



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C07K 14/00	A2	(11) International Publication Number: WO 00/61612 (43) International Publication Date: 19 October 2000 (19.10.00)		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> (21) International Application Number: PCT/US00/08896 (22) International Filing Date: 3 April 2000 (03.04.00) (30) Priority Data: 09/285,479 2 April 1999 (02.04.99) US 09/466,396 17 December 1999 (17.12.99) US 09/476,496 30 December 1999 (30.12.99) US 09/480,884 10 January 2000 (10.01.00) US 09/510,376 22 February 2000 (22.02.00) US (71) Applicant (for all designated States except US): CORIXA CORPORATION [US/US]; Suite 200, 1124 Columbia Street, Seattle, WA 98104 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): WANG, Tongtong [US/US]; 8049 NE 28th Street, Medina, WA 98039 (US). FAN, Liqun [CN/US]; 14116 SE 46th Street, Bellevue, WA 98006 (US). (74) Agents: MAKI, David, J.; Seed Intellectual Property Law Group PLLC, Suite 6300, 701 Fifth Avenue, Seattle, WA 98104-7092 (US) et al. </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> (81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>Without international search report and to be republished upon receipt of that report.</i> </td> </tr> </table>			(21) International Application Number: PCT/US00/08896 (22) International Filing Date: 3 April 2000 (03.04.00) (30) Priority Data: 09/285,479 2 April 1999 (02.04.99) US 09/466,396 17 December 1999 (17.12.99) US 09/476,496 30 December 1999 (30.12.99) US 09/480,884 10 January 2000 (10.01.00) US 09/510,376 22 February 2000 (22.02.00) US (71) Applicant (for all designated States except US): CORIXA CORPORATION [US/US]; Suite 200, 1124 Columbia Street, Seattle, WA 98104 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): WANG, Tongtong [US/US]; 8049 NE 28th Street, Medina, WA 98039 (US). FAN, Liqun [CN/US]; 14116 SE 46th Street, Bellevue, WA 98006 (US). (74) Agents: MAKI, David, J.; Seed Intellectual Property Law Group PLLC, Suite 6300, 701 Fifth Avenue, Seattle, WA 98104-7092 (US) et al.	(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>Without international search report and to be republished upon receipt of that report.</i>
(21) International Application Number: PCT/US00/08896 (22) International Filing Date: 3 April 2000 (03.04.00) (30) Priority Data: 09/285,479 2 April 1999 (02.04.99) US 09/466,396 17 December 1999 (17.12.99) US 09/476,496 30 December 1999 (30.12.99) US 09/480,884 10 January 2000 (10.01.00) US 09/510,376 22 February 2000 (22.02.00) US (71) Applicant (for all designated States except US): CORIXA CORPORATION [US/US]; Suite 200, 1124 Columbia Street, Seattle, WA 98104 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): WANG, Tongtong [US/US]; 8049 NE 28th Street, Medina, WA 98039 (US). FAN, Liqun [CN/US]; 14116 SE 46th Street, Bellevue, WA 98006 (US). (74) Agents: MAKI, David, J.; Seed Intellectual Property Law Group PLLC, Suite 6300, 701 Fifth Avenue, Seattle, WA 98104-7092 (US) et al.	(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>Without international search report and to be republished upon receipt of that report.</i>			
(54) Title: COMPOUNDS AND METHODS FOR THERAPY AND DIAGNOSIS OF LUNG CANCER				
(57) Abstract Compounds and methods for the treatment and diagnosis of lung cancer are provided. The inventive compounds include polypeptides containing at least a portion of a lung tumor protein. Vaccines and pharmaceutical compositions for immunotherapy of lung cancer comprising such polypeptides, or DNA molecules encoding such polypeptides, are also provided, together with DNA molecules for preparing the inventive polypeptides.				

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

COMPOUNDS AND METHODS FOR THERAPY AND DIAGNOSIS OF LUNG CANCER

TECHNICAL FIELD

5 The present invention relates generally to therapy and diagnosis of cancer, such as lung cancer. The invention is more specifically related to polypeptides comprising at least a portion of a lung tumor protein, and to polynucleotides encoding such polypeptides. Such polypeptides and polynucleotides may be used in vaccines and pharmaceutical compositions for prevention and treatment of lung cancer, and for the
10 diagnosis and monitoring of such cancers.

BACKGROUND OF THE INVENTION

 Lung cancer is the primary cause of cancer death among both men and women in the U.S., with an estimated 172,000 new cases being reported in 1994. The five-year survival rate among all lung cancer patients, regardless of the stage of disease
15 at diagnosis, is only 13%. This contrasts with a five-year survival rate of 46% among cases detected while the disease is still localized. However, only 16% of lung cancers are discovered before the disease has spread.

 Early detection is difficult since clinical symptoms are often not seen until the disease has reached an advanced stage. Currently, diagnosis is aided by the
20 use of chest x-rays, analysis of the type of cells contained in sputum and fiberoptic examination of the bronchial passages. Treatment regimens are determined by the type and stage of the cancer, and include surgery, radiation therapy and/or chemotherapy. In spite of considerable research into therapies for the disease, lung cancer remains difficult to treat.

25 Accordingly, there remains a need in the art for improved vaccines, treatment methods and diagnostic techniques for lung cancer.

SUMMARY OF THE INVENTION

 Briefly stated, the present invention provides compositions and methods for the diagnosis and therapy of cancer, such as lung cancer. In one aspect, the present

invention provides polypeptides comprising at least a portion of a lung tumor protein, or a variant thereof. Certain portions and other variants are immunogenic, such that the ability of the variant to react with antigen-specific antisera is not substantially diminished. Within certain embodiments, the polypeptide comprises a sequence that is encoded by a polynucleotide sequence selected from the group consisting of: (a) sequences recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253-337, 345, 347 and 349; (b) variants of a sequence recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253-337, 345, 347 and 349; and (c) complements of a sequence of (a) or (b). In specific embodiments, the polypeptides of the present invention comprise at least a portion of a tumor protein that includes an amino acid sequence selected from the group consisting of sequences recited in any one of SEQ ID NO: 152, 155, 156, 165, 166, 169, 170, 172, 174, 176, 226-252, 338-344 and 346, and variants thereof.

The present invention further provides polynucleotides that encode a polypeptide as described above, or a portion thereof (such as a portion encoding at least 15 amino acid residues of a lung tumor protein), expression vectors comprising such polynucleotides and host cells transformed or transfected with such expression vectors.

Within other aspects, the present invention provides pharmaceutical compositions comprising a polypeptide or polynucleotide as described above and a physiologically acceptable carrier.

Within a related aspect of the present invention, vaccines for prophylactic or therapeutic use are provided. Such vaccines comprise a polypeptide or polynucleotide as described above and an immunostimulant.

The present invention further provides pharmaceutical compositions that comprise: (a) an antibody or antigen-binding fragment thereof that specifically binds to a lung tumor protein; and (b) a physiologically acceptable carrier.

5 Within further aspects, the present invention provides pharmaceutical compositions comprising: (a) an antigen presenting cell that expresses a polypeptide as described above and (b) a pharmaceutically acceptable carrier or excipient. Antigen presenting cells include dendritic cells, macrophages, monocytes, fibroblasts and B cells.

