attaggagag gaaggggaaa 420
 tcacttcctt caaacttttt atctgattgt ctaaaattct aaccatgctt ttaacttatt 480
 atttttaccc agctctgaag gtcattgttc ttgcctgtg 519

<210> 311

VDX5009WOPCT.11.30.ST25.txt

<211> 540
 <212> DNA
 <213> human

<400> 311
 gtgtatctaa gctgctttac aatTTTTTTTT caatgctgta ctactgtctc aagatttaaa 60
 ttttaatgca gactacttta ttggtgtgag gcacacaggt aagaagaaat gtcaacatta 120
 aatgtatgac ttacttggtta caaaaatttt ttaaaaaggg aactaccttg acattgtgta 180
 ttaaattgttt acctaaagact ataattctca gtagatgttt tgtttaacat atacctctca 240
 aaatttatca cactcaatg aactgcatc aaaattgact ataaaactaa ttcaagaaat 300
 atttatatat attttttaat atacaaaaaa tatttagcct gatggaatgg ctttcctttt 360
 caaacattat tttctaagtt tctatacaaa tgaaatcttt acctctgcat attaatgagc 420
 cttgccataa ttactgtaga gtggcctttt aaagatatTT tgttgactta aaactgtggg 480
 agtaaactca gtgaacatga tgtgtggaag agcataatta gctgggtcaat atttttgtcc 540

<210> 312
 <211> 382
 <212> DNA
 <213> human

<400> 312
 tttcccttaa taccgttgca agtctgacag catgagtatc tatgacgata ttgatgctga 60
 cgtgctgcaa aattaccaag aatacaatct ggccaacatc atctactact ctctgaagga 120
 gtccaccact agtgagcaga gtgccaggat gacagccatg gacaatgcca gcaagaatgc 180
 ttctgagatg attgacaaat tgacattgac attcaaccgt acccgccaag ctgtcatcac 240
 aaaagagttg attgaaatta tctctgggtgc tgcagctctg gattaatgaa aatcaagttc 300
 catcctcaga caagaggtaa agaaggaaaa ttcagccagt tgattttgtt tttagcttac 360
 tgctgccttt gtccgaagaa ac 382

<210> 313
 <211> 474
 <212> DNA
 <213> human

<400> 313
 gcaaataaggc acgaaggcac aggtctaaaa tactacattg tcactgtaag ctatactttt 60
 aaaatatTTta ttttttttaa agtatttttct agtcttttct ctctctgtgg aatgggtgaaa 120
 gagagatgcc gtgttttgaa agtaagatga tgaaatgaat ttttaattca agaaacattc 180
 agaaacatag gaattaaaac ttagagaaat gatctaattt ccctgttcac acaaacttta 240
 cactttaatc tgatgattgg atatttttatt ttagtgaaac atcatcttgt tagctaactt 300
 taaaaaatgg atgtagaatg attaaagggt ggtatgattt ttttttaatg tatcagtttg 360

VDX5009WOPCT.11.30.ST25.txt

aacctagaat attgaattaa aatgctgtct cagtatttta aaagcaaaaa aggaatggag 420

gaaaattgca tcttagacca tttttatatg cagtgtacaa tttgctgggc taga 474

<210> 314

<211> 290

<212> DNA

<213> human

<400> 314

taggaccttc aagatcctag ggggttttgt ttggttttta attgtgagga ataaaaaatc 60

ttctgcccac actggcattt taagggtgact gaggtcaaac gttgtttcct taggttgaaa 120

tagcagccaa aacattcttc acgcaggggc ttgggatatg gctgctggca acacattttg 180

ttgtgggctc cttaatttaa tgataaaatt taagctaaac acaagccaaa aatgaatagg 240

tttttttaat ttttattttt cactaaacag gcaattgaaa tacatggtac 290

<210> 315

<211> 407

<212> DNA

<213> human

<220>

<221> misc_feature

<222> (47)..(47)

<223> n is a, c, g, or t

<400> 315

gcgcctagtc agagagtggg tgaggaggag atcctgatct acatcantga ccatgaggac 60

aaaaacgaag aggcattttg cgtgaagggtc atctaccagt gagggcttga ggggtgacgtc 120

cttcctgcgg caccagctg gggcctgtct gtgcccctcc tgccctgcag gctgtcctcc 180

ccgcctctct gcagcctttc acttcagtgc ccacctggct gacctgtgca cttggctgag 240

gaagcagaga ccgagcgctg gtcattttgt agtacctgca tccagcttag ctgctgctga 300

caccagcag gcctgggttc cgtgagcgcg aactccgtgg tgggtgggtct ggctctggtg 360

ctgccatcta cgcattgtggg accctcggtt tcgctgttgc tcaaaat 407

<210> 316

<211> 373

<212> DNA

<213> human

<400> 316

ccaggaagct gatccacctt gagatcaagc cggccatccg gaaccagatc atccgcgagc 60

tgcaggctcct gcacgaatgc aactcgccgt acatcgtggg cttctacggg gccttctaca 120

gtgacgggga gatcagcatt tgcatggaac acatggacgg cggctccctg gaccaggtgc 180

tgaaagaggc caagaggatt cccgaggaga tcctggggaa agtcagcatc gcggttctcc 240

VDX5009WOPCT.11.30.ST25.txt

```

ggggccttggc gtacctccga gagaagcacc agatcatgca ccgagatgtg aagccctcca    300
acatcctcgt gaactctaga ggggagatca agctgtgtga cttcgggggtg agcggccagc    360
tcatagactc cat                                                    373

```

```

<210> 317
<211> 526
<212> DNA
<213> human

```

```

<220>
<221> misc_feature
<222> (88)..(88)
<223> n is a, c, g, or t

```

```

<400> 317
agcagtgagt tattacccac aatttaaagc aaattttgaa tgaatcttta agttaggtat    60
ctaccttccc accagccccc caaaaaanct ctcagtagtt tctttcagtg tacaaaatga    120
tgagcatttt tctatgatga ggttttaacc attattcagg gtggtctttt gtttttaaat    180
ctttttttta ctaataagat ttacggtgtg tatttttatac agaaatgcat tataaatggt    240
tttaattgtg ttctgttttt tgcagtcctt aagtgccatg ccaattgttc ttatatctta    300
tagaagttcg ctcaaaatac tcaacagggg aataggcagc ggacagtcag aatgggttgga    360
attttggtct tctaagaaaa actttatatt gcataagcat gtggtcagat ctttttgtgc    420
atatgcagcc tggattggat gttaagtaaa tgcttggttca gtgccggtac atttacttaa    480
atctgttttt atttttgtca tgtagaatac tactgtgggtc atcata                    526

```

```

<210> 318
<211> 327
<212> DNA
<213> human

```

```

<400> 318
ttctcatcaa tacctgttcc actgagctcc tgttgcttac catcaagtca acagttatca    60
gcactcagac atgcgaatgt cttttttagt tcccgtatta ttacaggtat ctgagtctgc    120
cataattctg agaagaaaat gacctatatc cccataagaa ctgaaactca gtctaggtcc    180
agctgcagat gaggagtcct ctctttaatt gctaaccatc ctgcccatta tagctacact    240
caggagttct catctgacaa gtcagttgtc ctgatcttct cttgcagtgt ccctgaatgg    300
caagtgatgt accttctgat gcagtctt                                     327

```

```

<210> 319
<211> 474
<212> DNA
<213> human

```

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (39)..(39)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (53)..(53)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (56)..(56)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (75)..(75)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (110)..(110)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (113)..(113)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (147)..(147)
 <223> n is a, c, g, or t

<400> 319
 gccttgcatg gtgcctgtag ggggatttgc tttgctgtnc cattggggta canctnctgc 60
 tcttactcta gaccnaaaag tcgggttgag tgactggtgg cagggccacn ganagagaca 120
 gcggggaggg tggctgaccc tggcggnccct ggactgagcg tctggaggag tcgtggaggc 180
 tctttccctt ctttctcctc tgagagctcg ttcttcaggc tcttcagct tgtcatgtcg 240
 agtgccctggc cactgctcag ggttgaggc tcagtcctt tgccctgtct gttccagctc 300
 tggagctaac tcagggatcc ctgatcaggg ttacataggt ttggtaaaat gagtgtctgga 360
 aattaacttt ctcccagtag tcttaggtca tgctcagtga acttaaactt tatccagata 420
 tggttttcct tcagcctttc tattcccttt ctagccagtg aaagacccgc tgcc 474

<210> 320
 <211> 586
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (175)..(175)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (280)..(280)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (432)..(432)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (437)..(437)
 <223> n is a, c, g, or t

<400> 320
 gcacatgaac ggctggagca acggcagcta cagcatgatg caggaccagc tgggctaccc 60
 gcagcacccg ggcctcaatg cgcacggcgc agcgcagatg cagcccatgc accgctacga 120
 cgtgagcgcc ctgcagtaca actccatgac cagctcgagc acctacatga acggntcgcc 180
 cacctacagc atgtcctact cgcagcaggg caccctggc atggctcttg gctccatggg 240
 ttcggtggtc aagtccgagg ccagctccag cccccctgtn gggtacctct tcctcccact 300
 ccagggcgcc ctgccaggcc ggggacctcc gggacatgat cagcatgtat ctccccggcg 360
 ccgaggtgcc ggaacccgcc gccccagca gacttcacat gtcccagcac taccagagcg 420
 gcccggtgcc cngcacnggc cattaacggc aactgcccc tctcacacat gtgagggccg 480
 gacagcgaac tggagggggg agaaattttc aaagaaaaac gagggaaatg ggaggggtgc 540
 aaaagaggag agtaagaaac agcatggaga aaacccggta cgctca 586

<210> 321
 <211> 314
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (50)..(51)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (95)..(95)
 <223> n is a, c, g, or t

<400> 321
 gccgtcacat ggatggtggt ctattaactt gttcaaaaaa gtatcaggan ntgtcaaggc 60
 agagaagaga gtgtttgcaa aagggggaaa gtagnttgct gcctctttaa gactaggact 120
 gagagaaaga agaggagaga gaaagaaagg gagagaagtt tgagccccag gcttaagcct 180
 ttcaaaaaa taataataac aatcatcggc ggcggcagga tcggccagag gaggagggaa 240

VDX5009WOPCT.11.30.ST25.txt

gcgcctttttt tgatcctgat tccagtttgc ctctctcttt ttttccccca aattattctt 300

cgccctgattt tcct 314

<210> 322
 <211> 147
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (63)..(69)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (72)..(72)
 <223> n is a, c, g, or t

<400> 322
 ntcagtctgt caccctgaat cataatcgct cctttgcacc tctaaaaaga tgtcccttac 60

ccnnnnnnng gngggctcct gagcctctgc gtaaggctga acgtctcact gactgagcta 120

gtctttcttgt tgctcgggtg catttga 147

<210> 323
 <211> 510
 <212> DNA
 <213> human

<400> 323
 gagctcacag cacaagtgtg tcaactgttta atgttaccca acaagagtta gtgttaagtg 60

atgatcaagt tcccatttca cctgctctac ttttgctgca ttaattaatg acacccggat 120

gaggagacgt gcgctaactt cattgctcat ctgggatagt gcatgagccc attgaattag 180

agctgctcct actagataac tgagcagtag acataagtgc atgttatgaa acatgaatca 240

catagagcag tggagtttta ccaagtgggtg tgtgtgggtt ttgtttttta ctatgcaaag 300

atgggaaatg cacaaacttt tcaaagacta gtgtctgaag aactttacaa acaatacttg 360

aaccctttct ttaaagttat cccatcatgt tttatagtca ttgttgcttc cattgttagt 420

ttccattttc aagtgccttg taatttttta agtgcactac ctgaaatttt gtttgaaatt 480

aataaattca ttcgtatctt gttggctgcc 510

<210> 324
 <211> 503
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (169)..(170)
 <223> n is a, c, g, or t

<400> 324
 gacattgcct gtatgatcgg gtaccgacct tgcccctgga tgaaatggtg ctggtccttc 60
 ttcaccccgc tggctctgcat gggcatcttc atcttcaacg ttgtgtacta cgagccgctg 120
 gtctacaaca acacctacgt gtacccgtgg tggggtgagg ccatgggcnh ggccttcgcc 180
 ctgtcctcca tgctgtgctg gccgctgcac ctctggggct gcctcctcag ggccaagggc 240
 accatggctg agcgctggca gcacctgacc cagcccatct ggggcctcca ccacttgagag 300
 taccgagctc aggacgcaga tgtcaggggc ctgaccaccc tgacccagct gtccgagagc 360
 agcaaggctg tcgtgggtgga gagtgtcatg tgacaactca gctcacatca ccagctcacc 420
 tctggtagcc atagcagccc ctgcttcagc cccaccgcac ccctccaggg ggctgcctt 480
 tccctgacac ttttggggtc tgc 503

<210> 325
 <211> 465
 <212> DNA
 <213> human

<400> 325
 caatatctga caccactttg gactcaagag actcagtaac gtattatcct gtttatttag 60
 cttgggtttta gctgtgttct ctctggataa cccacttgat gtttaggaaca ttacttctct 120
 gcttattcca tattaatact gtgttaggta ttttaagaag caagttatta aataagaaaa 180
 gtcaaagtat taattcttac cttctattat cctatattag cttcaatata tccaaaccaa 240
 atggctgtta ggtagattta tttttatata agcatgttta ttttgatcag atgttttaac 300
 ttggatttga aaaaatacat ttatgagatg ttttataaga tgtgtaaata tagaactgta 360
 tttattacta tagtaaaggc tcagtaacat taaggaccat gataatgata ataaaccttg 420
 tacagtggca tattctttga tttatattgt gtttctctgc ccatt 465

<210> 326
 <211> 125
 <212> DNA
 <213> human

<400> 326
 cctccagatg atctaaatct agttagcaat gtcagcctgt ggactgcagc tgtttgggac 60
 attgtattcc tttgtttgtc tcttggtgtt ctgaaggatt gtattgatca caaagctata 120
 tgcatt 125

VDX5009WOPCT.11.30.ST25.txt

<210> 327
 <211> 156
 <212> DNA
 <213> human

<400> 327
 ggagcatatc aagtaagagg cgtcgccacc accctcccga gggcccctct gcggatggag 60
 ccccaggtgc aacagggccc atggatcatct gtggagggac agcccgtgtg gaaactgcat 120
 ttatcttctt gacctgatac ccatgcagta aatgaa 156

<210> 328
 <211> 302
 <212> DNA
 <213> human

<400> 328
 gaacgggtcg agatgccgac gtgagttagt gggggcatgc ttgggaggcg caggatggta 60
 ctggcacatc taacatctac acttctctag ctcagcctca caggccaaag catcagcacc 120
 agaacgcaca cccagcccag ccccaaagag aaagaagaga cagcaaagag ccgcagccgg 180
 tgcttgacaca ccgccttgca catagcagag gctccaggct gactccttcc tgggtgggaaa 240
 ggaagatgcc tgtcctctcc gtggaggacc ctgggcccctc accgcaggca gcagtttgca 300
 tt 302

<210> 329
 <211> 419
 <212> DNA
 <213> human

<400> 329
 ggagggcctt ccatgttttag aaggagaaac ttaagtgtgg aatgcattat atgggcaaag 60
 aagctatgaa gatacatgat acacttttga caactatcct gcagcccatt ggttgcttat 120
 atttatcgct tggctcaagt tctgcccttt ggagaaatac tgagcaagtc tttcattctc 180
 tgtgtgacag ccctctgaat atttgaagtt gtttggttga acttaagggtt ataacagccc 240
 ttagttcatt tactctgcat ttgttcaata aatatttaac tgaattcttc aattatttca 300
 tctaagatag tttctggaaa tttcactctc gatctttctg tggacacaat ctattttgtc 360
 attgtgtcta tatgaatctc ttaagtagaa atgagttgta tggatgaatct gtgtagtga 419

<210> 330
 <211> 452
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (235)..(235)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (341)..(341)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (353)..(357)
 <223> n is a, c, g, or t

<400> 330
 atatgggCGT ctggaccgag agctccagag agccaattct catttcattg aggagcagca 60
 ggcacagcag cagttgatcg tggaacagca ggatgagcag ttggagctgg tctctggcag 120
 catcgggggtg ctgaagaaca tgtcccagcg catcggaggg gagctggagg aacaggcagt 180
 tatgttgga gatttctctc acgaattgga gagcactcag tcccggctgg acaangtgat 240
 gaagaaactt gcaaaagtat ctcatatgac cagtgatcgg cgccaatggg gtgccatagc 300
 catcctcttt gcagtcctgt tggttgtgct catcctcttc ntagtgctgt gannnnncat 360
 cctgctcatt ttgacaaacg cagagtcatg taccatcac tacaatcaag ttacagacca 420
 tctccataac tccaaagaat tccacacact cc 452

<210> 331
 <211> 263
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (146)..(146)
 <223> n is a, c, g, or t

<400> 331
 gcagcagggtg aaacaacctt gccagcctcc accccaggaa ccatgcatcc ccaaaaccaa 60
 ggagccctgc caaccaagg tgcttgagcc ctgccacccc aaagtgcctg agccctgcca 120
 gcccaagatt ccagagccct gccagnccaa ggtgcctgag ccctgccctt caacgggtcac 180
 tccagcacca gcccagcaga agaccaagca gaagtaatgt ggtccacagc catgcccttg 240
 aggagctggc cactggatac tga 263

<210> 332
 <211> 334
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (32)..(40)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

<220>
<221> misc_feature
<222> (47)..(47)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (65)..(65)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (90)..(90)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (177)..(177)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (200)..(200)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (203)..(203)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (206)..(206)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (210)..(210)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (218)..(218)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (233)..(233)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (275)..(275)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (289)..(289)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (291)..(291)

VDX5009WOPCT.11.30.ST25.txt

<223> n is a, c, g, or t

<400> 332
 ctctcctcat gttgcctttc ggagaagagg gnnnnnnnnn ctggccncca gcccccccg 60
 ccgcncagg gagagctggg gaggaaggcn tagtgcccc acggcgcccc cccctctcta 120
 taccatctga gcaccattg ctcgccatca gatcaacccc tgattttaca tcatgangta 180
 atcaccactg gagcctcacn gtnacnaaan tattaatntc ttgccccag tgntctatct 240
 ctgaggctga gcattataag aaaatgacct ctgnccttt tcattgcana naattgccag 300
 gggcttattt cagaacaact tccacttact ttcc 334