10 Within related aspects, vaccines are provided that comprise: (a) an antigen presenting cell that expresses a polypeptide as described above, and (b) an immunostimulant.

The present invention further provides, in other aspects, fusion proteins that comprise at least one polypeptide as described above, as well as polynucleotides encoding such fusion proteins.

15 Within related aspects, pharmaceutical compositions comprising a fusion protein, or a polynucleotide encoding a fusion protein, in combination with a physiologically acceptable carrier are provided.

Vaccines are further provided, within other aspects, that comprise a fusion protein, or a polynucleotide encoding a fusion protein, in combination with an immunostimulant.

20 Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient a pharmaceutical composition or vaccine as recited above.

The present invention further provides, within other aspects, methods for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a lung tumor protein, wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the protein from the sample.

25 Within related aspects, methods are provided for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated as described above.

30 Within related aspects, methods are provided for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated as described above.

Methods are further provided, within other aspects, for stimulating and/or expanding T cells specific for a lung tumor protein, comprising contacting T cells with one or more of: (i) a polypeptide as described above; (ii) a polynucleotide encoding such a polypeptide; and/or (iii) an antigen presenting cell that expresses such a polypeptide; under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells. Determined T cell populations comprising T cells prepared as described above are also provided.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population as described above.

The present invention further provides methods for inhibiting the development of a cancer in a patient, comprising the steps of: (a) incubating CD4⁺ and/or CD8⁺ T cells determined from a patient with one or more of: (i) a polypeptide comprising at least an immunogenic portion of a lung tumor protein; (ii) a polynucleotide encoding such a polypeptide; and (iii) an antigen-presenting cell that expressed such a polypeptide; and (b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the patient. Proliferated cells may, but need not, be cloned prior to administration to the patient.

Within further aspects, the present invention provides methods for determining the presence or absence of a cancer in a patient, comprising: (a) contacting a biological sample obtained from a patient with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that binds to the binding agent; and (c) comparing the amount of polypeptide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within preferred embodiments, the binding agent is an antibody, more preferably a monoclonal antibody. The cancer may be lung cancer.

The present invention also provides, within other aspects, methods for monitoring the progression of a cancer in a patient. Such methods comprise the steps of: (a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a polypeptide as recited above; (b) detecting in the

sample an amount of polypeptide that binds to the binding agent; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polypeptide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

The present invention further provides, within other aspects, methods for determining the presence or absence of a cancer in a patient, comprising the steps of: (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein; (b) detecting in the sample a level of a polynucleotide, preferably mRNA, that hybridizes to the oligonucleotide; and (c) comparing the level of polynucleotide that hybridizes to the oligonucleotide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within certain embodiments, the amount of mRNA is detected via polymerase chain reaction using, for example, at least one oligonucleotide primer that hybridizes to a polynucleotide encoding a polypeptide as recited above, or a complement of such a polynucleotide. Within other embodiments, the amount of mRNA is detected using a hybridization technique, employing an oligonucleotide probe that hybridizes to a polynucleotide that encodes a polypeptide as recited above, or a complement of such a polynucleotide.

In related aspects, methods are provided for monitoring the progression of a cancer in a patient, comprising the steps of: (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein; (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polynucleotide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

Within further aspects, the present invention provides antibodies, such as monoclonal antibodies, that bind to a polypeptide as described above, as well as diagnostic kits comprising such antibodies. Diagnostic kits comprising one or more oligonucleotide probes or primers as described above are also provided.

These and other aspects of the present invention will become apparent upon reference to the following detailed description and attached drawings. All references disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

5

SEQUENCE IDENTIFIERS

SEQ ID NO: 1 is the determined cDNA sequence for LST-S1-2

SEQ ID NO: 2 is the determined cDNA sequence for LST-S1-28

SEQ ID NO: 3 is the determined cDNA sequence for LST-S1-90

10

SEQ ID NO: 4 is the determined cDNA sequence for LST-S1-144

SEQ ID NO: 5 is the determined cDNA sequence for LST-S1-133

SEQ ID NO: 6 is the determined cDNA sequence for LST-S1-169

SEQ ID NO: 7 is the determined cDNA sequence for LST-S2-6

SEQ ID NO: 8 is the determined cDNA sequence for LST-S2-11

15

SEQ ID NO: 9 is the determined cDNA sequence for LST-S2-17

SEQ ID NO: 10 is the determined cDNA sequence for LST-S2-25

SEQ ID NO: 11 is the determined cDNA sequence for LST-S2-39

SEQ ID NO: 12 is a first determined cDNA sequence for LST-S2-43

SEQ ID NO: 13 is a second determined cDNA sequence for LST-S2-43

20

SEQ ID NO: 14 is the determined cDNA sequence for LST-S2-65

SEQ ID NO: 15 is the determined cDNA sequence for LST-S2-68

SEQ ID NO: 16 is the determined cDNA sequence for LST-S2-72

SEQ ID NO: 17 is the determined cDNA sequence for LST-S2-74

SEQ ID NO: 18 is the determined cDNA sequence for LST-S2-103

25

SEQ ID NO: 19 is the determined cDNA sequence for LST-S2-N1-1F

SEQ ID NO: 20 is the determined cDNA sequence for LST-S2-N1-2A

SEQ ID NO: 21 is the determined cDNA sequence for LST-S2-N1-4H

SEQ ID NO: 22 is the determined cDNA sequence for LST-S2-N1-5A

SEQ ID NO: 23 is the determined cDNA sequence for LST-S2-N1-6B

30

SEQ ID NO: 24 is the determined cDNA sequence for LST-S2-N1-7B

SEQ ID NO: 25 is the determined cDNA sequence for LST-S2-N1-7H

- SEQ ID NO: 26 is the determined cDNA sequence for LST-S2-N1-8A
SEQ ID NO: 27 is the determined cDNA sequence for LST-S2-N1-8D
SEQ ID NO: 28 is the determined cDNA sequence for LST-S2-N1-9A
SEQ ID NO: 29 is the determined cDNA sequence for LST-S2-N1-9E
5 SEQ ID NO: 30 is the determined cDNA sequence for LST-S2-N1-10A
SEQ ID NO: 31 is the determined cDNA sequence for LST-S2-N1-10G
SEQ ID NO: 32 is the determined cDNA sequence for LST-S2-N1-11A
SEQ ID NO: 33 is the determined cDNA sequence for LST-S2-N1-12C
SEQ ID NO: 34 is the determined cDNA sequence for LST-S2-N1-12E
10 SEQ ID NO: 35 is the determined cDNA sequence for LST-S2-B1-3D
SEQ ID NO: 36 is the determined cDNA sequence for LST-S2-B1-6C
SEQ ID NO: 37 is the determined cDNA sequence for LST-S2-B1-5D
SEQ ID NO: 38 is the determined cDNA sequence for LST-S2-B1-5F
SEQ ID NO: 39 is the determined cDNA sequence for LST-S2-B1-6G
15 SEQ ID NO: 40 is the determined cDNA sequence for LST-S2-B1-8A
SEQ ID NO: 41 is the determined cDNA sequence for LST-S2-B1-8D
SEQ ID NO: 42 is the determined cDNA sequence for LST-S2-B1-10A
SEQ ID NO: 43 is the determined cDNA sequence for LST-S2-B1-9B
SEQ ID NO: 44 is the determined cDNA sequence for LST-S2-B1-9F
20 SEQ ID NO: 45 is the determined cDNA sequence for LST-S2-B1-12D
SEQ ID NO: 46 is the determined cDNA sequence for LST-S2-I2-2B
SEQ ID NO: 47 is the determined cDNA sequence for LST-S2-I2-5F
SEQ ID NO: 48 is the determined cDNA sequence for LST-S2-I2-6B
SEQ ID NO: 49 is the determined cDNA sequence for LST-S2-I2-7F
25 SEQ ID NO: 50 is the determined cDNA sequence for LST-S2-I2-8G
SEQ ID NO: 51 is the determined cDNA sequence for LST-S2-I2-9E
SEQ ID NO: 52 is the determined cDNA sequence for LST-S2-I2-12B
SEQ ID NO: 53 is the determined cDNA sequence for LST-S2-H2-2C
SEQ ID NO: 54 is the determined cDNA sequence for LST-S2-H2-1G
30 SEQ ID NO: 55 is the determined cDNA sequence for LST-S2-H2-4G
SEQ ID NO: 56 is the determined cDNA sequence for LST-S2-H2-3H

SEQ ID NO: 57 is the determined cDNA sequence for LST-S2-H2-5G

SEQ ID NO: 58 is the determined cDNA sequence for LST-S2-H2-9B

SEQ ID NO: 59 is the determined cDNA sequence for LST-S2-H2-10H

SEQ ID NO: 60 is the determined cDNA sequence for LST-S2-H2-12D

5 SEQ ID NO: 61 is the determined cDNA sequence for LST-S3-2

SEQ ID NO: 62 is the determined cDNA sequence for LST-S3-4

SEQ ID NO: 63 is the determined cDNA sequence for LST-S3-7

SEQ ID NO: 64 is the determined cDNA sequence for LST-S3-8

SEQ ID NO: 65 is the determined cDNA sequence for LST-S3-12

10 SEQ ID NO: 66 is the determined cDNA sequence for LST-S3-13

SEQ ID NO: 67 is the determined cDNA sequence for LST-S3-14

SEQ ID NO: 68 is the determined cDNA sequence for LST-S3-16

SEQ ID NO: 69 is the determined cDNA sequence for LST-S3-21

SEQ ID NO: 70 is the determined cDNA sequence for LST-S3-22

15 SEQ ID NO: 71 is the determined cDNA sequence for LST-S1-7

SEQ ID NO: 72 is the determined cDNA sequence for LST-S1-A-1E

SEQ ID NO: 73 is the determined cDNA sequence for LST-S1-A-1G

SEQ ID NO: 74 is the determined cDNA sequence for LST-S1-A-3E

SEQ ID NO: 75 is the determined cDNA sequence for LST-S1-A-4E

20 SEQ ID NO: 76 is the determined cDNA sequence for LST-S1-A-6D

SEQ ID NO: 77 is the determined cDNA sequence for LST-S1-A-8D

SEQ ID NO: 78 is the determined cDNA sequence for LST-S1-A-10A

SEQ ID NO: 79 is the determined cDNA sequence for LST-S1-A-10C

SEQ ID NO: 80 is the determined cDNA sequence for LST-S1-A-9D

25 SEQ ID NO: 81 is the determined cDNA sequence for LST-S1-A-10D

SEQ ID NO: 82 is the determined cDNA sequence for LST-S1-A-9H

SEQ ID NO: 83 is the determined cDNA sequence for LST-S1-A-11D

SEQ ID NO: 84 is the determined cDNA sequence for LST-S1-A-12D

SEQ ID NO: 85 is the determined cDNA sequence for LST-S1-A-11E

30 SEQ ID NO: 86 is the determined cDNA sequence for LST-S1-A-12E

SEQ ID NO: 87 is the determined cDNA sequence for L513S (T3).

SEQ ID NO: 88 is the determined cDNA sequence for L513S contig 1.

SEQ ID NO: 89 is a first determined cDNA sequence for L514S.

SEQ ID NO: 90 is a second determined cDNA sequence for L514S.

SEQ ID NO: 91 is a first determined cDNA sequence for L516S.

5 SEQ ID NO: 92 is a second determined cDNA sequence for L516S.

SEQ ID NO: 93 is the determined cDNA sequence for L517S.

SEQ ID NO: 94 is the extended cDNA sequence for LST-S1-169 (also known as L519S).

SEQ ID NO: 95 is a first determined cDNA sequence for L520S.

10 SEQ ID NO: 96 is a second determined cDNA sequence for L520S.

SEQ ID NO: 97 is a first determined cDNA sequence for L521S.

SEQ ID NO: 98 is a second determined cDNA sequence for L521S.

SEQ ID NO: 99 is the determined cDNA sequence for L522S.

SEQ ID NO: 100 is the determined cDNA sequence for L523S.

15 SEQ ID NO: 101 is the determined cDNA sequence for L524S.

SEQ ID NO: 102 is the determined cDNA sequence for L525S.

SEQ ID NO: 103 is the determined cDNA sequence for L526S.

SEQ ID NO: 104 is the determined cDNA sequence for L527S.

SEQ ID NO: 105 is the determined cDNA sequence for L528S.

20 SEQ ID NO: 106 is the determined cDNA sequence for L529S.

SEQ ID NO: 107 is a first determined cDNA sequence for L530S.

SEQ ID NO: 108 is a second determined cDNA sequence for L530S.

SEQ ID NO: 109 is the determined full-length cDNA sequence for L531S short form

SEQ ID NO: 110 is the predicted amino acid sequence encoded by SEQ ID NO: 109.

25 SEQ ID NO: 111 is the determined full-length cDNA sequence for L531S long form

SEQ ID NO: 112 is the predicted amino acid sequence encoded by SEQ ID NO: 111.

SEQ ID NO: 113 is the determined full-length cDNA sequence for L520S.

SEQ ID NO: 114 is the predicted amino acid sequence encoded by SEQ ID NO: 113.

SEQ ID NO: 115 is the determined cDNA sequence for contig 1.

30 SEQ ID NO: 116 is the determined cDNA sequence for contig 3.

SEQ ID NO: 117 is the determined cDNA sequence for contig 4.

SEQ ID NO: 118 is the determined cDNA sequence for contig 5.

SEQ ID NO: 119 is the determined cDNA sequence for contig 7.

SEQ ID NO: 120 is the determined cDNA sequence for contig 8.

SEQ ID NO: 121 is the determined cDNA sequence for contig 9.

5 SEQ ID NO: 122 is the determined cDNA sequence for contig 10.

SEQ ID NO: 123 is the determined cDNA sequence for contig 12.

SEQ ID NO: 124 is the determined cDNA sequence for contig 11.

SEQ ID NO: 125 is the determined cDNA sequence for contig 13.

SEQ ID NO: 126 is the determined cDNA sequence for contig 15.

10 SEQ ID NO: 127 is the determined cDNA sequence for contig 16.

SEQ ID NO: 128 is the determined cDNA sequence for contig 17.

SEQ ID NO: 129 is the determined cDNA sequence for contig 19.

SEQ ID NO: 130 is the determined cDNA sequence for contig 20.

SEQ ID NO: 131 is the determined cDNA sequence for contig 22.

15 SEQ ID NO: 132 is the determined cDNA sequence for contig 24.

SEQ ID NO: 133 is the determined cDNA sequence for contig 29.