<210> 333
 <211> 275
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (85)..(85)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (234)..(234)
 <223> n is a, c, g, or t

<400> 333
 tctaagaagg atagtcccc ctacaacata ctgtcact gctgggtttt catgggtagg 60
 aaagcttgct ctgacccag cagcnaagag gtggcaggct gctaataaat atatgcttta 120
 taatgtcctt cttcattgct gagagggcag ccttagagct gtggatttct gcatcccccc 180
 tgagtctgac ccatggacac ctgtttcatt cacttttagca tcacagtgc cttngtatgc 240
 tctgttcagt ctgtgtcagg cagtatgctt gtcct 275

<210> 334
 <211> 536
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (152)..(152)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (155)..(156)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (159)..(168)

VDX5009WOPCT.11.30.ST25.txt

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (170)..(173)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (175)..(175)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (190)..(192)

<223> n is a, c, g, or t

<400> 334

ttcagctgtc tacttggaag aacatggaat aagcatactt aacagtgaag agaatcttta	60
attatgtatt atatctgtaa tatattttatt ttgttttaaag aaggctttct aacaatgact	120
gactaaataa agctgtctgc tcctgcattg anaannaann nnnnnnnnan nnnanacccc	180
tccccccctn nntttggcaa aggaggggaa aggaagggtt aaaataattg atttaaaatg	240
tcactaagtg tagactgatg actgtataga gatgtgaaat gtataattac acatggaagc	300
aatatgttgc tgtgtgctat aggtttttgtt ttgttttcta catcttttaa agacttttgg	360
aaatttggct gaacaattag aacacaacag gccaaactcat actcatttgg gatctattta	420
gacaacgtta accaatatat ctatagcttt agattatatt cgataaaagt aatgggactt	480
tttttctttt ttgactcgt tgaacagtgt cttcgtaata tgttcttagt tccctt	536

<210> 335

<211> 431

<212> DNA

<213> human

<400> 335

aaccaggagt tttaatcgcc atatatttta atgtgcttgc atgatgggaa tgtgactttt	60
agcactgcat ggtgttttggg ggcaagatat taatgtggaa atcttagctt aagttttact	120
gtgctctcat cctgtgtcag ctacccctct aaactgaaaa agaggcatgg ctcatctctc	180
tcctgcttta tgtttttgag gttgacttgt aagataaaaa taaaaataag aaaaaatat	240
atctaggcaa atgacatgaa aaaaaagttg aaatatacta ctgggtgttca tttttgtcct	300
gcagtgttgc tttctcaaag aaataaacat gtggctggaa gtgttttaatg gctgcgtttt	360
gatcgtctac aacaaggtta cagtgcctc tggtggcagt catcaaaatc gcttctagac	420
ttgtttttat t	431

<210> 336

<211> 511

<212> DNA

VDX5009WOPCT.11.30.ST25.txt

<213> human

<400> 336
 ctaccgcctt gttttaggag cctgcctcct gtcagtatga aaccctcacc tgaaaaatgc 60
 cagcctggac accaaacact gagccccttc aacaggcaca ttatttcccc ctgagatcca 120
 taagggaatt tagtttctac tattgtagag ttctgaaaag aggtaaaata gtagtccttt 180
 ggtcatccta tttttgcttt caattttgat atttcagact gtaaaaggcc ttgggggatg 240
 atagtacatg tggtagcagt aatttttttg aagcaactgc actgacattc atttgagttt 300
 tctctcatta tcagattctg ttccaaacaa gtattctgta gatccaaatg gattaccagt 360
 gtgctacaga cttcttatta tagaacagca ttctattcta catcaaaaat agtttgtgta 420
 agttagtttt ggttaccatc taaaatattt ttaaagtgtc ttacataaaa aatttatggt 480
 gtgttttaaa atccttaggg gctttatcta t 511

<210> 337
 <211> 393
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (76)..(76)
 <223> n is a, c, g, or t

<400> 337
 gtttagccagg atgtccactt ttttcttaaa tgaacatatt gtcttataac cagcaaatga 60
 agttttactt ttttantcag aaaaaatttc gtcataaagc tatattttta tattttttaa 120
 attgatacag ttagatacct tcagattacc taagttaagt ttttgccaaa atgctatttt 180
 atgccctttt tgtaaagtta tgatttattt tgtaaataata gttccttata gttttctctt 240
 gagtgtttgg acatgagaat agataagatt aaattacaat ttacaagatc acttcattag 300
 gcacaggaaa agtatttaac aaaattcaac accctttcac aataaaaaat aaaaaataaa 360
 tctatgaaga acccatgggt agcatcatac tta 393

<210> 338
 <211> 310
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (45)..(46)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (56)..(56)

VDX5009WOPCT.11.30.ST25.txt

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (81)..(81)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (155)..(155)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (182)..(182)

<223> n is a, c, g, or t

<400> 338

ctgctgggcg gaagggcctg tggacagccc acccaggcgg cgggnncttg gtgggnccag 60

tggtaatggt gccctcccc nccattccct gtgggtgcag cccacaggct ggcgaggagg 120

tgcctctgcc ctaccctcgg gtctggcgag ggagngggca ggggtgcatcc actgtgacag 180

cncctctggg cccacaactc cctgaccctg gaagctgagc ctgctttcct gaccctccgc 240

cccaccccct cctccccaga acactcagag ggacgggtcaa catcagagca cattaacgc 300

tggtgaaacc 310

<210> 339

<211> 259

<212> DNA

<213> human

<220>

<221> misc_feature

<222> (55)..(58)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (82)..(82)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (216)..(216)

<223> n is a, c, g, or t

<400> 339

ttgtactgag ctgagacctt gccactgcgc tccagcctgg tgacagagtt aagtnnnnaa 60

aaaaaaggca tcttcctaaa gnaattgtat ttgtgcttac ctgtgccagg cactgttcta 120

ggtaagcact aagtgggctt taatacagca tattccaatg gggaatccca ggaacaaaaa 180

gactaattgt ccaagtccac aactagaagt ggcacntctg cagaaacaag catcaaattc 240

cctgctcagg aagaagcca 259

VDX5009WOPCT.11.30.ST25.txt

<210> 340
 <211> 356
 <212> DNA
 <213> human

<400> 340
 gtaactcaaa cccctatgtc tggaacatct gtattacatc tgaatTTTTT cacctagtca 60
 attcctgcac ctctctctcc tgtcccttct tccctccctt ggcagtcagc tactgttagg 120
 attttgttca ctgtagatta attttgccta ttctagaact tcatataacg gactcactta 180
 tgagatgtgt attctgtaag ttctttttac tcagcatggt tgtatgttca tcagtgtggt 240
 taagctttgt tcctttttat ggctgagcag tgttctatgt atgaatgccg cattttaacg 300
 tttcacctgt taggtgaaca actaactggg gaacaatggg ctgtttctag tttggg 356

<210> 341
 <211> 276
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (32)..(35)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (203)..(203)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (240)..(240)
 <223> n is a, c, g, or t

<400> 341
 gcataaatta atcagcccca gagtgcttta annnttctc ttaaataaccg gtgtctttga 60
 tcaggatgac atgtgccatt tttcagagga cgtgcagaca ggctggcatt ctagattact 120
 tttcttactc tgaacatgg cctgtttggg agtgcgggat tcaaagggtg tcccaccgct 180
 gcccctactg caaatggcag ttntaatctt atcttttggc ttctgcagat gggtgcaatn 240
 gatccttaac caataatggg cagtcctcat ctctgt 276

<210> 342
 <211> 508
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (146)..(146)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

<220>
 <221> misc_feature
 <222> (210)..(210)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (214)..(214)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (230)..(233)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (235)..(235)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (241)..(241)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (266)..(266)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (291)..(291)
 <223> n is a, c, g, or t

```
<400> 342
cagtacctcg cgccaggaga acgcgccgcc cgcgccggcc tcccaatagc cgccgcccgc      60
tgcctgact ctaagcgctc tccccacgtc cgctccggga gccatccccg gtcgcaggag      120
tccggggagg gccgggaggc gccatngtct ctctctgtag cctttcctgg tagtcaattt      180
gttgtcccga ggattcatct ttttcttcn cctnccttct gttttttttn nnncntgtat      240
ncattggtct tgcctgagct cttccncaa gcttgaggga acgggggagg ncccgggaat      300
gtccctgtct gcacgacctg ggactctgcc catgtgcttt tgcctgtgga atggagacgc      360
ggaccctgga tagtggttct atgactctgc gagggacagg cccacgcgtg tggggagAAC      420
atctcccttc cggggctgcc ctcaagagct tctgaaaaac taatgactct gctgccttct      480
cctttgtctt tgtttctact tgtgtttc      508
```

<210> 343
 <211> 561
 <212> DNA
 <213> human

```
<400> 343
ggaagacctg gagtttggca cagcaggagg ggaggtagaa gaaggtgcac ctccaccccc      60
```

VDX5009WOPCT.11.30.ST25.txt

```

aaccctgcct ccagctctgc ctccccctga gtctcccca aaggtgcagc cagaacccga      120
acccgaaccc gggctgcttt tggaagtgga ggagccaggg acggaggagg agcgtggggc      180
tgacacagct cccaccctgg cccctgaagc gctcccctcc cagggagagg tggagagggga      240
aggggaaagc cctgcggcag ggccccctcc ccaggagctt gttgaagaag agccctctgc      300
tcccccaacc ctgttggaag aggagactga ggatgggagt gacaaggtgc agccccacc      360
agagacacct gcagaagaag agatggagac agagacagag gccgaagctc tccaggaaaa      420
ggagcaggat gacacagctg ccatgctggc cgacttcatc gattgtcccc ctgatgatga      480
gaagccacca cctcccacag agcctgactc ctagccatct tctgcacccc actctttgtt      540
tccaataaag ttatgtcctt a                                              561

```

```

<210> 344
<211> 408
<212> DNA
<213> human

```

```

<220>
<221> misc_feature
<222> (83)..(83)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (92)..(92)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (103)..(103)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (105)..(105)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (145)..(145)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (174)..(174)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (178)..(178)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature

```

VDX5009WOPCT.11.30.ST25.txt

<222> (210)..(210)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (269)..(269)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (300)..(300)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (312)..(312)
 <223> n is a, c, g, or t

<400> 344
 agaaagggtgg acgctgggca gctctggggc tgctgggtgga gggagctgaa gccacatctc 60
 tgtagagcgt cccccggtgg atnagccaac tncaaccctt ttncngtctt tttctgcttg 120
 agattcaa at tccatggaca aacgnttcaa atgtcccagt ttgagtaaaa tgtntaancc 180
 agcctatgga gataagttat tttcatttgn caaaactggg ttgcttctat cagaaatggg 240
 gaaaatagat gttggatagc aaaagtcnc catgtccagg ccaggcgctg tggctcactn 300
 ttgtaatcct antcactttg ggaggccgag gcaggcggat cgcctgaggt caggagttcg 360
 acaccagcct gaccaatatg gtgaaacccc gtctctattc agaataca 408

<210> 345
 <211> 496
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (150)..(151)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (345)..(345)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (347)..(348)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (366)..(366)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (405)..(405)

VDX5009WOPCT.11.30.ST25.txt

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (428)..(428)

<223> n is a, c, g, or t

<400> 345

```

ccggtcagca ggatcatcgt gcaccacag ttctacatca tccagactgg agcggatatc      60
gccctgctgg agctggagga gcccgtgaac atctccagcc gcgtccacac ggtcatgctg    120
ccccctgcct cggagacctt cccccgggn ntgccgtgct gggtcactgg ctggggcgat    180
gtggacaatg atgagcccct ccaccgcca tttcccctga agcagggtgaa ggtccccata    240
atggaaaacc acatttgtga cgaaaatac caccttggcg cctacacggg agacgacgtc    300
cgcatcatcc gtgacgacat gctgtgtgcc gggaacaccc ggagnnntc atgccagggc    360
gactcnggag ggcccctggg gtgcaagggt aatggcacct ggctncaggc gggcgtggctc    420
agctgggncg agggctgtgc ccagcccaac cggcctggca tctacaccg tgtcacctac    480
tacttggaact ggatcc                                     496

```

<210> 346

<211> 251

<212> DNA

<213> human

<400> 346

```

gaaacatcag gcttcagctg gctgggtggg tcatctgaag agcaaatagc catgtataat      60
gctcttggtc aggatggaat taaagttgtc ctgcttgagc tggagaaaat ccaagactat    120
gagaaaatgc cagaatcgat taaattcatt aagcagaaac atggggctat ccgctggtca    180
ggggacttta cacagggacc acagtctgca aagacaagggt tctggaagaa tgtcaggtac    240
cacatgccag t                                           251

```

<210> 347

<211> 330

<212> DNA

<213> human

<400> 347

```

aagctgtttt ccaaggcaac tgcaccattt tacattccca gtaacaacct gtgagcattc      60
aaatttttcc gtatcgtcaa ccaacattta ttattatctt tctcattgtg gtaaaatgtc    120
tattcagatt ctgacatttt agcttttgat ataatcactt tagggctctt ctcattgtaat    180
atttatattt ttcccttttt ctgtatatcc ttttttttct ctctgaaaaa cgtaaacactg    240
tcagccagag gaagtaatat attctaggga atgggaaact catgcttcct gtgagtcttt    300
aaactgtcca ttgtccatct tggcaacatg                                     330

```

VDX5009WOPCT.11.30.ST25.txt

<210> 348
 <211> 447
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (186)..(186)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (193)..(193)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (297)..(297)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (319)..(319)
 <223> n is a, c, g, or t

<400> 348
 gccttttggg agtgcgtggt ggtggtcttg gtgtatggag ctgaccgctt cacggacgac 60
 attgcctgta tgatcgggta ccgaccttgc ccctggatga aatggtgctg gtccttcttc 120
 accccgctgg tttgcatggg catcttcatc ttcaacgttg tgtactacaa gccgctggtc 180
 tacaanaaca ccnacgtgta cccgtggtgg ggtgaggcca tgggctgggc cttcgtgctg 240
 tcctccatgc tgtgcatgcc actgcacctc ctgggctgcc tcctcagggc caaggggnacc 300
 atggctgagt gctggaagna cctgacctcag cccatctggg gcctccacca cttggagtac 360
 cgagctcagg atgcagatgt caggggcctg accaccctga cccagtgctc cgagagcagc 420
 aaggctcgtc tggtggagag tgtcatg 447

<210> 349
 <211> 308
 <212> DNA
 <213> human

<400> 349
 taaatctggg tgcatagctt gagccagtaa tttgggctaa agtgtgtttc ggacttagaa 60
 atttgtgcaa tagtcaactg tctaaagcag tgttgttcaa atagaactat aatgtgagac 120
 acacaagtat tttaaaattt tctagtagct accttaaaaa agtaaaaaga aatgtgaaat 180
 taattttaag gacttaacct aatatgttgc aaaatataat ttcaacatgt attcaatata 240
 aaaattatta gatatttttag gctgggcacg gtgactcacg ccagcacttt cggagtaatc 300
 ccagcact 308

VDX5009WOPCT.11.30.ST25.txt

<210> 350
 <211> 518
 <212> DNA
 <213> human

<400> 350
 gagtatttcg gcccgatatcg aactttttgtt ctcagtatca gcccatgggtt tcaggatcaa 60
 agctgtcatg ttggagattg gtaatggctt tcctgtcttt gtacagttga attcctagtc 120
 ttccttcacg cttgccctct gttggcacag gcattatctc tgcaatttta gaaaatgaca 180
 agtagagaat actacattga gaaactaaac cctcttcttg gggtcctgat actcattccc 240
 atttgtccca gtgctgacaa cccaatcttc ccaatacttt caggcctgct ctacaaaagt 300
 acctgttctt gtagaaattt tacagtctgc ctttttgggt gcccaccca atttttacct 360
 tttagtaagt tggcatgaaa ttttggtaaa atctgaaaat cacatttcag aataaaacaa 420
 ttgggcaaaa ctacctaggc ttactcttg agtgtctcct ttgataggg attgtttctg 480
 gaccagtttg tctaagtcct ggctcttatt ggttcata 518

<210> 351
 <211> 435
 <212> DNA
 <213> human

<400> 351
 ataggcactt gctacttcag taatgtctat attatataaa tagtatttca gacactatgt 60
 agtctgttag attttataaa gattggtagt tatctgagct taaacatttt ctcaattgta 120
 aaataggttg gcacaagtat tacacatcag aaaatcctga caaaaggac acatagtgtt 180
 tgtaacaccg tccaacattc cttgtttgta agtgttgtat gtaccgttga tgttgataaa 240
 aagaaagttt atatcttgat tttttgttg tctaaagcta aacaaaactt gcatgcagca 300
 gcttttgact gtttccagag tgcttataat atacataact ccctggaaat aactgagcac 360
 tttgaatttt ttttatgtct attctgtagt atttttatct ggatatttct agtatggcac 420
 atgatatgag tcaact 435

<210> 352
 <211> 149
 <212> DNA
 <213> human

<400> 352
 gagcacaagt aaatctgtac agatgatgac gcagagccat tccttttagct tcactttcct 60
 ggaggacttg caggccaaaa ttctagggat tccatataaa aacaacgacc taagcatggt 120
 tgtgcttctg cccaacgaca tcgatggcc 149

<210> 353
 <211> 514

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 353
cgactggagt cgttgggttt gggatatttt tggtagtggt ttggtgaaaa gggaaatttt 60
ttttggaagt gcaaaacatt tgtattgttt tctttgataa tatatttttc caaaaacta 120
aaaattgggt acgtcacaaa aagtattgag agacgaggct ggtataatca actctttcaa 180
cccatgttgc cacaacttcc tgtatgattt gttataatac aatacagatt gagatattaa 240
cacatgaatt ttaggtttta ttagtgttat ctgggctggc caccagggtg cataagtggg 300
tcaagaaact tgagcttggc tgtaatcaaa agcaagatag aacctttcca catcagcaag 360
attattctta tctccacttc tctgaatgtt tttcatttct ttctgaaata gcatgaacat 420
aaggctgatac ttgggtcagt tactgagggg gttttagtaa aatagtagag tgagtaagaa 480
ggctagagtg aagagtcagt atagtcttgt gttt 514