SEQ ID NO: 134 is the determined cDNA sequence for contig 31.

SEQ ID NO: 135 is the determined cDNA sequence for contig 33.

SEQ ID NO: 136 is the determined cDNA sequence for contig 38.

20 SEQ ID NO: 137 is the determined cDNA sequence for contig 39.

SEQ ID NO: 138 is the determined cDNA sequence for contig 41.

SEQ ID NO: 139 is the determined cDNA sequence for contig 43.

SEQ ID NO: 140 is the determined cDNA sequence for contig 44.

SEQ ID NO: 141 is the determined cDNA sequence for contig 45.

25 SEQ ID NO: 142 is the determined cDNA sequence for contig 47.

SEQ ID NO: 143 is the determined cDNA sequence for contig 48.

SEQ ID NO: 144 is the determined cDNA sequence for contig 49.

SEQ ID NO: 145 is the determined cDNA sequence for contig 50.

SEQ ID NO: 146 is the determined cDNA sequence for contig 53.

30 SEQ ID NO: 147 is the determined cDNA sequence for contig 54.

SEQ ID NO: 148 is the determined cDNA sequence for contig 56.

SEQ ID NO: 149 is the determined cDNA sequence for contig 57.

SEQ ID NO: 150 is the determined cDNA sequence for contig 58.

SEQ ID NO: 151 is the full-length cDNA sequence for L530S.

SEQ ID NO: 152 is the amino acid sequence encoded by SEQ ID NO: 151

5 SEQ ID NO: 153 is the full-length cDNA sequence of a first variant of L514S

SEQ ID NO: 154 is the full-length cDNA sequence of a second variant of L514S

SEQ ID NO: 155 is the amino acid sequence encoded by SEQ ID NO: 153.

SEQ ID NO: 156 is the amino acid sequence encoded by SEQ ID NO: 154.

SEQ ID NO: 157 is the determined cDNA sequence for contig 59.

10 SEQ ID NO: 158 is the full-length cDNA sequence for L763P (also referred to as contig 22).

SEQ ID NO: 159 is the amino acid sequence encoded by SEQ ID NO: 158.

SEQ ID NO: 160 is the full-length cDNA sequence for L762P (also referred to as contig 17).

15 SEQ ID NO: 161 is the amino acid sequence encoded by SEQ ID NO: 160.

SEQ ID NO: 162 is the determined cDNA sequence for L515S.

SEQ ID NO: 163 is the full-length cDNA sequence of a first variant of L524S.

SEQ ID NO: 164 is the full-length cDNA sequence of a second variant of L524S.

SEQ ID NO: 165 is the amino acid sequence encoded by SEQ ID NO: 163.

20 SEQ ID NO: 166 is the amino acid sequence encoded by SEQ ID NO: 164.

SEQ ID NO: 167 is the full-length cDNA sequence of a first variant of L762P.

SEQ ID NO: 168 is the full-length cDNA sequence of a second variant of L762P.

SEQ ID NO: 169 is the amino acid sequence encoded by SEQ ID NO: 167.

SEQ ID NO: 170 is the amino acid sequence encoded by SEQ ID NO: 168.

25 SEQ ID NO: 171 is the full-length cDNA sequence for L773P (also referred to as contig 56).

SEQ ID NO: 172 is the amino acid sequence encoded by SEQ ID NO: 171.

SEQ ID NO: 173 is an extended cDNA sequence for L519S.

SEQ ID NO: 174 is the predicted amino acid sequence encoded by SEQ ID NO: 174.

30 SEQ ID NO: 175 is the full-length cDNA sequence for L523S.

SEQ ID NO: 176 is the predicted amino acid sequence encoded by SEQ ID NO: 175.

- SEQ ID NO: 177 is the determined cDNA sequence for LST-sub5-7A.
SEQ ID NO: 178 is the determined cDNA sequence for LST-sub5-8G.
SEQ ID NO: 179 is the determined cDNA sequence for LST-sub5-8H.
SEQ ID NO: 180 is the determined cDNA sequence for LST-sub5-10B.
5 SEQ ID NO: 181 is the determined cDNA sequence for LST-sub5-10H.
SEQ ID NO: 182 is the determined cDNA sequence for LST-sub5-12B.
SEQ ID NO: 183 is the determined cDNA sequence for LST-sub5-11C.
SEQ ID NO: 184 is the determined cDNA sequence for LST-sub6-1c.
SEQ ID NO: 185 is the determined cDNA sequence for LST-sub6-2f.
10 SEQ ID NO: 186 is the determined cDNA sequence for LST-sub6-2G.
SEQ ID NO: 187 is the determined cDNA sequence for LST-sub6-4d.
SEQ ID NO: 188 is the determined cDNA sequence for LST-sub6-4e.
SEQ ID NO: 189 is the determined cDNA sequence for LST-sub6-4f.
SEQ ID NO: 190 is the determined cDNA sequence for LST-sub6-3h.
15 SEQ ID NO: 191 is the determined cDNA sequence for LST-sub6-5d.
SEQ ID NO: 192 is the determined cDNA sequence for LST-sub6-5h.
SEQ ID NO: 193 is the determined cDNA sequence for LST-sub6-6h.
SEQ ID NO: 194 is the determined cDNA sequence for LST-sub6-7a.
SEQ ID NO: 195 is the determined cDNA sequence for LST-sub6-8a.
20 SEQ ID NO: 196 is the determined cDNA sequence for LST-sub6-7d.
SEQ ID NO: 197 is the determined cDNA sequence for LST-sub6-7e.
SEQ ID NO: 198 is the determined cDNA sequence for LST-sub6-8e.
SEQ ID NO: 199 is the determined cDNA sequence for LST-sub6-7g.
SEQ ID NO: 200 is the determined cDNA sequence for LST-sub6-9f.
25 SEQ ID NO: 201 is the determined cDNA sequence for LST-sub6-9h.
SEQ ID NO: 202 is the determined cDNA sequence for LST-sub6-11b.
SEQ ID NO: 203 is the determined cDNA sequence for LST-sub6-11c.
SEQ ID NO: 204 is the determined cDNA sequence for LST-sub6-12c.
SEQ ID NO: 205 is the determined cDNA sequence for LST-sub6-12e.
30 SEQ ID NO: 206 is the determined cDNA sequence for LST-sub6-12f.
SEQ ID NO: 207 is the determined cDNA sequence for LST-sub6-11g.

SEQ ID NO: 208 is the determined cDNA sequence for LST-sub6-12g.

SEQ ID NO: 209 is the determined cDNA sequence for LST-sub6-12h.

SEQ ID NO: 210 is the determined cDNA sequence for LST-sub6-II-1a.

SEQ ID NO: 211 is the determined cDNA sequence for LST-sub6-II-2b.

5 SEQ ID NO: 212 is the determined cDNA sequence for LST-sub6-II-2g.

SEQ ID NO: 213 is the determined cDNA sequence for LST-sub6-II-1h.

SEQ ID NO: 214 is the determined cDNA sequence for LST-sub6-II-4a.

SEQ ID NO: 215 is the determined cDNA sequence for LST-sub6-II-4b.

SEQ ID NO: 216 is the determined cDNA sequence for LST-sub6-II-3e.