<210> 354
<211> 470
<212> DNA
<213> human

<220>
<221> misc_feature
<222> (41)..(41)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (43)..(43)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (45)..(45)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (75)..(75)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (94)..(94)
<223> n is a, c, g, or t

<400> 354
ccatcattct cggcaaactg acgcagggac agaaaaccaa ncnngcatg ttctcactca 60
taggtgggaa ttgancgatg agaacacatg gacncaggaa ggggaatatc acacactggg 120
gcctgtttgt ggggtgggggg agggggggagg gatagcatta agagatatac ctaatgttaa 180
atgacgagtt aatgggtgca gcacaccaac atggcacatg tatacatatg taacaaacct 240

VDX5009WOPCT.11.30.ST25.txt

gcacgttggtg tacatgtacc ctaaaactta aagtataata aaaaaaaaga aaatttaaaca 300
 acttttaaaaa aagagtaatt acagcactgt aataaatgaa ccatgcacat gggagtattc 360
 atagagaatg ataacttcaa cctaaatctt gaagtataag tataaatttg ccagggttcac 420
 ctcttgatta ttttaagtgtg aaagaggatg catagatcac cttcaagtag 470

<210> 355
 <211> 243
 <212> DNA
 <213> human

<400> 355
 cccagggcag aggggtcagca tctcctgcac tgggagcagc tccaacatcg gggcaggtta 60
 tgatgtacac tggatatctgc aacttccagg aacagcccc aaactcctca tctatggtaa 120
 caacaatcgg gcctcagggg tccctgaccg attctctggc tccaagtctg ccacctcagc 180
 ctccctggcc atcactgggc tccaggctga ggtagaggct gattattaca gccagtccta 240
 tga 243

<210> 356
 <211> 543
 <212> DNA
 <213> human

<400> 356
 gtggaatgtc atccttactt caaccagaga aaactgctgg atttctgcaa gtcaaaagac 60
 attgttcttg ttgcctatag tgctctggga tccctccgag aagaaccatg ggtggacccg 120
 aactccccgg tgctcttgga ggaccagtc ctttgtgcct tggcaaaaaa gcacaagcga 180
 accccagccc tgattgccct gcgctaccag ctacagcgtg gggttgtggt cctggccaag 240
 agctacaatg agcagcgcac cagacagaac gtgcagggtg ttgaattcca gttgacttca 300
 gaggagatga aagccataga tggcctaaac agaaatgtgc gatatttgac ccttgatatt 360
 tttgctggcc cccctaatta tccgatctct gatgaatatt aacatggagg gcattgcatg 420
 aggtctgcca gaaggccctg cgtgtggatg gtgacacaga ggatggctct atgctggtga 480
 atattaacat ggagggcatt gcatgaggtc tgccagaagg ccctgcgttg tggatggtga 540
 cac 543

<210> 357
 <211> 122
 <212> DNA
 <213> human

<400> 357
 tcctccgaag atgtccttga cataggagta gtcacctcca gatttgggga tggtgacccc 60
 gagttcagca tagcagaggg ctcccacaac tgtgatgaag cccgtcaca tccagacgat 120

VDX5009WOPCT.11.30.ST25.txt

ga 122

<210> 358
 <211> 516
 <212> DNA
 <213> human

<400> 358
 ccttttgcctc agagatacct aaaatatatt acagggtaat aaaataaatc aactagatca 60
 ataagtttgg tattgttaat tttaaagtaa ctttatttta taattgacat gtgtagtttg 120
 acaaattaaa tgcaatacca agcttaaaat aaaaatacag tgatactgtc ccatcattcc 180
 ccagtcttac ttttctatcc tgggggcaaa cacttttgaa tctttcagtt gcttaatttg 240
 gcatttatat atctccatag ttttatataa tatgtaaata tagctatttt gatttataaa 300
 tgtaattat tatcaaacctt caagtttttag cagaagtgtg gtgatgaatc agttttaaat 360
 ccatctctcc taaaaactgt agataaatat acacacatac ttgtgtgggc atgcacacat 420
 aaaacatgaa gagtgcctac agttactaca ctgattgact tcatcttctg gtaagttata 480
 gatgaactct ttcattgatgc cagttctatg tttttc 516

<210> 359
 <211> 544
 <212> DNA
 <213> human

<400> 359
 ggatctctgt actaaaagcc tcccgtagaa atttggttga tcggattact gccctccgat 60
 gccttgaagc ccaagtcagt acagggggca taattgatcc tcttactggc aaaaagtacc 120
 ggggtggccga agctttgcat agaggcctgg ttgatgaggg gtttgcccag cagctgcgac 180
 agtgtgaatt agtaatcaca gggattggcc atcccatcac taacaaaatg atgtcagtgg 240
 tggaagctgt gaatgcaaat attataaata aggaaatggg aatccgatgt ttggaatttc 300
 agtacttgac aggaggggtg atagagccac aggttcactc tcggttatca atagaagagg 360
 ctctccaagt aggtattata gatgtcctca ttgccacaaa actcaaagat caaaagtcac 420
 atgtcagaaa tataatatgc cctcagacaa aaagaaagtt gacatataaa gaagccttag 480
 aaaaagctga ttttgatttc cacacaggac ttaaaactgtt agaagtatct gagcccctga 540
 tgac 544

<210> 360
 <211> 509
 <212> DNA
 <213> human

<400> 360
 ggaaggtccc cattgcaata ttcagtgaat tcgcattctt taccaactga tttcctacaa 60

VDX5009WOPCT.11.30.ST25.txt

atcatattag ccggtttgaa ttctgaactt tttctgactt gatactctga attaaaccaa 120
gtataagtgt ctttttcttc taagagaata ttagtgctcag catatttttc ttcataaatc 180
ttgtgtataa atcctgatac agcctccatc ggttcaattc catatgagat gtttttcagc 240
tgcattgttc ccctgagtcc tgaacatacg ctgagagtca caagagaatt tggaataccc 300
gcaacatatc cattataatt gcaatccatc tgaactagca gaggtttgga atgacggatg 360
tcattttcgt cataagaatt aataacagaa gctgaagata aaattgattg ctttttgaga 420
tggacaaaat atggctttcc ctatggtaat catgtaaata acattatgtt ctggatctgt 480
ttttgcatcc gatgatgaaa tcttctctg 509

<210> 361
<211> 173
<212> DNA
<213> human

<400> 361
aaaggaggaa ctgacactag tgaataatgt tttaaaactg gctactaaac tgctaaagga 60
gttgacagt ctttttagat tatatgggct tacaatgaat ccgctgcttt ataacatcac 120
ccaggttggt atcctgtcag ctgtttctgg tgttatcagt gacttgcttg gat 173

<210> 362
<211> 113
<212> DNA
<213> human

<400> 362
gcgctgggtc ctgcaagtgc aaagagtgc aatgcacctc ctgcaagaag agctgctgct 60
cctgctgccc cgtgggctgt agcaagtgtg cccagggctg tgtttgcaa ggg 113

<210> 363
<211> 257
<212> DNA
<213> human

<400> 363
agctgcaggc gcaggagtcc ggctcaggac tgggtgaagcc ttcacagacc cggccctca 60
cctgcgatgt ctctgggtggc cccatcagca gtgggtggtta ctctgggagc tcgatccggc 120
agccaccagg gaagggcctg gagtggattg gggacataaa ttatagtggg agcacctact 180
acaaccgctc cctcaagagt cgagtcacca tatcagtaga caggtccaag aaccacttct 240
ccctgaaggc gaggtct 257

<210> 364
<211> 271
<212> DNA
<213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 364
 gggacccccag ggcagaggggt caccatctct tgttctggaa gcagctccaa catcggggaa 60
 gaaattactg taaactggta ccagcagctt ccaggaacag cccccaaact cctcatctat 120
 agtaataatc agcggccctc aggggtccct gaccgattct ctggctccaa gtctggcacc 180
 tcagcctccc tggccatcac tgggctccag tctgaggatg aggctgatta ttactggcag 240
 tcctatgaca ggagtctgag tgggtgtggt t 271

<210> 365
 <211> 492
 <212> DNA
 <213> human

<400> 365
 gctctgaatc tatacctaata gctcttaatt attggcttgt ttcatttttt tcctccagtt 60
 ttttaacaaga tcacataact ggcttatttt taacagcttt gtcaaactac aattttacatg 120
 ccgtaaaatg tacacactgt aattttataa ttcattgact tttagtaaata tttctagcgt 180
 tatgcatcgc cacaatccag ttttagaata tttccatgac cctaagaagt ttcctcatgt 240
 ctattaatat tcccaatcct aggcaccact gagttgtttt ctgtctttat aagtttttct 300
 ttctacatct tatataaatg gaatcataat acatgtagta ttttgtgtct ggcgtcttgc 360
 acttagcatg gtgttcttga ggttcatctg ttgtagtatg tattgatact taggattttt 420
 ttattgccga atactattcc attgcatgga aaagacctat tttatttcta ggttcaccag 480
 ttgagggaca tt 492

<210> 366
 <211> 523
 <212> DNA
 <213> human

<400> 366
 gtcccccccg agagagagtg gtgggggctc ctgggggtccc tggagctcct ggcgagagag 60
 gggagcaggg gcggccaggg cctgccggtc ctcgaggcga gaaggagaa gctgcactga 120
 cggaggatga catccggggc tttgtgcgcc aagagatgag tcagcactgt gcctgccagg 180
 gccagttcat cgcactctga tcacgacccc tccctagtta tgctgcagac actgccggct 240
 cccagctcca tgctgtgcct gtgctccgct tctctcatgc agaggaggaa gagcgggtac 300
 cccctgagga tgatgagtac tctgaatact ccgagtattc tgtggaggag taccaggacc 360
 ctgaagctcc ttgggatagt gatgaccctt gttccctgcc actggatgag ggctcctgca 420
 ctgcctacac cctgcgctgg taccatcggg ctgtgacagg cagcacagag gcctgtcacc 480
 cttttgtcta tgggtggctgt ggagggaaatg ccaaccgttt tgg 523

<210> 367

VDX5009WOPCT.11.30.ST25.txt

<211> 427
 <212> DNA
 <213> human

<400> 367
 gttttgctaa ctggctatct ggaataacctg atcaagcata actatggcaa agataaagca 60
 gcaaccaaga aaccagttgt gaacataatt actccgtctc atgtagagga gcgggggtgc 120
 cagctaaca taacatthttc tgttccaaac gaagatgttt tccaagaact agaaaaaaga 180
 ggagtgggttt gtgacaagcg gaatccaaat ggcattcgag tggctccagt tcctctctat 240
 aattctttcc atgatgttta taaatttacc aatctgctca cttctatact tgactctgca 300
 gaaacaaaaa attagcagtg ttttctagaa caacttaagc aaattatact gaaagctgct 360
 gtgggtatatt cagtattatt cgatttttaa ttattgaaag tatgtcacca ttgaccacat 420
 gtaacta 427

<210> 368
 <211> 503
 <212> DNA
 <213> human

<400> 368
 gaacctcccc aagatcagga atcctcacca atagaaaatg acagctctcc ttaagtgatt 60
 tcttctgttt tctgtttcct tttttaaaca ttagtgttca tagcttccaa gagacatgct 120
 gactttcatt tcttgaggta ctctgcacat acgcaccaca tctctatctg gcctttgcat 180
 ggagtgacca tagctccttc tctcttacat tgaatgtaga gaatgtagcc attgtagcag 240
 cttgtgttgt cacgcttctt cttttgagca actttcttac actgaagaaa ggcagaatga 300
 gtgcttcaga atgtgatttc ctactaacct gttccttgga taggcttttt agtatagtat 360
 ttttttttgt cattttctcc atcagcaacc agggagactg cacctgatgg aaaagatata 420
 tgactgcttc atgacattcc taaactatct tttttttatt ccacatctac gtttttggtg 480
 gagtcccttt ttatcatcct taa 503

<210> 369
 <211> 270
 <212> DNA
 <213> human

<400> 369
 gctgccagggt gccagatgtg acatccagat gacctcgtct ccatcctccc tgtctgcatc 60
 tgtaggagac agagtcacca tcacttgccg ggcgagtcag ggcattagca ataatttaaa 120
 ttgggtatcag cagaaaccag ggaaaactcc taagctcctg atctatgctg cacctcgtct 180
 gcaaagtggg attccctctc gggttcagtga cagtggatct ggggcagatt acactctcac 240
 catccgcagc ctgcagcctg aagattttgc 270

VDX5009WOPCT.11.30.ST25.txt

<210> 370
 <211> 452
 <212> DNA
 <213> human

<400> 370
 gatgaaatct cactgctaata gctcagagat cttttttcac tgtaagaggt aacctttaac 60
 aatatgggta ttacctttgt ctcttcatac cggttttatg acaaagggtct attgaattta 120
 tttgtttgta agttttctact cccatcaaag cagctttcta agttattgcc ttggttatta 180
 tggatgatag ttatagccct tataatgcct taactaagga agaaaagatg ttattctgag 240
 tttgttttaa tacatatatg aacatatagt ttatttcaat taaaccaaag aagagggtcag 300
 cagggagata ctaacctttg gaaatgatta gctggctctg ttttttggtt aaataagagt 360
 ctttaatcct ttctccatca agagttactt accaagggca ggggaagggg gatatagagg 420
 tcacaaggaa ataaaaatca tctttcatct tt 452

<210> 371
 <211> 320
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (48)..(48)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (128)..(128)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (144)..(144)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (150)..(150)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (194)..(194)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (199)..(199)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (201)..(201)

VDX5009WOPCT.11.30.ST25.txt

<223> n is a, c, g, or t

<400> 371
 ccagggcccg tggggatgtg tgggttctgt ggggtgggtgc ctgggaangg aagtggcaca 60
 aaggggtgaa ggcccaagca ataccaagga gccgtgcaca cacattccag gagcttctct 120
 gagtcttncc tctgggacat gctnctgggn ctgggacctg gggctttatg gcctgggtgga 180
 ggtgcccaatt acantgtana nggctacgtg ggctccctgt aatatcaatg ccattcttcg 240
 cagaaataga aacaataacc ctaaaattta tatggaacca caaaaggccc agaatagcca 300
 aaccaccctg agcaaaaatt 320

<210> 372
 <211> 410
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (31)..(31)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (33)..(34)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (37)..(37)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (39)..(39)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (92)..(92)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (151)..(151)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (378)..(378)
 <223> n is a, c, g, or t

<400> 372
 gtaagtggaa gctgaccagg ttgtcaggct ngntttncna tgttactctg catgactccc 60
 ctttaaactg cagtctttgt tctgcaatgc cntcttgtca cagggtcatc tactgcttat 120
 ttgtggcact gttttgtctt ctgtttatgt ntatttcaca gcttgtcaga gtctatacaa 180

VDX5009WOPCT.11.30.ST25.txt

ctcagcagaa agaacacggc ttgcctgctc cctctcttga agattgattg caatgggagt 240
 ggtttctctg tttcttttga tagtcgaaca gatattttact tcttccaaga agatacaatt 300
 cagaggaatt tttatggcaa aagtttagtgg agacgggggtg gatgaaatct gttgggagag 360
 tatcactgtt ctgatggncg gccttgagca ccacactgta atactagacc 410

<210> 373
 <211> 512
 <212> DNA
 <213> human

<400> 373
 ccaccagtgt atcaccagag tcctggacag gctccatacc cgggacccca gcagccttca 60
 tacccttcc ctcagcccc acagcagtct tactatccac agcagtaata tgtctgctca 120
 gcagctcagc tgattcagat cagagggaaa gaaataccaa ccctgcaata agtgactactaa 180
 actctacgct ctgggttaatg taatgtactc tcctggactg aatgcagtgt ataatttctg 240
 tctacagcta gaagctgtgc cccagttcca catttgatta cacatgtgag atttgctgct 300
 gttgcagtat aaacactagg tataatagga tttgaaattg cattacagtt cataaaaatt 360
 gaaaatgaga aattaaacct gcaagtgaac catttgaaac gattatactt tctacataag 420
 acatgggttg gacatcagat acttacaag atgggttaag tatggatact agagaaaatt 480
 aagttttctt tctcttttgg ttattgattt gg 512

<210> 374
 <211> 524
 <212> DNA
 <213> human

<400> 374
 aactgtactt tgtaccctca catacaaagg gatcaaattt gacctgggtgt tatttttagcc 60
 ccaaatttat gacattacac aatattaaaa tgtaaattgt tctttacca aactacttct 120
 agatattcta gtatttgctt ctgggtggaat taaatgacgg taaaattggc taattatttg 180
 aatgaatgaa tggatggatg ttttgcattg tcaatttcta ggtcctttgt ctagaaagga 240
 aatttgcctc agttgaatta gtgaaatatt tctgtcgttg atattaaaag tgacttctga 300
 gtacagttaa gttcctccta tttgccactg ggctgttggt tagaagcata ggtaactgat 360
 taagtaggta tgatactgca tttgaaataa gtggacacaa actatccttt ctccaccatg 420
 gactcaatct gagaacaaca gcattcattt ccattcattt ccatactggc ttttgattat 480
 atgcagattc ctagtagcat gccttaccta cagcactatg tgca 524

<210> 375
 <211> 411
 <212> DNA

VDX5009WOPCT.11.30.ST25.txt

<213> human

<400> 375

```

tgtggtacgg ctgcacaact tccaccagct ctctgcaccc cagccctggt tcaccttcag    60
ccatcccaac agagatccta tgattgacaa caaccgctat tgcaccttgg aatttcctgt    120
ggaggtgaac acagtactac atggctttgc ggtctacttt gagactgtgc tttatcagga    180
catcactctg agtatccgtc cagagactca ctctcctggg atgttctcat ggtttcccat    240
cctcttccct attaagcagc ccataacggg acgtgaaggc caaacatct gtgtgcgttt    300
ctggcgatgc agcaattcca agaagggtgtg gtatgagtgg gctgtgacag caccagtctg    360
ttctgtatt cataaccca caggccgctc atataccatt ggcctctagc c                411

```

<210> 376

<211> 351

<212> DNA

<213> human

<400> 376

```

gaaccagtgt atgtcaacag gtgcatttga gataacttta aatgatgtac ctgtgtggtc    60
taagctggaa tctggtcacc ttccatccat gcaacaactt gttcaaattc ttgacaatga    120
aatgaagctc aatgtgcata tggattcaat cccacaccat cgatcatagc accacctatc    180
agcactgaaa actcttttgc attaagggat cattgcaaga gcagcgtgac tgacattatg    240
aaggcctgta ctgaagacag caagctgtta gtacagacca gatgctttct tggcaggctc    300
gttgtacctc ttggaaaacc tcaatgcaag atagtgtttc agtgctggca t                351

```

<210> 377

<211> 426

<212> DNA

<213> human

<400> 377

```

tcacctgcca cagagcaacc caggttaaat acagcccatg caciaagcca caggccaaag    60
cctatggaat tgtttttaaat catcaaattt aaccattttc ataactgggt cctggagggtg    120
tgcagtgccc ctttgcctct tcaaacctac agcttctctt tgccatttgt ggatttcaca    180
tcaactccaca cagaaacatt acagcctggc atccccagtc tttgccttct tccagctgcc    240
tcgacacagc actgtggcct gtccctattg cccaggcacg ccatttccaa gggcaggaag    300
gggcagtgtc ctgaagccca tcttttctgt gactgtctta ggtgatgtgt agccccctcc    360
acctttccac tcaacaacct cccaccctg tcctgctgca tgggtccggag tctgggacct    420
actttg                                426

```

<210> 378

<211> 539

<212> DNA

VDX5009WOPCT.11.30.ST25.txt

<213> human

<400> 378

gacaatcgca ctttataacca cctgcgatta ctggttcagg ataagtttga ggtgctgaat 60
 tacacaagca ttcctatctt tctcccggaa gtcaccattg gagctcatca gactgaccgt 120
 gtcttacatc agttcagaga gctgccgggc cgcaagtaca gccctgggta caacaccgag 180
 gtgggagaca agtggatctg gctgaagtga acgggccgccc ttctgctcca gctgcatcac 240
 agtgatggcc aagctgcatc agccgcactc tcctggacgc catatagctt taagatcggg 300
 ggagggtaaa taatgcaaaa attgcacagt ggaagaaggg gtctcacaaa aagcaatcca 360
 tcctgtagta taggtaatgg agttggggga agcagcttcc attctggatg tttggaaccc 420
 tttagctttg ttttggaatg gccaccatt ctcactggaa aacagtgggc tgctgtgaaa 480
 ggccagctct cggcagcccc tgtggtttca gcgtgccgct ctgtgtcatt caggttgtg 539

<210> 379

<211> 508

<212> DNA

<213> human

<400> 379

gaggagggga agcctgtatt caggatgata gaggagcag agacttactg tctctcttcc 60
 acattataaa tgaactgcct ttccagggtcc aacatgctgt caggttgctt cagctcgggtg 120
 tgaatgtaag tgtggggatc aaacacacac acctatacac atacatatta atatgcagag 180
 gattttaaat aattgcaaat gtcttggtgc tgttttattt ctacaaaatt ctgtaagatg 240
 tataccagaa aacataataa agataagctc agttcttcat tgggaaaaaa tatttttaaa 300
 gaaaatttag aagtttttgc tgaattaaag tatcttcaat ttttaattact ggatttggaa 360
 gttgaaatgc catccttcaa tatcactggc ctcaaattca ttgatagaat ttttcttaa 420
 actaataagt ggggtaagta taatctccta aattgggtacc cactggctgc tcctaaactg 480
 gtttccagtc atgtcctcca gtatgtga 508

<210> 380

<211> 549

<212> DNA

<213> human

<400> 380

aaagagctgg gtctggctga gcaccagctg cgcttcacct gccgcgtgca cctgcatgac 60
 acacgcaagg agcaggagac ggcatcgctg gtctacagcc acctcaagag cgtcctgaag 120
 gaccactgtg tgcagcacct cccagacggc tctgtgactg tggagtccgt cctcctccag 180
 gccgccgccc cttctgagga cccaggcacc aagggtgctg tggctctctg gacctaccag 240
 gacgaggagc tggggagctt ctcacatctc tgctgaagaa gggcctcccc caggccccca 300

VDX5009WOPCT.11.30.ST25.txt

gctgaggccg gcaactcacc cagccgccac ctctgccctc tcccagccgg acagaccctg 360
 ggcctgcact tcaggactgt gggcgccctg ggtgaacaga ccctgcaggt cccatccctg 420
 gggacggagg ccttgtgtca cctgcctgcc caggcagctg tttgcagctg aagaaacaaa 480
 ctggtctcca ggctgtcttg cctttattcc tggttagggc aggtggtcct agacagcagt 540
 ttccagtaa 549

<210> 381
 <211> 489
 <212> DNA
 <213> human

<400> 381
 gtctccatcg ggaaggggggt gaccgtgggt gaggggtgtgc ggctccggga gagcatcgtc 60
 ctccatggag ccactttgca ggagcacacg tgtgttctgc attgcatcgt gggctggggg 120
 agcaccgtgg gacgtggggc ccgctgggag gtacccccag tgaccctaac cccaacgatc 180
 cccgagcccg catggacagt gagagcctct tcaaggacgg gaagctgctg cctgctatca 240
 ccatcctggg ctgccgagtc cggatccctg ccgagggtgt catcctgaac tcgattgttc 300
 tgccacacaa ggagctgagc cgaagcttca ccaaccagat catcctctga gtagggctgc 360
 cagaaggccc ccagctccta cccactcccc ttgaggactg ctgcctgctt ggccagcctc 420
 tgtccagaaa ggaccagaga aagccaggct ggatcgtcac atgccgggga gcaatgtgga 480
 tggcctggg 489

<210> 382
 <211> 524
 <212> DNA
 <213> human

<400> 382
 gtcttgtttc actgatctta gcttttaaca caagagaagt ctttaaaaag cctgcattgt 60
 gtattaaaca ccaggtaata tgtgcaaaac cgagggtctc agtaacacct tctaacctgt 120
 gaattggcag aaaagggtag cggatcatg tatattaaaa ttggctaata ttaagttatt 180
 gcagatacca cattcattat gctgcagtac tgtacatatt tttcttagaa attagctatt 240
 tgtgcatatc agtattttgta actttaacac attgttatgt gagaaatgtt actggggaaa 300
 tagatcagcc acttttaagg tgctgtcata tatcttgaa tgaatgacct aaaatcattt 360
 taaccattgc tactggaaag taacagagtc aaaattggaa ggttttattc attcttgaat 420
 ttttcctttc taaagagctc ttctatttat acatgcctaa attcttttaa aatgtagagg 480
 gatacctgtc tgcataataa agctgatcat gttttgctac agtt 524

<210> 383
 <211> 524

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 383
gtcttgtttc actgatctta gcttttaaca caagagaagt ctttaaaaag cctgcattgt 60
gtattaaaca ccaggtaata tgtgcaaac cgagggctcc agtaacacct tctaacctgt 120
gaattggcag aaaagggtag cggtatcatg tatattaaaa ttggctaata ttaagttatt 180
gcagatacca cattcattat gctgcagtac tgtacatatt tttcttagaa attagctatt 240
tgtgcatatc agtattttgta actttaacac attgttatgt gagaaatgtt actggggaaa 300
tagatcagcc acttttaagg tgctgtcata tatcttggaa tgaatgacct aaaatcattt 360
taaccattgc tactggaaag taacagagtc aaaattggaa ggtttttattc attcttgaat 420
ttttcctttc taaagagctc ttctatttat acatgcctaa attcttttaa aatgtagagg 480
gatacctgtc tgcataataa agctgatcat gttttgctac agtt 524

<210> 384
<211> 516
<212> DNA
<213> human

<400> 384
tggcaaggag cggcccgaag tggtcctgga ctcagatgct gaggatttgg aggacctgtc 60
agaggaatca gctgatgagt ctgctggtgc ctatgcctac aaacccatcg gcgccagctc 120
tgtagatgtg cgcgatgatc actttgcaca caccacctgc aggctgtatg gcgaggacac 180
cgtggtgcat gagggccagg atgctggcta tatcttcggg ctccagagcc tgatagacat 240
tgtcacagag ataagtgagg agagtgggga gtgagcttgc tagctgctcc agtacttgag 300
agcgactctg tgtcccaggc acagctgtgc tgcggcagcc acgaagccag tatggccagg 360
tgggtggctcc tgcagcctgg aaaaaaatgt gcagtggcct ctgagagccc cagcctgagc 420
cagtcccagc tgtgcttggga gtctttatatt attttaacta tttcttcgaa cattccacat 480
ttgatgatga tacctctttc ttccctgagt gtatat 516

<210> 385
<211> 523
<212> DNA
<213> human

<400> 385
aaatgtttatt ttccctgtga tagaggatga cttcccagtt tcaccaaagt ctgtttatat 60
caacacacac aaaatggaat aattctgagt cactaggcaa tcaatctact gtggttttac 120
tatgtaagggt gaaaattaac tggaacgatg tttgtttgct atacttacat agtcaaactt 180
tacaagccat gaaattaatt gcactctttg tatttgttgt taaatgccta agaagttttc 240
taaaaatttt gtaaaggcac tgtcagagaa tctggagttg aatgattatt ccagatactg 300

VDX5009WOPCT.11.30.ST25.txt

tataacctgc ataacttttt gtctttaagt cgtgtttgta aaagaagtaa ttgctagaaa	360
catttgataa tgtacaaagt agtctataat gactgttcag tacatntttta atatnttttt	420
ggttatatcc aactnttttg aaatatactg gaagcttgat aataaaatgt atttcctatc	480
accatacttt tccatgtgaa aacctgagcc tatttctagt ata	523

<210> 386
 <211> 186
 <212> DNA
 <213> human

<400> 386 gaagatgaat cggttgggga agaaagggga ggcggataga cacgtgtttg atatgaagcc	60
caagcacttg ctgtctggga agaggaaagc tggtaaaaag gacaggagat agtatccgtt	120
tggttggcgt ggcttcgcta gagtgttgct gtttatttcc tggtttggtg cagtatgggt	180
tcatga	186

<210> 387
 <211> 265
 <212> DNA
 <213> human

<400> 387 gcacttggtg ctttgctgaa aactatgggt aaccctatat aggtgtggga aatntttgtc	60
actgcataat attacaaata ttttgagtag acagtgtttc cacatntaat ggagtatcag	120
ttgcttcaga ttttcagaac tgggaagatt tactgggtgta actgggttgt ttttgatgga	180
gaaaaacctt atnttctntt gtaagagctg ggagcaaaca cgnttatgag tgtgtcggaa	240
tcccgtgctt aaaatacgct cttaa	265

<210> 388
 <211> 494
 <212> DNA
 <213> human

<400> 388 gagacaattc gttatcttgc agcttcgggtg tttacttgcc tggcaatagc attgggattt	60
tatagattct ggaagtagta ttaatgctca tcctgctgtg gctgttggct tcttagaaca	120
ccaaaccggg agagattttac tttgaacatt gtcagttgca gcaaaaattt actacacaag	180
attattcgaa gtgtatacgg actaaaagag gaagtgtntt agaatgagaa gagatactgt	240
gtctnttattg tgtgtgtgtg agtgcagggtg tgtgtctnta ttatattgaa aagctgtcac	300
tcagacctgg tttgagatag aagagcattt tgtcctnttg atagttaata gaaattgaac	360
cagagttntc ttatgtnttg ttgaacagtt gtgtaaatca tacaggattt tgtgggtatt	420
ggttgaatat ttgtaaacca ttccctagcc tacatnttta ttactgaatt aactnttctg	480

VDX5009WOPCT.11.30.ST25.txt

ataaccattg cata 494

<210> 389
 <211> 454
 <212> DNA
 <213> human

<400> 389
 tggaggagtg ggtcaccatt gggcgctctt tcagcttcct gtaccagagc agccctgacc 60
 aggttataga tgtggctccc gagcttctgc gtatctgcag ctcattctg gctgacaaca 120
 agatcccacc agacaccaag gccgcactgt tgctgctcct gacgttcctg gccaaacagc 180
 acaccgacag ctttcaagca gctctgggct cactgcctgt tgacaaggct caggagctcc 240
 aggctgtact gggcctctcc tagactgcag gctgcagcca gtccagagag aatagagcct 300
 gccaggcct taagaccacc tctcagccca gttcagttct gccttaccaa agattttgag 360
 actcatatccc atttggagcc agccccactt gctgccttac agggctgtcc ctgaggctgg 420
 atctgttaca aatgagtcac gacatcatac tgta 454

<210> 390
 <211> 530
 <212> DNA
 <213> human

<400> 390
 gaaatatgtc acagtggcat tgcagttgtc tgttagcttt gggttgcagt gctagatatt 60
 gttttaaatt attttcattt taaacaagat gccttctaag ctattgagct tattaataat 120
 aattttacat gtttacttag ttggagcaaa aataagtcta ttttaacgaa tagctttggt 180
 tttgctatgc taatgtctag aaaggcatac gatgctacta ttatgctctg ttttaaaggt 240
 tttacctacc cttgtaaaaa ctataatctt aaatggtttt atttgctgtt tactacttat 300
 acatactact actataaaac ttttttttcc taaatggtac aaatttataa actatcattt 360
 ttcacttacg gtatttgtaa atactactac tacaaaaatc agctttccga gaaagaaata 420
 atcatattatt tatgatattg aaaatttcta cagtaaacac tcaaaaccaa gcaaaaaaca 480
 tttgtaagat acacggtatc tttttggagc aacgggttttt gtaactaatg 530

<210> 391
 <211> 355
 <212> DNA
 <213> human

<400> 391
 tttgttggat gtgggcctta gcctccaggt ccagactact actctatgtt ctccagaagg 60
 gtgctaagtc acctactgaa gagagaacca actgactttc ctattgactc atcaggaacc 120
 agtcctcagt ctggtcaagt tgtttcttat ttgtgagcag ttcaggctat ctcctgatgg 180

VDX5009WOPCT.11.30.ST25.txt

ggatgaggcc aaggctttct tatcttttgg ttgtctctgc ttaatggagg agcctggcct 240
 aggatggagg cctggcttag atctttcatt ccacctcagg aatgagggtg tgatctttcc 300
 tgtcctgacc ctctctgaat tatgtttcaa tagtactctt gattgtctgc catgt 355

<210> 392
 <211> 427
 <212> DNA
 <213> human

<400> 392
 ggtccccgtc tacaaaggag tctgcaaattg cttctgccgg tccaagggcc atggcttcat 60
 taccacagct gatggcggcc ccgacatctt cctgcacatc tctgatgtgg aaggggagta 120
 tgtcccagtg gaaggcgacg aggtcaccta taaaatgtgc tccatcccac ccaagaatga 180
 gaagctgcag gccgtggagg tcgtcatcac tcacctggca ccaggcacca agcatgagac 240
 ctggtctgga catgtcatca gctcctagga gatggtggaa gcaccccttg tcctgtgctt 300
 gaggagactt tgcggggagg aggcagcaga cactggagat gacattcttc cacacgagac 360
 ggggcttcag ccggggatgg tccctctcaa gtatctcctg gaggaagggg tatggggggc 420
 aggtgtg 427

<210> 393
 <211> 501
 <212> DNA
 <213> human

<400> 393
 ttaaaagtaa gtcgcagccg ctctctccgc agccacttca gcagcatctt agattttaag 60
 cctcacgtgc gcagctgggt catgaactat tggctgcac ctcgttaggt gcccaccaag 120
 aagggttttta cctacttaac aaaaaagaaa gaagccaaag tgattagaaa gaaatgaaat 180
 ctcttttttg gttctgtcta ctgaaattta atatctcagt gaacagacta aaaggaattt 240
 agaatcctaa caacttacca gatttctcct gttttaaata tactgggact ttaaaggtta 300
 tatgtccggt caccgtatgt ttttaagtcgg tgttaatgct aacagtgttg aaaacaatat 360
 ttcatgagat ctaattgtgg ttgcccctat aggttagcagg aaagtaaagt tgcatttccc 420
 tctcgcacat tctacacca agtgcctaaa agatctcatt gtaagtgggt agtgttaccg 480
 gaagccattg tgttcacacg g 501

<210> 394
 <211> 414
 <212> DNA
 <213> human

<400> 394
 tgatctgtgc cattctagac atccctgtct acaagagtcg gatccagtcc ctccatctgc 60

VDX5009WOPCT.11.30.ST25.txt

tctttttccct	ctactcagaa	ttcaagaact	cacagcattt	taaagctctc	gctgaaggca	120
agaaagcatt	cactccttca	tccaattcca	cctcccaagc	tgagacatg	gagacattaa	180
ccttcagctg	agacacttcc	caagctgctg	tttcaaggct	gagctggccc	ctctgcccc	240
gctgagatgg	acagatcggt	gtcagctact	tgatgtcctt	gcccattgca	cagcttggt	300
caggggcagt	gcatgtcctg	ctgccctctc	tgccagagg	cacagaacat	gtttgtttaa	360
tgaacctgcc	tgccctcagat	tgctgtcccc	ggggagttaa	tgcatctaca	ccac	414

<210> 395
 <211> 370
 <212> DNA
 <213> human

<400> 395	
tggtgtatgc	tggtgtttcc
tcagcagtat	ggctctgaca
tctcttagat	gtcccaactt
	60
cagctgttgg	gagatggtga
tattttcaac	cctacttcct
aaacatctgt	ctggggttcc
	120
tttagtcttg	aatgtcttat
gctcaattat	ttggtgttga
gcctctcttc	cacaagagct
	180
cctccatggt	tgatagcag
ttgaagaggt	tggtgtgggt
ggctgttggg	agtgaggatg
	240
gagtgttcag	tgcccatctc
tcattttaca	ttttaaagtc
gttcctccaa	catagtgtgt
	300
atttgtctga	aggggggtgt
gggatgccaa	agcctgctca
agttatggac	attgtggcca
	360
ccatgtggct	
	370