10 SEQ ID NO: 217 is the determined cDNA sequence for LST-sub6-II-4f.

SEQ ID NO: 218 is the determined cDNA sequence for LST-sub6-II-4g.

SEQ ID NO: 219 is the determined cDNA sequence for LST-sub6-II-4h.

SEQ ID NO: 220 is the determined cDNA sequence for LST-sub6-II-5c.

SEQ ID NO: 221 is the determined cDNA sequence for LST-sub6-II-5e.

15 SEQ ID NO: 222 is the determined cDNA sequence for LST-sub6-II-6f.

SEQ ID NO: 223 is the determined cDNA sequence for LST-sub6-II-5g.

SEQ ID NO: 224 is the determined cDNA sequence for LST-sub6-II-6g.

SEQ ID NO: 225 is the amino acid sequence for L528S.

SEQ ID NO: 226-251 are synthetic peptides derived from L762P.

20 SEQ ID NO: 252 is the expressed amino acid sequence of L514S.

SEQ ID NO: 253 is the DNA sequence corresponding to SEQ ID NO: 252.

SEQ ID NO: 254 is the DNA sequence of a L762P expression construct.

SEQ ID NO: 255 is the determined cDNA sequence for clone 23785.

SEQ ID NO: 256 is the determined cDNA sequence for clone 23786.

25 SEQ ID NO: 257 is the determined cDNA sequence for clone 23788.

SEQ ID NO: 258 is the determined cDNA sequence for clone 23790.

SEQ ID NO: 259 is the determined cDNA sequence for clone 23793.

SEQ ID NO: 260 is the determined cDNA sequence for clone 23794.

SEQ ID NO: 261 is the determined cDNA sequence for clone 23795.

30 SEQ ID NO: 262 is the determined cDNA sequence for clone 23796.

SEQ ID NO: 263 is the determined cDNA sequence for clone 23797.

SEQ ID NO: 264 is the determined cDNA sequence for clone 23798.

SEQ ID NO: 265 is the determined cDNA sequence for clone 23799.

SEQ ID NO: 266 is the determined cDNA sequence for clone 23800.

SEQ ID NO: 267 is the determined cDNA sequence for clone 23802.

5 SEQ ID NO: 268 is the determined cDNA sequence for clone 23803.

SEQ ID NO: 269 is the determined cDNA sequence for clone 23804.

SEQ ID NO: 270 is the determined cDNA sequence for clone 23805.

SEQ ID NO: 271 is the determined cDNA sequence for clone 23806.

SEQ ID NO: 272 is the determined cDNA sequence for clone 23807.

10 SEQ ID NO: 273 is the determined cDNA sequence for clone 23808.

SEQ ID NO: 274 is the determined cDNA sequence for clone 23809.

SEQ ID NO: 275 is the determined cDNA sequence for clone 23810.

SEQ ID NO: 276 is the determined cDNA sequence for clone 23811.

SEQ ID NO: 277 is the determined cDNA sequence for clone 23812.

15 SEQ ID NO: 278 is the determined cDNA sequence for clone 23813.

SEQ ID NO: 279 is the determined cDNA sequence for clone 23815.

SEQ ID NO: 280 is the determined cDNA sequence for clone 25298.

SEQ ID NO: 281 is the determined cDNA sequence for clone 25299.

SEQ ID NO: 282 is the determined cDNA sequence for clone 25300.

20 SEQ ID NO: 283 is the determined cDNA sequence for clone 25301

SEQ ID NO: 284 is the determined cDNA sequence for clone 25304

SEQ ID NO: 285 is the determined cDNA sequence for clone 25309.

SEQ ID NO: 286 is the determined cDNA sequence for clone 25312.

SEQ ID NO: 287 is the determined cDNA sequence for clone 25317.

25 SEQ ID NO: 288 is the determined cDNA sequence for clone 25321.

SEQ ID NO: 289 is the determined cDNA sequence for clone 25323.

SEQ ID NO: 290 is the determined cDNA sequence for clone 25327.

SEQ ID NO: 291 is the determined cDNA sequence for clone 25328.

SEQ ID NO: 292 is the determined cDNA sequence for clone 25332.

30 SEQ ID NO: 293 is the determined cDNA sequence for clone 25333.

SEQ ID NO: 294 is the determined cDNA sequence for clone 25336.

- SEQ ID NO: 295 is the determined cDNA sequence for clone 25340.
SEQ ID NO: 296 is the determined cDNA sequence for clone 25342.
SEQ ID NO: 297 is the determined cDNA sequence for clone 25356.
SEQ ID NO: 298 is the determined cDNA sequence for clone 25357.
5 SEQ ID NO: 299 is the determined cDNA sequence for clone 25361.
SEQ ID NO: 300 is the determined cDNA sequence for clone 25363.
SEQ ID NO: 301 is the determined cDNA sequence for clone 25397.
SEQ ID NO: 302 is the determined cDNA sequence for clone 25402.
SEQ ID NO: 303 is the determined cDNA sequence for clone 25403.
10 SEQ ID NO: 304 is the determined cDNA sequence for clone 25405.
SEQ ID NO: 305 is the determined cDNA sequence for clone 25407.
SEQ ID NO: 306 is the determined cDNA sequence for clone 25409.
SEQ ID NO: 307 is the determined cDNA sequence for clone 25396.
SEQ ID NO: 308 is the determined cDNA sequence for clone 25414.
15 SEQ ID NO: 309 is the determined cDNA sequence for clone 25410.
SEQ ID NO: 310 is the determined cDNA sequence for clone 25406.
SEQ ID NO: 311 is the determined cDNA sequence for clone 25306.
SEQ ID NO: 312 is the determined cDNA sequence for clone 25362.
SEQ ID NO: 313 is the determined cDNA sequence for clone 25360.
20 SEQ ID NO: 314 is the determined cDNA sequence for clone 25398.
SEQ ID NO: 315 is the determined cDNA sequence for clone 25355.
SEQ ID NO: 316 is the determined cDNA sequence for clone 25351.
SEQ ID NO: 317 is the determined cDNA sequence for clone 25331.
SEQ ID NO: 318 is the determined cDNA sequence for clone 25338.
25 SEQ ID NO: 319 is the determined cDNA sequence for clone 25335.
SEQ ID NO: 320 is the determined cDNA sequence for clone 25329.
SEQ ID NO: 321 is the determined cDNA sequence for clone 25324.
SEQ ID NO: 322 is the determined cDNA sequence for clone 25322.
SEQ ID NO: 323 is the determined cDNA sequence for clone 25319.
30 SEQ ID NO: 324 is the determined cDNA sequence for clone 25316.
SEQ ID NO: 325 is the determined cDNA sequence for clone 25311.

SEQ ID NO: 326 is the determined cDNA sequence for clone 25310.

SEQ ID NO: 327 is the determined cDNA sequence for clone 25302.

SEQ ID NO: 328 is the determined cDNA sequence for clone 25315.

SEQ ID NO: 329 is the determined cDNA sequence for clone 25308.

5 SEQ ID NO: 330 is the determined cDNA sequence for clone 25303.

SEQ ID NO: 331-337 are the cDNA sequences of isoforms of the p53 tumor suppressor homologue, p63 (also referred to as L530S).

SEQ ID NO: 338-344 are the amino acid sequences encoded by SEQ ID NO: 331-337, respectively.

10 SEQ ID NO: 345 is a second cDNA sequence for the antigen L763P.

SEQ ID NO: 346 is the amino acid sequence encoded by the sequence of SEQ ID NO: 345.

SEQ ID NO: 347 is a determined full-length cDNA sequence for L523S.

SEQ ID NO: 348 is the predicted amino acid sequence encoded by SEQ ID NO: 347.

15 SEQ ID NO: 349 is the cDNA sequence encoding the N-terminal portion of L773P.

SEQ ID NO: 350 is the amino acid sequence of the N-terminal portion of L773P.

DETAILED DESCRIPTION OF THE INVENTION

As noted above, the present invention is generally directed to
20 compositions and methods for the therapy and diagnosis of cancer, such as lung cancer. The compositions described herein may include lung tumor polypeptides, polynucleotides encoding such polypeptides, binding agents such as antibodies, antigen presenting cells (APCs) and/or immune system cells (*e.g.*, T cells). Polypeptides of the present invention generally comprise at least a portion (such as an immunogenic
25 portion) of a lung tumor protein or a variant thereof. A "lung tumor protein" is a protein that is expressed in lung tumor cells at a level that is at least two fold, and preferably at least five fold, greater than the level of expression in a normal tissue, as determined using a representative assay provided herein. Certain lung tumor proteins are tumor proteins that react detectably (within an immunoassay, such as an ELISA or Western
30 blot) with antisera of a patient afflicted with lung cancer. Polynucleotides of the subject invention generally comprise a DNA or RNA sequence that encodes all or a portion of

such a polypeptide, or that is complementary to such a sequence. Antibodies are generally immune system proteins, or antigen-binding fragments thereof, that are capable of binding to a polypeptide as described above. Antigen presenting cells include dendritic cells, macrophages, monocytes, fibroblasts and B-cells that express a polypeptide as described above. T cells that may be employed within such compositions are generally T cells that are specific for a polypeptide as described above.

The present invention is based on the discovery human lung tumor proteins. Sequences of polynucleotides encoding specific tumor proteins are provided in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154,157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349.

LUNG TUMOR PROTEIN POLYNUCLEOTIDES

Any polynucleotide that encodes a lung tumor protein or a portion or other variant thereof as described herein is encompassed by the present invention. Preferred polynucleotides comprise at least 15 consecutive nucleotides, preferably at least 30 consecutive nucleotides and more preferably at least 45 consecutive nucleotides, that encode a portion of a lung tumor protein. More preferably, a polynucleotide encodes an immunogenic portion of a lung tumor protein. Polynucleotides complementary to any such sequences are also encompassed by the present invention. Polynucleotides may be single-stranded (coding or antisense) or double-stranded, and may be DNA (genomic, cDNA or synthetic) or RNA molecules. RNA molecules include HnRNA molecules, which contain introns and correspond to a DNA molecule in a one-to-one manner, and mRNA molecules, which do not contain introns. Additional coding or non-coding sequences may, but need not, be present within a polynucleotide of the present invention, and a polynucleotide may, but need not, be linked to other molecules and/or support materials.

Polynucleotides may comprise a native sequence (*i.e.*, an endogenous sequence that encodes a lung tumor protein or a portion thereof) or may comprise a variant of such a sequence. Polynucleotide variants may contain one or more substitutions, additions, deletions and/or insertions such that the immunogenicity of the

encoded polypeptide is not diminished, relative to a native tumor protein. The effect on the immunogenicity of the encoded polypeptide may generally be assessed as described herein. Variants preferably exhibit at least about 70% identity, more preferably at least about 80% identity and most preferably at least about 90% identity to a polynucleotide sequence that encodes a native lung tumor protein or a portion thereof. The term “variants” also encompasses homologous genes of xenogenic origin.

Two polynucleotide or polypeptide sequences are said to be “identical” if the sequence of nucleotides or amino acids in the two sequences is the same when aligned for maximum correspondence as described below. Comparisons between two sequences are typically performed by comparing the sequences over a comparison window to identify and compare local regions of sequence similarity. A “comparison window” as used herein, refers to a segment of at least about 20 contiguous positions, usually 30 to about 75, 40 to about 50, in which a sequence may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned.

Optimal alignment of sequences for comparison may be conducted using the Megalign program in the Lasergene suite of bioinformatics software (DNASTAR, Inc., Madison, WI), using default parameters. This program embodies several alignment schemes described in the following references: Dayhoff, M.O. (1978) A model of evolutionary change in proteins – Matrices for detecting distant relationships. In Dayhoff, M.O. (ed.) *Atlas of Protein Sequence and Structure*, National Biomedical Research Foundation, Washington DC Vol. 5, Suppl. 3, pp. 345-358; Hein J. (1990) Unified Approach to Alignment and Phylogenies pp. 626-645 *Methods in Enzymology* vol. 183, Academic Press, Inc., San Diego, CA; Higgins, D.G. and Sharp, P.M. (1989) *CABIOS* 5:151-153; Myers, E.W. and Muller W. (1988) *CABIOS* 4:11-17; Robinson, E.D. (1971) *Comb. Theor* 11:105; Santou, N. Nes, M. (1987) *Mol. Biol. Evol.* 4:406-425; Sneath, P.H.A. and Sokal, R.R. (1973) *Numerical Taxonomy – the Principles and Practice of Numerical Taxonomy*, Freeman Press, San Francisco, CA; Wilbur, W.J. and Lipman, D.J. (1983) *Proc. Natl. Acad., Sci. USA* 80:726-730.

Preferably, the “percentage of sequence identity” is determined by comparing two optimally aligned sequences over a window of comparison of at least 20

positions, wherein the portion of the polynucleotide or polypeptide sequence in the comparison window may comprise additions or deletions (i.e. gaps) of 20 percent or less, usually 5 to 15 percent, or 10 to 12 percent, as compared to the reference sequences (which does not comprise additions or deletions) for optimal alignment of the two sequences. The percentage is calculated by determining the number of positions at which the identical nucleic acid bases or amino acid residue occurs in both sequences to yield the number of matched positions, dividing the number of matched positions by the total number of positions in the reference sequence (i.e. the window size) and multiplying the results by 100 to yield the percentage of sequence identity.

Variants may also, or alternatively, be substantially homologous to a native gene, or a portion or complement thereof. Such polynucleotide variants are capable of hybridizing under moderately stringent conditions to a naturally occurring DNA sequence encoding a native lung tumor protein (or a complementary sequence). Suitable moderately stringent conditions include prewashing in a solution of 5 X SSC, 0.5% SDS, 1.0 mM EDTA (pH 8.0); hybridizing at 50°C-65°C, 5 X SSC, overnight; followed by washing twice at 65°C for 20 minutes with each of 2X, 0.5X and 0.2X SSC containing 0.1% SDS.

It will be appreciated by those of ordinary skill in the art that, as a result of the degeneracy of the genetic code, there are many nucleotide sequences that encode a polypeptide as described herein. Some of these polynucleotides bear minimal homology to the nucleotide sequence of any native gene. Nonetheless, polynucleotides that vary due to differences in codon usage are specifically contemplated by the present invention. Further, alleles of the genes comprising the polynucleotide sequences provided herein are within the scope of the present invention. Alleles are endogenous genes that are altered as a result of one or more mutations, such as deletions, additions and/or substitutions of nucleotides. The resulting mRNA and protein may, but need not, have an altered structure or function. Alleles may be identified using standard techniques (such as hybridization, amplification and/or database sequence comparison).