<210> 396
 <211> 493
 <212> DNA
 <213> human

<400> 396	
ggcagcccac	aagtttctcg
tggggagatg	gaggcagagc
ccagggtagg	ggacagagct
	60
gctggggcct	ttccttgctt
gggaatctgt	cccaggaaga
gcttccccac	tcccatcccc
	120
caaattggaa	aaaccgtaca
ttcaagcctg	tttggccctg
aaattcttaa	gaatctggtt
	180
aagaattaac	tcactaatgt
caaaagtcaa	aacctcctag
gggttgtcct	gggagtcagg
	240
ttcacgggta	cagaagatga
atctcagatg	tcactcaacc
tgagccgtca	ttctctgtgg
	300
cagggtgcc	ctgggtttct
cttactcaat	ccctggagtg
taagcatttg	gattgtgtca
	360
cagattacct	ttttaccttt
tctttctttt	ttttcttttt
tttcaatatc	agtgccaca
	420
ccttactgag	tattgagttt
tagagctttc	gcttgatgtg
cttgaccaag	agacttcttt
	480
tgtatccttt	tct
	493

<210> 397
 <211> 554
 <212> DNA

VDX5009WOPCT.11.30.ST25.txt

<213> human

<400> 397

```

gagacagcaa cagccgtagc aaaagcagct gctgctcctg ctatgagggt gtatatatatt 60
tttacccaaa gctctggaat tgtacattta ttttttaaaa ctcaaagagg gaaagagcct 120
tgtatcatat gtgaacattg tatcataggt aatgttgtac agaccctttt atacagtgat 180
ctgtctttgtt cctgcagcaa aaatcctcta tggacatagg aggtgctgtg tcccatgcct 240
tcttgccctg acagtgtccc atgggcccc ttctgctccc tgccccctcc ctgctactgc 300
tgatgcactg tcctctccct gcagcccctg gcttcccagc cttcctcctg accccttcca 360
acagccttg aactccagct gccaccacc tctgggtcgg aactgggac ccactggccc 420
agtcttggtt gctgcttacc cctagccttg atgcctgccc agggaccccc agccccctcc 480
cgttgccctg cagctttaac agagtgaacc atgtgtattg tacaggcgcg gttgtcattg 540
cagaaaccgc tggg 554

```

<210> 398

<211> 501

<212> DNA

<213> human

<400> 398

```

gaagaaggaa agtccccctg tgtggtaact gtattgttct agaaatatgc tttctagaga 60
tatgatgatt ttgaaactga tttctagaaa aagctgactc ctttttgtc cctggcgggt 120
aaattaggaa tctgcactat tttggaggac aagtagcaca aactgtataa cggtttatgt 180
ccgtagtttt atagtcctat ttgtagcatt caatagcttt attccttaga tggttctagg 240
gtggggtttac agctttttgt acttttacct ccaataaagg gaaaatgaag ctttttatgt 300
aaattgggtt aaaggcttag ttttgggagg aaaaaagccg tagtaagaaa tggatcatat 360
atattacaac taacttcttc aactatggac tttttaagcc taatgaaatc ttaagtgtct 420
tatatgtaat cctgtaggtt ggtacttccc ccaaactgat tataggtaac agtttaatca 480
tctcacttgc taacatgttt t 501

```

<210> 399

<211> 461

<212> DNA

<213> human

<400> 399

```

tgaagcctag gaatgtgttg ttgttttcag agcttccctg gtgattgtga taagcctggt 60
ttggaaacca ttgctggaga actttgtaaa gatacagaga cccagacctt ttgtatttac 120
atttaaatac aaatacaaat cctgggtttc tatatgttct gttagctttt cagggtgattc 180
tgctacacag acgttgaaaa ccactgccct aagaaagaga tcagaggcca catatcagag 240

```

VDX5009WOPCT.11.30.ST25.txt

agaaaagggga ccaaacccttc ggtggtttgt tgtgtgtcgt tttaatgccca attatttttaa 300
 cttgcacagt cttctgaaac cttgtattaa tagttctctt ttgtattacc attttcaggt 360
 aggggttttga tcactatgat tctgaagata atagtgaaat agtgaatttc attgatatga 420
 agagataatt gattttcatt cattggtttg aacacctgca a 461

<210> 400
 <211> 427
 <212> DNA
 <213> human

<400> 400
 gtatgggtca tttcaaagag ggcttatgag gctgtgaaac ccagagctct taacgctgtg 60
 accaaagatg gaagttctct ataggaagcc atagcactcc taatgttttg tgctatgttt 120
 tcctgaggag atataaaacg taataatcca tgattgttgc catgtgagag ttttaaagggt 180
 taatcaaaat ttctcttctt cagggccaaac ttgaagataa atcttttgac tccagctctt 240
 tagaggatct aaagtgcctt tgatggacag tggaagaaat cacaacatgg aattcctcga 300
 ataacaattt attgacttta aataattttg tctaattgcta catatacaca attaaaaaac 360
 ctttacacta tttctagaaa gtcagcatgt atttttggct cgaagtttct ctagtgtttt 420
 ctgtgga 427

<210> 401
 <211> 496
 <212> DNA
 <213> human

<400> 401
 gaaagtgggg ctgatccaac aattgaaact gactctggat ataattctat ggatctagct 60
 gtagccctag gctatagaag tgttcaacag gttattgagt cacatttggt gaagctgctt 120
 caaaatatca aggagtagac acagtcacga gaaaatgtct gcccttttgt ttacttcttg 180
 gtccttataa atgatagttt tgtttactta taaattttta cctcagttgc aatatttact 240
 ggtttttagt aggttttaaat aaatatttct ctgagtaatt cactggttta taataaatgt 300
 aatactcttt ttataactat gttttactgt atatttataa ttataaatta atgttttcgt 360
 ggcattgtaa tttttatggg acagatagtt atcatcagtc tttgtatcaa gtgctgtaat 420
 ttgacatttt cagaaattat tctaccctag tcatcttcac tcgtgtatta agtcattcac 480
 tttatatagg gtttgc 496

<210> 402
 <211> 532
 <212> DNA
 <213> human

<400> 402

VDX5009WOPCT.11.30.ST25.txt

```

gagacagact tggcaagga cccctggtt ctgagccagt agctgccatc tggaaattcc 60
tcttttagcc tctccttaga ggtgaatgtg aatgaagcct cccaggcacc cgctgaattt 120
ctgaggcctt gcttaaagct cagaagtggg ttaggcattt ggaaaatctg gttcacatca 180
taaagaactt gatttgaaat gttttctata gaaacaagtg ctaagtgtac cgtattatac 240
ttgatgttgg tcattttctca gtcctatttc tcagttctat tatttttagaa cctagtcagt 300
tctttaagat tataactggg cctacattaa aataatgctt ctcgatgtca gattttacct 360
gtttgtctgct gagaacatct ctgcctaatt taccaaagcc agaccttcag ttcaacatgc 420
ttccttagct tttcatagtt gtctgacatt tccatgaaaa caaaggaacc aactttgttt 480
taaccaaact ttgtttgggt acagttttca ggggagcggt tcttccatga ca 532

```

<210> 403
 <211> 394
 <212> DNA
 <213> human

```

<400> 403
ggggcgggcg aagcgagtag agtttgtgac atttgtgcc gcccctccag cccagtcacc 60
tgaggagcct gtagggggccc ctgctgtgca gtccatcctt gtggcaggcg aggaggacat 120
ccgctgggtg tgtgaggaca tggggctgaa ggaccctgag gagcttcgca actacatgga 180
gaggatccgg ggcagctcct gaccctccac agccacctgg tcagccacca gctggggcaa 240
cgagggtgga ggtccactg agcctctcgc ctgccccgc cactcgtctg gtgcttgttg 300
atccaagtcc cctgcctggg cccccacaag gactcccatc caggccccct ctgccctgcc 360
ccttgtcatg gaccatgggtc gtgaggaagg gctc 394

```

<210> 404
 <211> 554
 <212> DNA
 <213> human

```

<400> 404
tcaggagcac cagttctatc cctgctaagt gtcagagatg gattcattgc tagccaaggt 60
gatggaagct gttttattgt ccagcaagac ttagactatg tctagagct cactggggct 120
gactgtgacc ctgtgtacaa ggtagccaca tgggagaagc agatctacac atgctgtcga 180
gacggctctt tacgacgcta ccagctttct gacctctgac ttcttgaaa gagcagtcct 240
ggtagtgaa aaggtttgac cctgatcaac aatgagcaga aacatcatca gtccttccca 300
aggaccatgg cgtttaatgt cttgggcacc ctttggaat cacagaaagt cagctgtact 360
ggccgtgtgg aactctcatc ccaagacctt ctttgaactg agtaagaagg tcattgtgcc 420
cactgcattt gttccaactt ctccttgat aaactcacc cagcaacaca gggcaaggat 480
atagatgctt ttagtttggt cttaaaccag ttttgtaaa tgtttacaag gacctcagta 540

```

VDX5009WOPCT.11.30.ST25.txt

ctaaagcctg ttct 554

<210> 405
 <211> 435
 <212> DNA
 <213> human

<400> 405
 gatcccccaa agtcagacac agagcaagag tccccctggg tacaccctc tgcccacagc 60
 ctcagcattt cttggagcag caaagggcct caattcctgt aagagaccct cgcagcccag 120
 aggcgcccag aggaagtcag cagccctagc tcggccacac ttggtgctcc cagcatccca 180
 gggagagaca cagccactg aacaaggtct caggggtatt gctaagccaa gaaggaactt 240
 tcccacacta ctgaatggaa gcaggctgtc ttgtaaaagc ccagatcact gtgggctgga 300
 gaggagaagg aaaggggtctg cgccagccct gtccgtcttc acccatcccc aagcctacta 360
 gagcaagaaa ccagttgtaa tataaaatgc actgccctac tgttggtatg actaccgtta 420
 cctactgttg tcatt 435

<210> 406
 <211> 552
 <212> DNA
 <213> human

<400> 406
 gatccccatt gagttaatgc tctgccttga aaattatatt tctgatcctt gttagtata 60
 acattttttt tctactgaag gtcagaggat aggaacaag tatttctctt ctggtataca 120
 tgtaatgtat tctgtaaaaa agtattcata ttggcaattt tagttaggca taatattgtg 180
 gttgtaattt ttaaaactta gtgttttgtc tgattaaagc aggcactgat cagggtatct 240
 cctaagaggt aattcacttc ttattccttt ccaataatta ttacattcta aattttcatc 300
 tatgagaaat aacaaacaag aaggggaatag aattaaattg ggggtataatc taatcttcat 360
 tgtttaaatg gtttgccttc tcaccattga agccattttt ttatagcctc agaaagagga 420
 aataatgcct ccaccatttt ctacctggtg acttgaaaat tgaactttta agttaggaag 480
 aagttagagt caggggaactt gtataccact atctatgcag cattgttata gtctgattat 540
 ttctgtgttt tg 552

<210> 407
 <211> 479
 <212> DNA
 <213> human

<400> 407
 ccagggtgta ccaagggtccc tgagccaggc tgtaccaagg tccctgagcc aggttgatcc 60
 aaggtccctg agccaggcta caccaaggct cctgaaccag gcagcatcaa ggtccctgac 120

VDX5009WOPCT.11.30.ST25.txt

caaggcttca tcaagtttcc tgagccaggt gccatcaaag ttcctgagca aggatacacc	180
aaagtctctg tgccaggcta cacaaagcta ccagagccat gtccttcaac ggtcactcca	240
ggcccagctc agcagaagac caagcagaag taatttggtg cacagacaag cccttgagaa	300
gccaaccacc agatgctgga caccctcttc ccatctgttt ctgtgtctta attgtctgta	360
gaccttgtaa tcagcacatt gtcaccccaa gccatagtct ctctcttatt tgtatcctaa	420
aaatacgtac tataaagctt ttgttcacac acactctgaa gaatcctgta agcccctga	479

<210> 408
 <211> 517
 <212> DNA
 <213> human

<400> 408	
tgctgcctca tcgaggacgg cgagcgctgc gtccggccccg cgggcaacgc ctccttcagc	60
aagaggggtcc agaagagcat ctcgcagaag aaactcaagc tggacatcga caagagcgta	120
aggcacctat atatctgtga ttttcacaaa aatttcatcc agagtgtccg aaataaaagg	180
aagaggaaga caagtgcga tggcggagat tctcccgagc acgacactga cattcctgag	240
gttgatctgt tccagctgca ggtgaacacc ctacgacgtt ataaacgaca ctacaagttg	300
cagaccagac caggcttcaa taaggcccag ttagcagaaa ctgtgagtcg acacttcagg	360
aacatacctg tgaatgaaaa agagaccctt gcctacttca tctacatggt gaagagtaac	420
aagagtagac tggaccagaa atcggagggt ggcaagcagc ttgagtgagg atgaagcaca	480
tcttaaagga atgaagtgtg atgcttgatg cacaggt	517

<210> 409
 <211> 524
 <212> DNA
 <213> human

<400> 409	
accacaggac tttgatttta agccaaatcc atctccatcc ctttactgtc aatcttctgt	60
cccagtagtt tagcctttgt ggcttagggt atgatgcgcc tccttctgtg cgaccaatga	120
gacgacttca gcatctttttt aaaataatct aagcatcatt gaagcagtaa cacaaaaaaa	180
aggttcagta ttttcttttt agtataactt acatcctttc aaataagtct ttgccctcat	240
gaagaatccc tagaggaaga taaggaaaat aagtattttc cagttttgct tgacagtttc	300
taaacaaaca aaaataaact caatgaaagg aaagatgttt ctttttagct gagatgacag	360
attgcttctc tgtattaaat agtctagaag ttaaggggat ggtcacattt accatgtatt	420
gtgttattag cagttaaatt ttatgaatat gtttgtaaaa ttgttgtttt atatttcattg	480
tcaaattgaa aagtttattt cttcactatt gtacctgtgg aaat	524

VDX5009WOPCT.11.30.ST25.txt

<210> 410
 <211> 494
 <212> DNA
 <213> human

<400> 410
 caacaaaacc catgagcggc agccccccag tcctggatgg tggtaaagaa tcctcaagat 60
 caaaccacag cagtgcctgag agcttggcct gattctaggg ctggggctgg agaaactgct 120
 agagatgatg ccgatagcca gtgtgatccc cctgccctga tggtaaggag cagagtgcag 180
 actggaaccc tcccctcccc aaagattcag acctgtgggg ctgagtgggc tcatagtgtc 240
 cccaagtcct gagaggctgg tgtctggcct cagcctccag cttctcaggt tctgatgcag 300
 tcagctgagt tccctgccta ttcttgcaag cactaggagg aggggtgggtg gttgctggga 360
 acagcaccga gcgccctccc caccagatt cacagagcac actccccggg gggatacttt 420
 aatccggagg ccgtgacgcc tggctccgcc ccgagacgag ctgaatccaa atacggatct 480
 aggcttgagc ttgg 494

<210> 411
 <211> 442
 <212> DNA
 <213> human

<400> 411
 ctgtgaagtc tgaggtctgg gggcttcaga ccagagtgga acaatttgta cacaagggtg 60
 tccgagacat tctgctgatt ggacatagac aggcttttgc atgggttgat gagtggatg 120
 acatgacaat ggatgaagtc cgagaatttg aacgagccac tcaggaagcc accaacaaga 180
 aaatcggcat tttccacact gcaatttcta tctccagcat ccccctgctg ctttcttccg 240
 tccgcagtgc gccttctagt gctccatcca cccctctctc cacagacgca cccgaatttc 300
 tgtccgttcc caaagatcgg ccccggaaaa agtctgcccc agaaactctc acacttccag 360
 accctgagaa aaaagccacc ctgaatttac ccggcatgca ctcttcagat aagccatgtc 420
 ggcccaaadc tgagtaactt ta 442

<210> 412
 <211> 431
 <212> DNA
 <213> human

<400> 412
 gtgacttcag gtaccagctt aaagagcact agggatgggg aacgaatgcc aaatcagact 60
 ccacctagag caccaggaaa cagcttgtag cctggtaggg aaatgggtgtt gctgaaaggg 120
 gaggtgagc cagtgcgaga ctgaacttgt gcagccttag ccaagacaaa gcagtgtttt 180
 tcagcagacg gctgatggga caggaattga agaagagaat tgactcgtat gaacaggaca 240

VDX5009WOPCT.11.30.ST25.txt

gggtgaaaat gctgggaatt ataatgggaa acaaaactat ctatgttcat attttgtaat 300
 atttcatttg ttaagtttat atctggatat aatgttcttt ttaaacaagt ataatcatat 360
 cgtcggaggt taagattatg aaattttaga atctctattc aagatgatgt tcactccaaa 420
 tacactacag a 431

<210> 413
 <211> 511
 <212> DNA
 <213> human

<400> 413
 accaatggta tctggacctt cgtcgatttg gatctgtgcc acatggaggt tttgggatag 60
 gatttgaacg ctacctgcag tgcattcttg gtgttgacaa tatcaaagat gttatccctt 120
 tcccaagggt tcctcattca tgccttttat agctggaaga ttggttaagg aaaagcaccc 180
 cccatggcag agacacctgc acatgattgt gcatacagca gaatgcatgt ttggatttta 240
 gaaatgcaga tttcaatatg taattgttgt gccataagat atcatagaaa aaatataagt 300
 ggttgtgatt ttcttagaaa gttgagggtg tttcacgtaa ggatgagctc ccgcaagaag 360
 aggtacttat agcaagggga ctctcaaadc cattacctca attaagaaat gaagaaattg 420
 aattagtctc aaagtttctt ttaaactcta aaacagaatg agataatgta ttttacgttg 480
 tctataatca ttaaatactt ccctgtgtaa t 511