Polynucleotides may be prepared using any of a variety of techniques. For example, a polynucleotide may be identified, as described in more detail below, by screening a microarray of cDNAs for tumor-associated expression (i.e., expression that

is at least two fold greater in a lung tumor than in normal tissue, as determined using a representative assay provided herein). Such screens may be performed using a Synteni microarray (Palo Alto, CA) according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA* 93:10614-10619, 1996 and
5 Heller et al., *Proc. Natl. Acad. Sci. USA* 94:2150-2155, 1997). Alternatively, polypeptides may be amplified from cDNA prepared from cells expressing the proteins described herein, such as lung tumor cells. Such polynucleotides may be amplified via polymerase chain reaction (PCR). For this approach, sequence-specific primers may be designed based on the sequences provided herein, and may be purchased or synthesized.

10 An amplified portion may be used to isolate a full length gene from a suitable library (e.g., a lung tumor cDNA library) using well known techniques. Within such techniques, a library (cDNA or genomic) is screened using one or more polynucleotide probes or primers suitable for amplification. Preferably, a library is size-selected to include larger molecules. Random primed libraries may also be
15 preferred for identifying 5' and upstream regions of genes. Genomic libraries are preferred for obtaining introns and extending 5' sequences.

For hybridization techniques, a partial sequence may be labeled (e.g., by nick-translation or end-labeling with ³²P) using well known techniques. A bacterial or bacteriophage library is then screened by hybridizing filters containing denatured
20 bacterial colonies (or lawns containing phage plaques) with the labeled probe (see Sambrook et al., *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989). Hybridizing colonies or plaques are selected and expanded, and the DNA is isolated for further analysis. cDNA clones may be analyzed to determine the amount of additional sequence by, for example, PCR using
25 a primer from the partial sequence and a primer from the vector. Restriction maps and partial sequences may be generated to identify one or more overlapping clones. The complete sequence may then be determined using standard techniques, which may involve generating a series of deletion clones. The resulting overlapping sequences are then assembled into a single contiguous sequence. A full length cDNA molecule can be
30 generated by ligating suitable fragments, using well known techniques.

Alternatively, there are numerous amplification techniques for obtaining a full length coding sequence from a partial cDNA sequence. Within such techniques, amplification is generally performed via PCR. Any of a variety of commercially available kits may be used to perform the amplification step. Primers may be designed using, for example, software well known in the art. Primers are preferably 22-30 nucleotides in length, have a GC content of at least 50% and anneal to the target sequence at temperatures of about 68°C to 72°C. The amplified region may be sequenced as described above, and overlapping sequences assembled into a contiguous sequence.

One such amplification technique is inverse PCR (*see* Triglia et al., *Nucl. Acids Res.* 16:8186, 1988), which uses restriction enzymes to generate a fragment in the known region of the gene. The fragment is then circularized by intramolecular ligation and used as a template for PCR with divergent primers derived from the known region. Within an alternative approach, sequences adjacent to a partial sequence may be retrieved by amplification with a primer to a linker sequence and a primer specific to a known region. The amplified sequences are typically subjected to a second round of amplification with the same linker primer and a second primer specific to the known region. A variation on this procedure, which employs two primers that initiate extension in opposite directions from the known sequence, is described in WO 96/38591. Another such technique is known as "rapid amplification of cDNA ends" or RACE. This technique involves the use of an internal primer and an external primer, which hybridizes to a polyA region or vector sequence, to identify sequences that are 5' and 3' of a known sequence. Additional techniques include capture PCR (Lagerstrom et al., *PCR Methods Applic.* 1:111-19, 1991) and walking PCR (Parker et al., *Nucl. Acids. Res.* 19:3055-60, 1991). Other methods employing amplification may also be employed to obtain a full length cDNA sequence.

In certain instances, it is possible to obtain a full length cDNA sequence by analysis of sequences provided in an expressed sequence tag (EST) database, such as that available from GenBank. Searches for overlapping ESTs may generally be performed using well known programs (*e.g.*, NCBI BLAST searches), and such ESTs

may be used to generate a contiguous full length sequence. Full length DNA sequences may also be obtained by analysis of genomic fragments.

Certain nucleic acid sequences of cDNA molecules encoding portions of lung tumor proteins are provided in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349.

Polynucleotide variants may generally be prepared by any method known in the art, including chemical synthesis by, for example, solid phase phosphoramidite chemical synthesis. Modifications in a polynucleotide sequence may also be introduced using standard mutagenesis techniques, such as oligonucleotide-directed site-specific mutagenesis (*see* Adelman et al., *DNA* 2:183, 1983). Alternatively, RNA molecules may be generated by *in vitro* or *in vivo* transcription of DNA sequences encoding a lung tumor protein, or portion thereof, provided that the DNA is incorporated into a vector with a suitable RNA polymerase promoter (such as T7 or SP6). Certain portions may be used to prepare an encoded polypeptide, as described herein. In addition, or alternatively, a portion may be administered to a patient such that the encoded polypeptide is generated *in vivo* (*e.g.*, by transfecting antigen-presenting cells, such as dendritic cells, with a cDNA construct encoding a lung tumor polypeptide, and administering the transfected cells to the patient).

A portion of a sequence complementary to a coding sequence (*i.e.*, an antisense polynucleotide) may also be used as a probe or to modulate gene expression. cDNA constructs that can be transcribed into antisense RNA may also be introduced into cells of tissues to facilitate the production of antisense RNA. An antisense polynucleotide may be used, as described herein, to inhibit expression of a tumor protein. Antisense technology can be used to control gene expression through triple-helix formation, which compromises the ability of the double helix to open sufficiently for the binding of polymerases, transcription factors or regulatory molecules (*see* Gee et al., *In* Huber and Carr, *Molecular and Immunologic Approaches*, Futura Publishing Co. (Mt. Kisco, NY; 1994)). Alternatively, an antisense molecule may be designed to hybridize with a control region of a gene (*e.g.*, promoter, enhancer or transcription

initiation site), and block transcription of the gene; or to block translation by inhibiting binding of a transcript to ribosomes.

A portion of a coding sequence, or of a complementary sequence, may also be designed as a probe or primer to detect gene expression. Probes may be labeled
5 with a variety of reporter groups, such as radionuclides and enzymes, and are preferably at least 10 nucleotides in length, more preferably at least 20 nucleotides in length and still more preferably at least 30 nucleotides in length. Primers, as noted above, are preferably 22-30 nucleotides in length.

Any polynucleotide may be further modified to increase stability *in vivo*.
10 Possible modifications include, but are not limited to, the addition of flanking sequences at the 5' and/or 3' ends; the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages in the backbone; and/or the inclusion of nontraditional bases such as inosine, queosine and wybutosine, as well as acetyl- methyl-, thio- and other modified forms of adenine, cytidine, guanine, thymine and uridine.

15 Nucleotide sequences as described herein may be joined to a variety of other nucleotide sequences using established recombinant DNA techniques. For example, a polynucleotide may be cloned into any of a variety of cloning vectors, including plasmids, phagemids, lambda phage derivatives and cosmids. Vectors of particular interest include expression vectors, replication vectors, probe generation
20 vectors and sequencing vectors. In general, a vector will contain an origin of replication functional in at least one organism, convenient restriction endonuclease sites and one or more selectable markers. Other elements will depend upon the desired use, and will be apparent to those of ordinary skill in the art.