<210> 414
 <211> 488
 <212> DNA
 <213> human

<400> 414
 cctcctacag ccttaagtcc caggcccatg tctgcctgtc caagggctca agactttcta 60
 actgggatgt ggtagaggga ctgaaggtag ctttgggggc aacagcaccc tagtttcatt 120
 ctcaactcta gccctgcaca ctcacctgtg gcacggaatg aaaacagagc ttcccgtgca 180
 aaaaggggtc cgcctccac ccccgcccc tccctgcacc tcctgtcctc tcccagttca 240
 ttcctggaac cagccaggcc aggcaaccag tggccccaa aggcaggcag gatcctcagg 300
 cccagccgc gggaggctgg aagggtctgc agatcgcttc cctcatccac ctccaccggt 360
 ccagggtctt gctgctgtcc ccagacctcc tgtgacacca cgccagatca cagggcacca 420
 ggccagagat agtcttcttt ttgtcctttc tggcctctgg ctagtcagtt tttcatagcc 480
 ttacagta 488

<210> 415
 <211> 577
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

```

<400> 415
cgctgatgac accactgcgg gagcgcttcc tgcagccgct gatggccctg ctgtaccctg      60
actgtggcgg gggccggctc gacagccacc gggcctttgt ggtcaaatac gcaccgggcc      120
aggacctgga gctgggctgc cactatgata atgccgagct caccctcaat gtggccttgg      180
gcaaggtctt cacagggggc gccctgtatt ttgggggcct cttccaggca cccacagccc      240
tgacggagcc cctggagggt gagcacgtgg tgggccaggg tgtcctccac cgtggcggcc      300
agctgcatgg agcccggccc ttgggcactg gtgagcgctt gaaccttgtc gtctggctcc      360
gagcctctgc tgtgcgaac agcctctgtc ccatgtgctg ccgtgagccc gacctggtgg      420
acgatgaggg cttcggtgat ggcttcaccc gagaggagcc cgccacggtg gatgtatgtg      480
cgctcacctg agcttgcttg ggcccagtgt gggggtggca ggcaggtgag ggctccgttg      540
ccttggtctg ggggcagaaa taaaatcccc gcagcct      577

```

```

<210> 416
<211> 528
<212> DNA
<213> human

```

```

<400> 416
taagcaatga acccatctcg aaggaggagt ttgtaatata caccatattt cctcctaattg      60
gaatgaatct gtacaaaaac aatcacagtg aaagcagtag taaccgaagc tacagagaca      120
gtggtattcc agactcagat cactcacact catgatgctg aaggactcac agcagacttg      180
tgttttgggt tttttaaac taagggagggt gatggttagga accctgttct actgcaaaac      240
actggaaaaa gagactgaaa aaaagcaatg tactgtacat ttgccatata atttatattt      300
aagaactttt tattaaaagt ttcaaatttc aggttactgc tgcgattgat gtagtggaga      360
tgccctgaaca caattctata ttttagtatt ttttagtaat ttgtactgta ttttccttgc      420
aaatattgga gttataaac atttactttg tgttctactg agtaagatga cttgttgact      480
gtgaaagtga attttcttgc tgtgtcgaac aatcaggact gcattcat      528

```

```

<210> 417
<211> 508
<212> DNA
<213> human

```

```

<400> 417
aacactaaga cattatttca ctatttatag cttttccttt tttttatttg agaaggagtc      60
ttgctctgtt gcccacattg gagtgcagtg gcacgatctc agctcattgc agcctccgcc      120
acctgggttc aagcaattct cctacctcag cttcccaggt agctgggatt ataggcacc      180
accaccacac ctggctaatt tttgtatttt tagtggagac ggggtttcac catgttggcc      240
aggctggtct ggaactcctg agctcaagtg atctgcccat ctcagcctcc caaagtgctg      300

```

VDX5009WOPCT.11.30.ST25.txt

ggattacagg tatgagccac aacgcccagc catcatttat ctttttcact cattttttca 360
 tgagtatgca gaggagtttt caagaggcta tctggtgtga tattgtaata ggctgaatgc 420
 aaaagcagat acaagattcc agctttcgtc tgtcatcaga cattgaagag atttggagaa 480
 atgtaaagca gcagtactct tctcacta 508

<210> 418
 <211> 479
 <212> DNA
 <213> human

<400> 418
 gtagagctca tgaactctgt gctgtcttct ggtaacatat catcagtgtt tgtattcatg 60
 gtgtggcaca tggatccatg gcattgggta aatctggtgg tttttacaca tggtcagaat 120
 gtgttcaaat acatctcatg atggagacag taaccaaggt aatgttttgt ttcagcattt 180
 taaaaagact ccacttaaca tttatctcag aatcatgagc ctctctctag ttgacaattg 240
 tcattgttcc cccagcccca aattgaacca tacatttatt ttccaaaaca gaaattgttt 300
 ctgtaaacat atccgacctt caaaagaagt gtgaggttgg atttttcccc cttttatttg 360
 tcctaagatt ccaggaggct ggcctcccag cccagatagc tcagccacct cacctgccta 420
 tcattcctgc attcctactt tgagggtctc atcatgcca ctgggtgttg ttcctaaga 479

<210> 419
 <211> 332
 <212> DNA
 <213> human

<400> 419
 gcagggtgagg agcaggctcc acagactctc ctggggccca gaggagctgg tgctgaccta 60
 gctaggggatg caagagtgag caagcagcac cccacctgc tggcttggcc tcaagggtgcc 120
 tccacccttg ccctcccctt catcccaggg ggtctgcctg agaatggaga aggagaagct 180
 acaaagtggg catccaagcc gggttctggc tgcagaagtt ctgcctctgc ctggggtctt 240
 ggccacattg gagaaaaaca ggctcaaagt ggggctggga cctggtgggt gaacctgagc 300
 tctcccagga gacaacttag ctgccagtca cc 332

<210> 420
 <211> 495
 <212> DNA
 <213> human

<400> 420
 tcgcctccag tcataacagt caaacttcta tgcacaaaaa agccaaggac tccaaaaatt 60
 cctcctcagc tgttcattta aatagcaaaa cagctgaaga caaaaaagtg gcacaaaaag 120
 agcctgtgga agagacagac aggcccagcc cagagcccag caatgaagct gccaaagcaa 180

VDX5009WOPCT.11.30.ST25.txt

gaaatacaga gaaggacagt aatgctgaga acatgaattc tcaacctgag aaaacagtta 240
 ctactcccac agaaaaaaag gagagtgtat ctcttgagaa taacgaagaa ggtggaaatg 300
 ataaccaaga caatgaaaat cctggaaata caaattgcc a tgatgttgta ctagtacagt 360
 gaattatcag aaaaccaga agccagttta ggctagagag gaaaaaacta ctgtatcatt 420
 tctcctaaag aacagagatg aggtcaattt caaattttag ccatctgttt gtgatttctg 480
 tcataagcat tttgt 495

<210> 421
 <211> 324
 <212> DNA
 <213> human

<400> 421
 ctgagcccct gtcaacagtg gggacccac caccaccatc ctggagtgat tccaactcaa 60
 ctcaaaggac acccagagct gccatctggt atctgccagt ttttccaaat gacctgtacc 120
 ctaccagta ccctgctccc cttttcccat aattcatgac atcaaaacac cagcttttca 180
 ctttttctt gagactcagg aggaccaaag cagcagcctt ttgctttttc ttttttcttc 240
 cctcccctta tcaagggttg aaggaaggga gccatcctta ctgttcagag acagcaactc 300
 cctcccgtta ctcaggctga gaag 324

<210> 422
 <211> 522
 <212> DNA
 <213> human

<400> 422
 gaatgttgca ctctgatctc ttaacaaatt gttacgttca aagtttaaag tgatatatta 60
 acaaagtcac ctagtattac aaacaattgt cagagaattc tggatttgga gggatttgga 120
 gttatatgat tctttcttag ataatggcct ctactaaata actcaagatc tttctggaat 180
 gtcttctggc aggcaggtgc cactgtcagc ttttctcaa aaagcagcca acatcagcct 240
 cccctgtcaa ctcaacagtt ttgtatctca tattatatgg actttatatg aaaatgaata 300
 ttttacagtt tgcacagtat ttttttacag aaaaggaatc agagaatcta caacataggg 360
 ccccagaaca acagtttcac tttgtggcct ttaattattc tagaatttta actgcatctc 420
 atttttctag catggtgaga actaatatgt aactcctttg attgaaggag ctcttttgtc 480
 cgtacctatc agaatgtttt cttgacactt ccatgttggc tc 522

<210> 423
 <211> 431
 <212> DNA
 <213> human

VDX5009WOPCT.11.30.ST25.txt

<400> 423
tctttttttt gagacagcct cgctctgtca cccaggctgg agtacagtgg cataatctcg 60
gctcactgca agccctgcct cctgggttca tgccattctc ctgcctcagc ctccctaata 120
gctgggacta caggcaacca ccaccactcc tacctttttt gtatttttag tagagatggg 180
gtttcaccct gttagccagg aagttctcaa tctcctgacc tcgtgatctg cccgccttgg 240
cctctcaaag tgttgggatt gcaggcgtga gccactgctc ctggccttga ttttcttata 300
atcccatgaa accatcatca gagtcacaat aatgaattta tctaacttat cacctttgta 360
ttcacctgga gcctttataa agtttttctc tatgcagaca accattgatt tactctgctg 420
tataatactt t 431

<210> 424
<211> 483
<212> DNA
<213> human

<400> 424
tcccttggtg taggaacaac ggaggagttt ctctctgct aactattcat atatgtaact 60
gtaacaaaag tgtactatgt tatgcacaca ttacaaataa tataagggga agttttatta 120
gcttagtagg aaattgttat tattaagggt taaaaatgag aacagggtgtg agttttccaa 180
aatacttaaa aataatagtg tcaaaaattc aggggcagtt aaggagtcac ggatggaact 240
agaggctact atattaagtg acataagcca gaaacagaca aacattgcat gttctcaatt 300
atgtgcggga tctaaaagtc aaaacaattg aactcatgga tatagagagt agaaggatgg 360
ttactagtggt ctgggaaaag ggggtgtgca ggggaactgg ggatgcttaa tgtgtaaaaa 420
actatgtagt tagaaagtat aaataagacc tagtatttga tagcacaacc ggggtgagtat 480
agt 483

<210> 425
<211> 500
<212> DNA
<213> human

<400> 425
gccaagcttg ttggctcatg cctatagtcc cagcactttg ggaggccaag gtgcaaggcg 60
ggcagatcat ttgaggctcag aaattcgaga ccagcgtggt caacatggtg taaccccatc 120
tctactaaaa attacaaaaa aatgaaccag gcatggtagt gcatgcctct aatcccagct 180
actcaggagg ctaaggcagg agaatcactt gaacctggag acagagggtt cagtgaagctg 240
agatcacgcc actgcattcc agcctgtgct acagaatgag aactgtctc aagaaaaaat 300
aaaagtggga aaatcttcca actgtcctct agagtgtgaa tatatgaaag gagtcagagt 360
gggggtgaaag tctataaatg taagacattt gggaaagcct tcacacagcc ttttgagcac 420

VDX5009WOPCT.11.30.ST25.txt

acatgagaat gtatactgga gagaaaccct ataaatatta agaatgtggg aaattcttca 480
tcctagtctt tttgttggtg 500

<210> 426
<211> 540
<212> DNA
<213> human

<400> 426
gaggacaata tccatgactg ctcaaaactt aaaagtcctt tgggggtcaa atggcatacg 60
gcagtcacct atgtgaacag ctgcttggtt gtggccgtgc tgggtgattct gatcggatgt 120
tacatagcca tatccaggta catccacaaa tccagcaggc aattcataag tcagtcaagc 180
cgaaagcgaa aacataacca gagcatcagg gttgttggtg ctgtgttttt tacctgcttt 240
ctaccatatc acttgtgcag aattcctttt acttttagtc acttagacag gcttttagat 300
gaatctgcac aaaaaatcct atattactgc aaagaaatta cacttttctt gtctgcgtgt 360
aatgtttgcc tggatccaat aatttacttt ttcattgtgt ggtcattttc aagaaggctg 420
ttcaaaaaat caaatatcag aaccaggagt gaaagcatca gatcactgca aagtgtgaga 480
agatcggaag ttcgcatata ttatgattac actgatgtgt aggcctttta ttgtttggtg 540

<210> 427
<211> 502
<212> DNA
<213> human

<400> 427
tcaacttcct ggtacaatgg ccaccctttc tctggtgaat gaggcacagt atctgctgat 60
caacacatcc agtatcttgg aacttcaccg gcaactaaac accagtgatg agaatggaaa 120
ggaggaatta ttctcactga aggatctcag cttgcgtttt cgtgccataa ttattatcaa 180
tggaaaaagg gcttttgaag aagagaaatg ggatgagatt tcaattggct ctttgcgttt 240
ccagggtttt gggccttggt acagatgcca gatgatgtgc atcgaccagc aaactgggca 300
acgaaaccag catgttttcc aaaaactttc tgagagtcgt gaaacaaagg tgaactttgg 360
catgtacctg atgcatgcat cattggattt atcctcccca tgtttcctgt ctgtaggatc 420
tcagggtgct cctgtgttga aagagaatgt ggaaggatcat gatttacctg catctgagaa 480
acaccaggat gttacctcct aa 502

<210> 428
<211> 234
<212> DNA
<213> human

<400> 428
ggatcacttg taaggacagt gcctgggaac tgggtgtagct gcaaggattg agaatggcat 60

VDX5009WOPCT.11.30.ST25.txt

gcattagctc actttcattt aatccattgt caaggatgac atgctttctt cacagtaact 120
 cagttcaagt actatggtga ttgacctaca gtgatgtttg gaatcgatca tgctttcttc 180
 aagggtgacag gtctaaagag agaagaatcc aggggaacagg tagaggacat tgct 234

<210> 429
 <211> 385
 <212> DNA
 <213> human

<400> 429
 aaaacacctg aatgactcta agactgatat gtattttcaa gtctaagctg tcttacagaa 60
 gatcttttat aaatgtttcc ttataaatat ctcaccatta caacaaattg ttttaactgt 120
 ttttctatta gctctagctg catatttgat gtaaattgaca attactgaaa aaatgtcaga 180
 aaaaacattt tcagtactaa cattaaagtg ccatatgtaa aaaagaaaaa tgtgatttgt 240
 ataactaaat aacacacaaa catcaagagg ctattttatac aaataattta tttccactag 300
 ggaaagtgca ttactggtga aggtattatc aattttattct acttgcttat aatgttacag 360
 tgaatgttct ggcttactct gcctc 385

<210> 430
 <211> 437
 <212> DNA
 <213> human

<400> 430
 ccagttcagg ccgtggaggg acgtgatgct gggctgtgtt tactaaacc accgggttttc 60
 agcctcttaa gccagctcc gatctccaat tagttgagag cgctgggttg actaacctct 120
 ggtatctgag cacagacaga ggggtgctgtg ggtctgctgg gtggcagaaa tggttccttc 180
 cggcttggcg ttctctcctg gccactcttc ctgctgcctc tgactactca gccttgtttt 240
 cgggtgtgtag gcccagctg cccactggaa ctgccggcta atgcttgctc tccaagatc 300
 ttttaactcct cctggctgca cctgggtagg gatgggtggca tcgatgcccc tctgtctgct 360
 gaaggacctg ttgctgcttc tgtcttttca cccctccttg gctgatgacc cagagccctc 420
 tgatgatggc attctcc 437

<210> 431
 <211> 551
 <212> DNA
 <213> human

<400> 431
 gcaagtctcg ggatcactca gatgcagcca agaaacacag gcatgaaagg ggacatcata 60
 gggacaggcg tgaacgatct cgctcctttg agaggtccca taaaagcaag caccatgggtg 120
 gcagtcgctc aggacatggc aggcacaggc gctgactttg tcttcctttg agcctgcatc 180

VDX5009WOPCT.11.30.ST25.txt

agttcttggt tttgcctatc taccagtgtg atgtatggac tcaatcaaaa acattaaacg 240
 caaaactgat taggatttga tttcttgaaa ccctctaggt ctctagaaca ctgaggacag 300
 tttcttttga aaagaactat gttaattttt ttgcacatta aaatgcccta gcagtatcta 360
 attaaaaacc atggtcaggt tcaattgtac tttattatag ttgtgtattg tttattgcta 420
 taagaactgg agcgtgaatt ctgtaaaaat gtatcttatt tttatacaga taaaattgca 480
 gacactgttc tatttaagtg gttatttgtt taaatgatgg tgaatacttt cttaacactg 540
 gtttgtctgc a 551

<210> 432
 <211> 380
 <212> DNA
 <213> human

<400> 432
 gctcctttct gatcttcact aagaacaaaa gaagcagcaa cttgcaaggg cggcctttcc 60
 cactgggtcca tctggttttc tctccagggg tcttgcaaaa ttcctgacga gataagcagt 120
 tatgtgacct cacgtgcaaa gccaccaaca gccactcaga aaagacgcac cagcccagaa 180
 gtgcagaact gcagtcactg cacgttttca tctctagggg ccagaaccaa acccaccctt 240
 tctacttcca agacttattt tcacatgtgg ggagggttaat ctaggaatga ctcgtttaag 300
 gcctattttc atgatttctt tgtagcattt ggtgcttgac gtattattgt cctttgattc 360
 caaataatat gtttccttcc 380

<210> 433
 <211> 513
 <212> DNA
 <213> human

<400> 433
 ttgaagctgc ttggcttgct cttaggacaa gatatggcat tcgccctgaa aatgtgatta 60
 tatatggcca aagtataggg acagtaccgt ctgtggatct tgctgctcga tatgagagtg 120
 ctgctgttat tcttcattct cctctgactt cgggaatgcg agttgccttt cctgatacca 180
 aggagaccta ctgttttgat gcattcccaa acattgacaa aatctctaag ataacctctc 240
 cagtattaat aattcatggg actgaagatg aagtcattga cttttcacat ggcctcgcac 300
 tgtttgaacg ttgccaaaga cctgtggagc ctctctgggt tgaaggagca ggtcacaatg 360
 atgtggaact ttatggacag tatcttgaaa ggttgaaaca gtttgtgtca caggaactgg 420
 tgcagaaaca taaagaaggg aagtgatatt ctcaaggctc acagttttca atgacggtac 480
 tatgtattcc attatcttct ctttaccaaa ctt 513

<210> 434
 <211> 527

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<400> 434
 gggatttttct acccagagac ctgcatgttc tctccaacga ccagaatatt ctacccaaat 60
 gtcaggacca agatttttcta ccaaaatata agaaagtaca ctttaaggag ccatactctg 120
 atatgacaga tgagaaaggg agagaagact tttctctggc agactatcag tgtttgcctc 180
 ccaaatccca ggaccaggat gacatcaaaa atcagcaacc tgcattcttt atgagagaag 240
 aaagagttag agaggaattg cctctggact atcatcaata tgttgtacct aaaatccagg 300
 accaagactc ccctagagaa cagaacaagc atatcaaact accctcatct ttgagaaaat 360
 gggagattgc aagaggaaat actcctggag tgccattggc ttatgatagg tatcaatcag 420
 gattgagcac tgaattccaa gctccactgg catttcagtc tgacgtggat aaagaagaag 480
 ataagaaaga gcgtcaaaag cagtacctga gacatagacg acttttc 527

<210> 435
 <211> 548
 <212> DNA
 <213> human

<400> 435
 atgtctttatc aacagtagca atgtaagcag ccctgccagc cacctcctgt gtgccgcctg 60
 ccaaagcgtc cagagccatg tccacccttg aagtgccctg agccctgccc accaccaaag 120
 tgtccacagc cctgcccacc tcagcagtg cagcagaaat atcctctggt gacaccttcc 180
 ccaccctgcc agccaaagtg tccaccaag agcaagtaac agcttcggaa ttcattcagga 240
 ccacgaaagg atagggataa ttggctcacc tcgttcacac gctccacctg catcttctca 300
 tcaaagccat ccagggatac acagggagct tctttccct tagcctgtga tctgcccattg 360
 atgatccccg acagcaaaat gtttcctttc tgaggctgcc atgctgccac tgtccagggtg 420
 gagactgagc aaaggaagtc ctcagctgta ccggcctttc agagcttctc tttgggtgcc 480
 atcaaagaat tattttgatg tcttctgtct ctgtctgtca cctggcatga gcttctacta 540
 tctgtgca 548

<210> 436
 <211> 503
 <212> DNA
 <213> human

<400> 436
 ggcacagggtc cccagatgag aagtctgcta ccctcatttc tcattctttt actaaactca 60
 gaggcagtga cagcagtcag ggacagacat acatttctca taccttcccc acattctgaga 120
 gatgacaggg aaaactgcaa agctcggtgc tccctttgga gatTTTTTaa tctttttta 180
 ttccataaga agtcgttttt agggagaacg ggaattcaga caagctgcat ttcagaaatg 240

VDX5009WOPCT.11.30.ST25.txt

ctgtcataat ggtttttaac accttttact cttcttactg gtgctatttt gtagaataag 300
gaacaacggt gacaagtttt gtggggcctt ttatacactt tttaaaatct caaacttcta 360
tttttatgtt taacgttttc attaaaattt ttttgtaact ggagccacga cgtaacaaat 420
atggggaaaa aactgtgcct tgtttcaaca gtttttgcta attttttaggc tgaaagatga 480
cggatgccta gagtttacct tat 503

<210> 437
<211> 313
<212> DNA
<213> human

<400> 437
agcccaccag caggagcttg gagtttgagg agtggggatg agtccgtcaa gcacaactgt 60
tctctgagtg gaaccaaaga agcaaggagc taggaccccc agtcctgccc cccaggagca 120
caagcagggt cccctcagtc aaggcagtggt gatgggcggc tgaggaacgg ggcaggcaag 180
gtcactgctc agtcacgtcc acgggggacg agccgtgggt tctgctgagt aggtggagct 240
cattgctttc tccaagcttg gaactgtttt gaaagataac acagagggaa agggagagcc 300
acctggtact tgt 313

<210> 438
<211> 510
<212> DNA
<213> human

<400> 438
tttgcccttag cacacgtttt atggagtact tgttatacta ggtttgattt gaaactgggtg 60
cttgtcgcag aactgtcaga gcatgaggag cgctcctcct gtgggtggac gcattcacgc 120
actcccagggt tgcacctgct gctggcggtg agcagggggt tcagcagctt gaccgatgcc 180
ccccgagggg gctctcccca gcttaaactt tgttgtttaa atttgttaac tttttatatt 240
aatgactatt gaaagtggta ataaaaattt atattatagg cttcaatgtt ttcattgaatg 300
ttacccaaaa agctgtgttt tctttgggtca gaggtcaaaa tttatgaaaa acaaaatgct 360
gtatgaatgg aaatcatttt gcaattgagt gacacttcat tgtaattcac agtgtaaatt 420
taatccaaac tgaaattttg tttcaactga atttgtaatt aactctgaat ttgtttttaa 480
tcattagtaa tatttcagtt ggggtatcttt 510

<210> 439
<211> 514
<212> DNA
<213> human

<400> 439
cactagttca atggacccta atgacatgat gagagaaatc cgaaaagtgt tagatgcaaa 60

VDX5009WOPCT.11.30.ST25.txt

```

taactgtgat tatgagcaaa aagagagatt tttgcttttc tgtgtccatg gagacgctag 120
acaggatagc ctcgtgcagt gggagatgga agtctgcaag ttgccacgac tgtcacttaa 180
tgggggttcgc ttcaagcgaa tatctgggac atctattgcc ttttaagaaca ttgcatcaaa 240
aatagcaaat gagcttaagc tgtaaagaag tccaaattta caggttcagg gaagatacat 300
acatatatga ggtacagttt ttgaatgtac tggtaatgcc taatgtgggtc tgcctgtgaa 360
tctccccatg tagaatttgc ccttaatgca ataaggttat acatagttat gaactgtaaa 420
attaaagtca gtatgaacta taataaatat ctgtagctta aaaagtaggt tcacatgtac 480
aggtaagtat attgtgtatt tctgttcatt ttct 514

```

<210> 440
 <211> 508
 <212> DNA
 <213> human

```

<400> 440
attcagggca gtgctccgaa gctgtgtgct cacctggttg gctcatcaaa cctggcaacc 60
ctgtggcctg tctgccggag ctgactggat ccactcatca attcttcgtc cccactacta 120
agactgggca tgttgtgctg gcccaggcgt ggggctacca agcaaaggct tggcatatac 180
caaaggccag ctgcatgccc atcagtctgg tctttttcct ctgcggtcac gttggctttc 240
atgctggatc aaatgtttta ctttccaga ctgggtggcat ctgagttccc catcctacca 300
ctctcacccc actttcctgc cccacctaaa ccctcgtttt agtaatttgt agtgactgtt 360
cccttccttc tgttgcaggg aaccaggagg aaagggaaag atgttgccat atttcctact 420
ctttaggcat ggactctcct ttccctttgt tagtgtcctg gggtcccatg gactcagggg 480
tttgttggct aaggtttctc tgtgcata 508

```

<210> 441
 <211> 420
 <212> DNA
 <213> human

```

<400> 441
aaggagctag ttttcctgag cctgtgtgtg caccaggcac tggggctgat gttccagcct 60
cgtggcgtgg gagcaggaga gctccgtcct gcatttctgt ggtccgtggc cctgtttctg 120
tgcgctgcg cctcggagag caagtgaagg agcatcatgg gttttgtttt ctcccttaac 180
cctctgaaag acagtttgat actaacaaaa aacgcagcag aggggatcca acgtcagagc 240
ttttagaatt acttttttaa gcagctgtct tctggctggg tgcggtggct catgcctgtg 300
atcccagcac tttgggaggc ggggtggatca cctaaggatca ggagttcaag accagcctgg 360
ccacatggtg caaccccgct ttagtaaaaa taaaaattg gcctggcgtg agagcgggca 420

```

VDX5009WOPCT.11.30.ST25.txt

<210> 442
 <211> 413
 <212> DNA
 <213> human

<400> 442
 gcatctgctg ttctgtatc agccagaggc tggtcaggtc ttctgcagc agtcagggct 60
 gcaagccctg gaaaggcatc aggaagaggc ccagctccag gatcgtgtgt atgctctcca 120
 gcagacagct cttcaagggt gatcttggtt ctcaatgtca ctattcccc tctctcttaa 180
 catcaagctt gtttgtccag tagagccttt ggagatttag gaccataatg aggtctcatg 240
 ttctctgctc ccacacctaa gccaagacct ttgggtccca gtcctcccc ttccactcag 300
 cactatccag gcaggaggac caaaagggac tcagtgtggt ctacttactc tggggcccta 360
 gaatccctgc cccccgccca cccttcattg ttgcttcagc agctggtagc ttt 413

<210> 443
 <211> 531
 <212> DNA
 <213> human

<400> 443
 gtgcacctct aatatatgcc ttacaaactc cagaggccat attcaaaaca gggctcttctc 60
 agtgtatgca aggggctgca gcccctcttc tcttcctccc cagggtgaac aatacggaca 120
 gttttcacac atatctacct gtataaccct ctgtacctct cataactggc caacgactgt 180
 aacaggttac atcagggtgtt tttctacata ctttttacac agattctatg cgattaatgt 240
 aatttaattc aatgcatcat tttattgtac tagttcttag gcttgtcctt attttttctt 300
 aagtgtattgt ggtttttctc gtgggtttta ttgtaaaaaa tgaaaggctg ttgatgctta 360
 ttctctgtaa ctaagaattt taccttttgg gggaaaaaag cattgctatg aactaatgga 420
 attggaactt catttactca ttgtaaatac actattgtgc aaaaaaagtt ttcactcaat 480
 tgaattgcta gtgttaactg aattttgtct agacaccatt tctgttgatg a 531

<210> 444
 <211> 405
 <212> DNA
 <213> human

<400> 444
 aggctctcca ggacatgttt gcactacttg gggagtttgg agaagaccag atctatgaag 60
 cccaccaaca aggccgaggg gctctggagg cattgctatg tgggggaccc cagggggcct 120
 gctcagagaa ggtgtcagcc acaagagaag agctctagtc ctggactcta ccctcctctg 180
 aaagaagctg gggcttgctc tgacggtctc cactcccgtc tgcaggcagc caggagggca 240
 ggaagccctt gctctgtgct gccatcctgc ctccctcctc cagcctcagg gcactcgggc 300

VDX5009WOPCT.11.30.ST25.txt

ctgggtggga gtcaacgcct tcccctctgg actcaaataa aaccagtgga cctcacttct 360
 tttctctgca aaaggtgctt gtggggctgg gagtgcagac attgg 405

<210> 445
 <211> 325
 <212> DNA
 <213> human

<400> 445
 gccactatct tgaagaaggt gcacagtgcc ctgctcctct ttcctatgtc cccagaattc 60
 tcttaggggt ctcagatgcc atgactttca aggagagagt acggaaccac atcatgcact 120
 tggaggaaca tttattttgc cagtattttt ccaaaaatgc cctagaaata gcctctgaaa 180
 ttctccaaac acctgtcaca gcatatgatc tctacagcca cacatcaatt tggttgttgc 240
 gaacagactt tgttttggac tatcccaaac ccgtgatgcc caatatgatc ttcattggtg 300
 gtatcaactg ccatcagggg aagcc 325

<210> 446
 <211> 177
 <212> DNA
 <213> human

<400> 446
 agacttaatg gagcatttag ttcccatcc tgaattcaag atgctgagtg ttcgtaacat 60
 tcctcacatg tctgagaatt cattggcata caccacattt acttgggctg gcctcctcaa 120
 gcatttgaga cagatgctca tttctaattgc aaagatggaa gaaggatttg ataggca 177

<210> 447
 <211> 395
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (86)..(86)
 <223> n is a, c, g, or t

<400> 447
 aagtttggaa gacaggcttg ccgaaattga ggacatgatt aaaattgcag tgaagtttga 60
 aatgttttta gcaaaatcta attttngcca taatgtgtcc tccctgtcca aattgggaat 120
 gacttaatgt caattttgtt gttgggttgtt ttaataatac ttccttatgt agccattaag 180
 atttatatga atattttccc aaatgcccag tttttgctta atatgtattg tgcttttttag 240
 aacaaatctg gataaatgtg caaaagtacc cctttgcaca gatagttaat gttttatgct 300
 tccattaaat aaaaaggact taaaatctgt taattataat agaaatgctg ctagttcaga 360
 gagattttta gagctgtggt ggacttcata gatga 395

VDX5009WOPCT.11.30.ST25.txt

<210> 448
 <211> 468
 <212> DNA
 <213> human

<400> 448
 gggcctaaag cccagtgcc aaaaaagacg ccggtttctc attaaagccc ctgaggggtcc 60
 tccaagaaaa gataagaatt tgccaaatgt gattatcaat gagaagcgca acatccacgc 120
 agctgctcat caggtacgag tgcttcata tccatttacc caccattggc aatttgaaag 180
 gaccatccag acccccatag gatccacatg gaacaccag agggctttcc aaaagctgac 240
 tactcccaag gtcgtcacca agccaggcca tatcattaac ccataaaaag cagaagacgt 300
 gggctaccgg tcttcctcaa ggtcggacct gtctgtcata cagaggaatc caaaacgaat 360
 caccacacgt cacaaaaaac agctgaagaa atgctctgta gattgagttg ctggaggagt 420
 gacagccagg agccctgact tcacttcctt tgggccagtt ttactctg 468

<210> 449
 <211> 405
 <212> DNA
 <213> human

<400> 449
 acgcagctgc tcatcaggta cgagtgtctc catatccatt taccacccat tggcaatttg 60
 aaaggaccat ccagaccccc ataggatcca catggaacac ccagagggct ttccaaaagc 120
 tgactactcc caaggtcgtc accaagccag gccatatcat taacccata aaagcagaag 180
 acgtgggcta ccggtcttcc tcaaggtcgg acctgtctgt catacagagg aatccaaaac 240
 gaatcaccac acgtcacaaa aaacagctga agaaatgctc tgtagattga gttgctggag 300
 gagtgcagc caggagccct gacttcactt ctttgggtcc agttttactc tgatacaggg 360
 tggattccaa aactggctca gtacattgca tgtagttaag ccaca 405

<210> 450
 <211> 380
 <212> DNA
 <213> human

<400> 450
 aggtattggc atactccaca catctgtacc attcttgagt gatcgcttag gaatgaatgt 60
 gatttgaact cattcatgtt gagaggggtgt caaattgaga accaggtaga tccccaccac 120
 ctacagtaaa aaggacccta aagtaaattg gttgaagaaa ttagatccca aagattcttg 180
 gtgaattttg aagtcttcat cagtatatcc atattaaaac gagatgacag aagccaaagt 240
 aattatgggc tgacaggaca actggatcag ttctattaaa aagggcaaac ttgaagataa 300
 atcttttgac tccagctctt tagaggatct aaagtgcct tgatggacag tggaagaaat 360

VDX5009WOPCT.11.30.ST25.txt

cacaacatgg aattcctcga 380

<210> 451
 <211> 513
 <212> DNA
 <213> human

<400> 451
 ttactgcct tgtgacgttg gtcttctttt actcatctgc ctcatTTTtgg gcctggTTtgg 60
 ccctgggctt tagtctggca gtgtatggg ccagctacca ctctatgagc tcgatggcac 120
 gagcagcgtt ctctgaggat ggggccctga tggatggTtg catggacctc aacatggagc 180
 agggcatggc agagcacctt aaggatgtga tcctactgac agccatcgtg caggtgctca 240
 gctgcttctc tctctatgtc tggTccttct ggcttctggc tccaggccgg gccctttacc 300
 tcctgtgggt gaatgtgctg ggccctTgg tctctgcaga cagtggcacc ccagcaccag 360
 agcacaatga gaaacggcag cgccgacagg agcggcgga gatgaagcgg ttatagccat 420
 tgacattgtg gccacaggcc actggccctg ggtggctctg tcagggtgca cagccctca 480
 tgccTggagc aatgagggtc tagtccaggg gcc 513

<210> 452
 <211> 503
 <212> DNA
 <213> human

<400> 452
 atgcatcatt ggctacactt ccatttttTgt ctactgtTgt tactgacaag ctttttTtaa 60
 ttgatgcttt gtattcagat aatataagca aggaaaactg tgttttcaga agctcactga 120
 ttggcatagt ttgtggTgtt ttctatcca gtTctttTggc ttttactaaa aatggacgcc 180
 tggcaaccaa gtatcatacc gttccactgc caccaaaagg aagggtttta atccattgga 240
 tgacgctttg tcaaacacaa atgaaattaa ttgcgattcc tctagtcttt cagattatgt 300
 ttggaatatt aaatggctat accattatgc aagtatttga aagagacact tgagaaaact 360
 atacatgaag agtaaccaa aaaatgaatg gttgctaact tagcaaaatg aagtttctat 420
 aaagaggact caggcattgc tgaaagagtt aaaagtaact gtgaacaaat aatttTtct 480
 gtgcctttTg cctggTatat agc 503

<210> 453
 <211> 219
 <212> DNA
 <213> human

<400> 453
 ggaaatggat cgaggcaggg gtcgcctttg tgaccagaag tttccaaga ccaaggacaa 60
 gtcccgggat ggtgggCgag gccggggccg gggccgcca gggaagagag tggcctgagc 120

VDX5009WOPCT.11.30.ST25.txt

ccaagccgca ccggagcagc ggctggattg aacgccccag attggggccc gagatgtggc 180
 ccttggtttc ctttcataaa ggagttgtgt ccccgagccc 219

<210> 454
 <211> 251
 <212> DNA
 <213> human

<400> 454
 gttgtttttg gaaatcgta gtgagaagtc cagatactct ctccatcaga acatggacaa 60
 gatcaagggt ccgacgcaga tcatctgggg gaaacaagac cagggtgctgg atgtgtctgg 120
 ggcagacaat gttggccaag tcaattgccca actgccaggt ggagcttctg gaaaactgtg 180
 ggcactcagt agtgatggaa aaaacccagg aagacagcca agctcataat cgacttttta 240
 gcttctgtgc a 251

<210> 455
 <211> 531
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (50)..(50)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (92)..(92)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (130)..(130)
 <223> n is a, c, g, or t

<400> 455
 ggggtgcatac catattcttg gttcttaaaa tctatcactt ttcaccttan acttgatgtg 60
 tgaaaactat aaaaacaatg tgtgaaaccc anggggttct aaaatacaag catagatttt 120
 atcagggtgn tttgtcaaag caggttattc agtgattcct cccaccatt ctaagaacg 180
 ttaaataatg ctgttgtgtt agctctgagt agaaaggaaa aagtaaaacc tctgtttgga 240
 ggtaatatgg ggttgaattc tgactgcccc tttctagctg gacctttaac aaatcaccca 300
 atcttttttg tgtttctcta aagtcattta tacattaaat gtaattatag caactgtggg 360
 gttctgttga gaattaagag ctaacactat atatgtaaag tttccagtac tagtcccaga 420
 atttagaata tgctcaacac aaagtaaaca gcattatata agtttatatt tttgtgagtt 480
 ataaagtact ttgatataatt ctcatataat ctgtaaatca cctctataag t 531

VDX5009WOPCT.11.30.ST25.txt

<210> 456
 <211> 549
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (90)..(90)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (120)..(123)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (127)..(127)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (129)..(129)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (476)..(476)
 <223> n is a, c, g, or t

<400> 456
 aatccaaccc tgtcagaatc atgctgttct ctttgctgac actgtgaccc tgggtcggga 60
 cagaccagca gcaatctgtc tttagaatcn ctttccttcc tccccctttg cccccgtggn 120
 nnncccnngnc atcctgaaag ccagcaaagc ctccagcatc ttttccatcc tgagggtgcct 180
 cccagtggcc tggcttgtcg gagcaagttt catcagccct agggaaaaca cggccctcct 240
 gggaacctcc ttacctggag taaccggaca ccttagacgg aggtgcctga ggggtgggtg 300
 ggatttgcag ggtcattatc agaacatgag gataacttcc ttgccccctgc tctgtagcca 360
 cctccttggc accggcctct atttgtcata aggcggcgtg ggcgaggcct gacacaggcc 420
 agccttggca cgaggggggc caggggttct gagaagcgct gccctgtgag agccangctg 480
 gccttcgtct ccatctctgg ttgacgggct gtccgtgtgc ctctgtgtg tctgcagaca 540
 agtcttgct 549

<210> 457
 <211> 358
 <212> DNA
 <213> human

<400> 457
 ccaggatcca tttaggtacc acttgatata aaaaggatat ccataatgaa tattttatac 60
 tgcacccctt acattagcca ctaaatacgt tattgcttga tgaagacctt tcacagaatc 120

VDX5009WOPCT.11.30.ST25.txt

ctatggattg cagcatttca cttggctact tcatacccat gccttaaaga ggggcagttt 180
 ctcaaaagca gaaacatgcc gccagttctc aagttttcct cctaactcca tttgaatgta 240
 agggcagctg gcccctaagtg tggggagggtc cgaacatttt ctgaattccc attttcttgt 300
 tcgcgggctaa atgacagttt ctgtcattac ttagattccg atctttccca aagggtgtt 358

<210> 458
 <211> 402
 <212> DNA
 <213> human

<400> 458
 aaagtcagtc cattttcaag ttttggctct cagagacaaa agaacgtccc agccacctga 60
 ttttgatggt gaggtaactc taagttgaat tcaggctagt gttgcagtat agctttggca 120
 tgttcatgag tgagcaccca gaatgtgttg aaccaacccc caccctaac tactgactat 180
 gactgcagtg ggtttttatg gggaaaaaaa gtgtgaaaag caaaaagaaa ggaacagaga 240
 ttttttatca cttttattgt aagacagtcc atttatgaat tgagtataaa cacatacaaa 300
 gtaacaagag attcctaaga aacgcaaadc cttgagtttc acgcacttca tgttcaacca 360
 tttgctgtaa tccagaggca gcctgtgaat cattctcatg cc 402

<210> 459
 <211> 491
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (332)..(332)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (365)..(365)
 <223> n is a, c, g, or t

<400> 459
 cccaggcctg tcactttgag aggggcaaaa ctgagagggg cttttcctag agaaagagaa 60
 caaggagctt gccaggcttc atgtagccga cacacgtctc aggattttta gtccacattg 120
 gcctcacact accagggccca atgccccaaa taaggagtgc caatttgagg ccaaatgagg 180
 aaggacacag actctgccct gggatctcct gtgctagcgg ccaatgacaa atccagtcac 240
 tggccaccag ccacctctgc agtggggacc acactagcag ccctgactcc acactcctcc 300
 tggggaccca agaggcagtg ttgctgtctg cntgtccacc ttggaatctg gctgaactgg 360
 ctggnaggac caagactgag gctgggggtg gcagggaagg gaagccgggg gctgctgtga 420
 gggatcttgg agcttccttg tagccacact tccccttgct tcatgtttgt agaggaacct 480

VDX5009WOPCT.11.30.ST25.txt

tgtgccgcc a

491

<210> 460
 <211> 473
 <212> DNA
 <213> human

<400> 460
 accagtgcc tggagatgag ttgcaagaca tccccagtga ggtataaaga ggaagaatat 60
 aaaagtggac tttctgctct agatcatata aggcacttca cagatagcct caaaatgagg 120
 aaaatggaag ataatcaata ttctgaagct gagctgtctt cttttagtag ttcccatgtg 180
 ccagaggaac ttaagcagcc gttacacaga aagtccaaat cgcaggcata tgctatgatg 240
 ctgtcactgt ctgacaagga gtccctccat tctacatccc acagttcttc caacgtgtgg 300
 cacagtatgg ccagggctgc ggcggaatcc agtgctatcc agtccataag ccacgtatga 360
 cgttatcaag gttgaccaga gtgggaccaa gtccaacagt agcatggctc tttcatatag 420
 gactatttac aagactgctg agcagaatgc cttataaacc tgcagggtca ctc 473

<210> 461
 <211> 379
 <212> DNA
 <213> human

<400> 461
 ttcttttcta accaagaggc tggttttggc atctctgtcc cattccctgg gatctggtgg 60
 tcagccctag gataaaaagc cagggctgga gaacaagaaa gggccaggag atggaattcc 120
 ttcaggccgg caccacacc ctaggacatg taagccctca tgtccaaggg agcctcatgc 180
 agatagtagg aaatcaggctc tggaaattta aaaataaaag gcatgagact aaggctatct 240
 gcttccctta tgccctgact ggagagggga gggaggagag gcaaggcca cagagggcat 300
 cccagctagg ccttgggatg gctgcagtga ggagaaatcc cggaactgt attgacacaa 360
 agattcttat tgcacttgt 379

<210> 462
 <211> 513
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (45)..(109)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (114)..(128)
 <223> n is a, c, g, or t

VDX5009WOPCT.11.30.ST25.txt

```

<220>
<221> misc_feature
<222> (255)..(255)
<223> n is a, c, g, or t

<400> 462
gctcggctcg gctccatgac aacgtccacg ccgtcttcca ggagnnnnnnn nnnnnnnnnn 60
nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnc gtgnnnnnnnn 120
nnnnnnnnnncg gggcgctccca gcgacgcggg aaggggcagg gcgctgacct gctgctgagc 180
tggctgggct ggacccggtc cctaggctgt gaccgccgaa ctccactgca acagacgggc 240
gccaccaaag ccagnccctg aggcctggga gtcctggact gagaaagggg gttcctgggc 300
ccacctgtc tgtgtagggc tcgtcctgcg gtgcccgaga atcactcgct aaccctatg 360
cccggtcccg gaccgacatc ctggagccgc ctgtgcagcc tgatgcccc tcgtggctgc 420
tcccagggct gcacctgcca ggacctaatg ttcttaggtc cctctggcca gaaccacac 480
ccggcccctt cccacctgtc atactggtaa ctg 513

```

```

<210> 463
<211> 65
<212> DNA
<213> human

```

```

<400> 463
ggaaagcatg tctgctgggt gtgacctgt ttctctcaa taaagttccc ctgtgacct 60
caaaa 65

```

```

<210> 464
<211> 483
<212> DNA
<213> human

```

```

<220>
<221> misc_feature
<222> (51)..(51)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (176)..(176)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (324)..(324)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (328)..(433)
<223> n is a, c, g, or t

```

```

<400> 464

```

VDX5009WOPCT.11.30.ST25.txt

```

ccaggaaact gcaggggctc acggaggaag tgctgcctgg gccaggggga ncagctttcc    60
tccgtagaga ccatgtgcag aacacttctg ctgtgccaag aacatgaggg agccagtgtt    120
ttgtcagcag gaagaaaggg cctgctggga tgaaagtggg aaggaaacag ggttgnntag    180
tcaggagaca cctcaggggc aacagcacag gccagagta cctgctgcct ccactgcgtc    240
tgtcctgggg tcatgaggat gctgaggttg acgacaggtt ccaggtcctt tcaactcctt    300
ggccaaaggt tgggggtagg tggncctnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn    360
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn    420
nnnnnnnnnn nnnatgtgta ctccgcagct gtttggggtg ggacatttct gtacttctcg    480
att                                                                    483

```

<210> 465
 <211> 457
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (264)..(264)
 <223> n is a, c, g, or t

```

<400> 465
gttgtgccct ctgagtgtct ggctgatcac atcagagagg tctgcgtggc agtttggggc    60
tgtcacgtga ccagtgaccc acactctctg ctgcccagta ctgccaagtg gggaggggtcc    120
tgcctttttc tctgccccag gtctgggacg caggtgatgc cagccaggcc caggagtgcc    180
cagcatcccc caactgatga cacagtagca ctgattctgt cttttcctca gaatctggcc    240
tttttccatg gcaatgaggt gggncctcag ctctctctaaa gtgactttgt ttctgcacag    300
ttgtaactgc tcttggggat gtcagtgagg ctgggagcag ggagccacgg gatgctgaga    360
gaggaggccc gagaggacac cccaccctcc agcgtggcct ttgatccaga cttagggacg    420
aggctgtcac tggtagggcac cctctgttcc tgtttgt                                                                    457

```

<210> 466
 <211> 442
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (319)..(334)
 <223> n is a, c, g, or t

```

<400> 466
agatcttggc ccaaaccagc ccaggcagtc taaagaaaac tgggttggtg cttcttggaa    60
tgaaggcaaa aatctgaaat tgtagtgctc tcagtaatcc tgatttagaa cccaggcttt    120

```

VDX5009WOPCT.11.30.ST25.txt

```

ttgtaacaat gtgttttctt gcctaaattc atttatctgg catcatcaga gtactaacat 180
gtttatatatt cagatatcca aagcttacca ctttaggtga tgaatcttta ctatttttagc 240
ccttttttga tgagactatt tgtctaaagt gaatcatttg ttcttgccct attaaacaga 300
gtagatggaa aacaatttnn nnnnnnnnnn nnnnatttct ttatgaatat gaataattgt 360
tctatgcttt aataatctat tgtgaggaaa ctactaagaa atatgttggt gtgtttgtcc 420
ttacttgaaa tgggtctgta tt 442

```

```

<210> 467
<211> 539
<212> DNA
<213> human

```

```

<220>
<221> misc_feature
<222> (31)..(31)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (53)..(53)
<223> n is a, c, g, or t

```

```

<220>
<221> misc_feature
<222> (63)..(112)
<223> n is a, c, g, or t

```

```

<400> 467
aacatcgagg atgaaggcag ctccttctat ngggtctcca gccagtatga gancccccag 60
aannnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nntggagaaa 120
gttgagacag agtatgctcg ctatgagaat ggacactact cttaccgcat ccaccggtcc 180
ccgctctgtg agtacatgat caacttcac cacaagctca agcacctccc tgagaagtac 240
atgatgaaca gcgtgctgga gaacttcacc atcctgcagg tggtcaccaa cagagacaca 300
caggagacct tgctgtgcat tgcctatgtc tttagagggt cagccagtga gcacgggggt 360
cagcaccaca tctacaggct ggtgaaagaa tgagagactc ggggagcagg gaggggggaa 420
gagacgtgtg tgcaggaaac ggggacgtgg ggagggggacc tgcaggggca gccccctgaa 480
gtgccaagag agctgagagg agcagttgtg actctaccca ggaacaaact gtgcctgaa 539

```

```

<210> 468
<211> 545
<212> DNA
<213> human

```

```

<220>
<221> misc_feature

```

VDX5009WOPCT.11.30.ST25.txt

<222> (62)..(82)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (102)..(135)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (229)..(245)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (353)..(367)

<223> n is a, c, g, or t

<220>

<221> misc_feature

<222> (422)..(472)

<223> n is a, c, g, or t

<400> 468

caagctggac tgcataaaga ttggtatggc cttagctctt agccaaacac cttcctgaca 60

cnnnnnnnnn nnnnnnnnnn nngatcgtgg tgggtgttcct cnnnnnnnnn nnnnnnnnnn 120

nnnnnnnnnn nnnnncggga gttcctgtta aaggtcaaga cactgtcaaa ggccgtgttc 180

cattcaatgg acaagatccc gttaaaggac aagtttcagt taaaggtcnn nnnnnnnnnn 240

nnnnncaaga gccagtcaaa ggtccagtct ccactaagcc tggctcctgc cccattatct 300

tgatccggtg cgccatgttg aatcccccta accgctgctt gaaagatact gannnnnnnn 360

nnnnnnngaa gtgctgtgaa ggctcttgcg ggatggcctg tttcgttccc cagtgaagagg 420

gnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nngtcctaag 480

tccctgctgc ctttcccctt cccacactgt ccattcttcc tccattcag gatgccacg 540

gctgg 545

<210> 469

<211> 274

<212> DNA

<213> human

<220>

<221> misc_feature

<222> (26)..(47)

<223> n is a, c, g, or t

<400> 469

cctgaacaca ttcctcagtg agatgnnnnn nnnnnnnnnn nnnnnntat aaccaagtg 60

ccaccaacta cctgctaaga gccgggagca tggaacgtgt tgggatttag agaacattat 120

ctgagaaaag agttcacttc ctgctcccag gatatttctc ttttctgttt atgaagtaca 180

VDX5009WOPCT.11.30.ST25.txt

acccatgctg ctaagatgcg agcaggaaga ggcacccctt gctaaatcct gtttgaatgt 240
 cattgtaaat aaagcctctg ctctcagatg taaa 274

<210> 470
 <211> 238
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (74)..(74)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (183)..(183)
 <223> n is a, c, g, or t

<400> 470
 atcctggcac cacacgggtg gcctacctcc cggactgccc tgagggcaac aaggtgctga 60
 ccctgttccg caangcggtt gaccagcgtc tcaccttcac tatcggcacg tccatgacca 120
 cagggagacc gaatgtcatc acctggaacg acatccacca caagaccagc tgcacagggg 180
 gancccagct gtttggttac ccagacccca cctacctgac ccgggtgcaa gaggagct 238

<210> 471
 <211> 475
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (76)..(76)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (172)..(172)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (219)..(219)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (229)..(229)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (283)..(283)
 <223> n is a, c, g, or t

<220>

VDX5009WOPCT.11.30.ST25.txt

<221> misc_feature
 <222> (319)..(337)
 <223> n is a, c, g, or t

<400> 471
 ggtccagccg gtccaagcac atggcctccc atctgggaga gccactgtc ccactcccac 60
 atgtctgggc acctgncctg ggctgaggcc aggctgctcc aggggcctcc tgcgccctca 120
 cctgccacag agcaaccag gttaaataca gcccatgcac aaagccacag gnccaaagcc 180
 tatggaattg tttttaatca tcaaatttaa ccattttcna taactggtnt cctggagggtg 240
 tgcagtgtcc ccttgccctt tcaaacctac agcttctctt tgnccatttg tggatttcac 300
 atcactccac acagaaacnn nnnnnnnnnn nnnnnnnnagt ctttgccttc ttccagctgc 360
 ctgcacacag cactgtggcc tgtccctatt gccagggcac gccatttcca agggcaggaa 420
 ggggcagtggt cctgaagccc atcttttctg tgactgtctt aggtgatgtg tagcc 475

<210> 472
 <211> 448
 <212> DNA
 <213> human

<220>
 <221> misc_feature
 <222> (29)..(29)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (73)..(73)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (107)..(107)
 <223> n is a, c, g, or t

<400> 472
 cctctgagtc ccagggacct gggcaggcnc aagcccacca cgagcatcat ccagtcctca 60
 gccctaattct gcncttagga gtccaggctg caccctggag atcccanacc tagcccccta 120
 gtgggacaag gacctgacct tcctgccgcg atacacaacc catttcccct ggtgagccac 180
 ttggcagcat atgtaggtag cagctcaacc ccacgcaagt tcctgagctg aacatggagc 240
 aaggggaggg tgactttctt ccacataggg agggcttaga gctcacagcc ttgggaagtg 300
 agactagaag aggggagcag aaagggacct tgagtagaca aaggccacac acatcattgt 360
 cattactgtt ttaattgtct ggcttctctc tggactggga gctcagttag gattctgacc 420
 agtgacttac acaaaaggcg ctctatac 448

<210> 473
 <211> 420

VDX5009WOPCT.11.30.ST25.txt

<212> DNA
<213> human

<220>
<221> misc_feature
<222> (102)..(102)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (120)..(120)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (129)..(129)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (138)..(138)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (141)..(141)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (189)..(189)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (204)..(204)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (211)..(211)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (318)..(336)
<223> n is a, c, g, or t

<400> 473
gagcttgtct ctaagatata tacctcttcc ttttgtcttt tgctgtaagc tttgaccttt 60
tgcagatctg atgaaaatac aacctcttat tgtatagttt gnccttgatt ataagccatn 120
agtaaatacng agctgttncg ncattttttgc aggccttgca ttttctactg ggaggttcat 180
caaaccttnc cacttagcaa tagnccttga nctcaggcag aatgcctcat aaattagcct 240
tcgaaagaaa agtgcacgct cagacagtgt gtggagggggc aggagcgtga tgcagacaag 300
gacttagtca tgactgannn nnnnnnnnnn nnnnnnaatg gcttatgggg aacattgtga 360
gcttcttacc tgacatgttg gcagaagtag aatattagga tcctcaagca tctctaccgt 420

VDX5009WOPCT.11.30.ST25.txt