Within certain embodiments, polynucleotides may be formulated so as to
25 permit entry into a cell of a mammal, and expression therein. Such formulations are particularly useful for therapeutic purposes, as described below. Those of ordinary skill in the art will appreciate that there are many ways to achieve expression of a polynucleotide in a target cell, and any suitable method may be employed. For example, a polynucleotide may be incorporated into a viral vector such as, but not
30 limited to, adenovirus, adeno-associated virus, retrovirus, or vaccinia or other pox virus (e.g., avian pox virus).). The polynucleotides may also be administered as naked

plasmid vectors. Techniques for incorporating DNA into such vectors are well known to those of ordinary skill in the art. A retroviral vector may additionally transfer or incorporate a gene for a selectable marker (to aid in the identification or selection of transduced cells) and/or a targeting moiety, such as a gene that encodes a ligand for a receptor on a specific target cell, to render the vector target specific. Targeting may also be accomplished using an antibody, by methods known to those of ordinary skill in the art.

Other formulations for therapeutic purposes include colloidal dispersion systems, such as macromolecule complexes, nanocapsules, microspheres, beads, and lipid-based systems including oil-in-water emulsions, micelles, mixed micelles, and liposomes. A preferred colloidal system for use as a delivery vehicle *in vitro* and *in vivo* is a liposome (*i.e.*, an artificial membrane vesicle). The preparation and use of such systems is well known in the art.

15 LUNG TUMOR POLYPEPTIDES

Within the context of the present invention, polypeptides may comprise at least an immunogenic portion of a lung tumor protein or a variant thereof, as described herein. As noted above, a "lung tumor protein" is a protein that is expressed by lung tumor cells. Proteins that are lung tumor proteins also react detectably within an immunoassay (such as an ELISA) with antisera from a patient with lung cancer. Polypeptides as described herein may be of any length. Additional sequences derived from the native protein and/or heterologous sequences may be present, and such sequences may (but need not) possess further immunogenic or antigenic properties.

An "immunogenic portion," as used herein is a portion of a protein that is recognized (*i.e.*, specifically bound) by a B-cell and/or T-cell surface antigen receptor. Such immunogenic portions generally comprise at least 5 amino acid residues, more preferably at least 10, and still more preferably at least 20 amino acid residues of a lung tumor protein or a variant thereof. Certain preferred immunogenic portions include peptides in which an N-terminal leader sequence and/or transmembrane domain have been deleted. Other preferred immunogenic portions may

contain a small N- and/or C-terminal deletion (*e.g.*, 1-30 amino acids, preferably 5-15 amino acids), relative to the mature protein.

Immunogenic portions may generally be identified using well known techniques, such as those summarized in Paul, *Fundamental Immunology*, 3rd ed., 243-
5 247 (Raven Press, 1993) and references cited therein. Such techniques include screening polypeptides for the ability to react with antigen-specific antibodies, antisera and/or T-cell lines or clones. As used herein, antisera and antibodies are "antigen-specific" if they specifically bind to an antigen (*i.e.*, they react with the protein in an ELISA or other immunoassay, and do not react detectably with unrelated proteins).
10 Such antisera and antibodies may be prepared as described herein, and using well known techniques. An immunogenic portion of a native lung tumor protein is a portion that reacts with such antisera and/or T-cells at a level that is not substantially less than the reactivity of the full length polypeptide (*e.g.*, in an ELISA and/or T-cell reactivity assay). Such immunogenic portions may react within such assays at a level that is
15 similar to or greater than the reactivity of the full length polypeptide. Such screens may generally be performed using methods well known to those of ordinary skill in the art, such as those described in Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. For example, a polypeptide may be immobilized on a solid support and contacted with patient sera to allow binding of antibodies within the
20 sera to the immobilized polypeptide. Unbound sera may then be removed and bound antibodies detected using, for example, ¹²⁵I-labeled Protein A.

As noted above, a composition may comprise a variant of a native lung tumor protein. A polypeptide "variant," as used herein, is a polypeptide that differs from a native lung tumor protein in one or more substitutions, deletions, additions
25 and/or insertions, such that the immunogenicity of the polypeptide is not substantially diminished. In other words, the ability of a variant to react with antigen-specific antisera may be enhanced or unchanged, relative to the native protein, or may be diminished by less than 50%, and preferably less than 20%, relative to the native protein. Such variants may generally be identified by modifying one of the above
30 polypeptide sequences and evaluating the reactivity of the modified polypeptide with antigen-specific antibodies or antisera as described herein. Preferred variants include

those in which one or more portions, such as an N-terminal leader sequence or transmembrane domain, have been removed. Other preferred variants include variants in which a small portion (*e.g.*, 1-30 amino acids, preferably 5-15 amino acids) has been removed from the N- and/or C-terminal of the mature protein.

5 Polypeptide variants preferably exhibit at least about 70%, more preferably at least about 90% and most preferably at least about 95% identity (determined as described above) to the identified polypeptides.

Preferably, a variant contains conservative substitutions. A "conservative substitution" is one in which an amino acid is substituted for another amino acid that has similar properties, such that one skilled in the art of peptide chemistry would expect the secondary structure and hydropathic nature of the polypeptide to be substantially unchanged. Amino acid substitutions may generally be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity and/or the amphipathic nature of the residues. For example, negatively charged amino acids include aspartic acid and glutamic acid; positively charged amino acids include lysine and arginine; and amino acids with uncharged polar head groups having similar hydrophilicity values include leucine, isoleucine and valine; glycine and alanine; asparagine and glutamine; and serine, threonine, phenylalanine and tyrosine. Other groups of amino acids that may represent conservative changes include: (1) ala, pro, gly, glu, asp, gln, asn, ser, thr; (2) cys, ser, tyr, thr; (3) val, ile, leu, met, ala, phe; (4) lys, arg, his; and (5) phe, tyr, trp, his. A variant may also, or alternatively, contain nonconservative changes. In a preferred embodiment, variant polypeptides differ from a native sequence by substitution, deletion or addition of five amino acids or fewer. Variants may also (or alternatively) be modified by, for example, the deletion or addition of amino acids that have minimal influence on the immunogenicity, secondary structure and hydropathic nature of the polypeptide.

As noted above, polypeptides may comprise a signal (or leader) sequence at the N-terminal end of the protein which co-translationally or post-translationally directs transfer of the protein. The polypeptide may also be conjugated to a linker or other sequence for ease of synthesis, purification or identification of the

polypeptide (*e.g.*, poly-His), or to enhance binding of the polypeptide to a solid support. For example, a polypeptide may be conjugated to an immunoglobulin Fc region.

Polypeptides may be prepared using any of a variety of well known techniques. Recombinant polypeptides encoded by DNA sequences as described above
5 may be readily prepared from the DNA sequences using any of a variety of expression vectors known to those of ordinary skill in the art. Expression may be achieved in any appropriate host cell that has been transformed or transfected with an expression vector containing a DNA molecule that encodes a recombinant polypeptide. Suitable host cells include prokaryotes, yeast, higher eukaryotic and plant cells. Preferably, the host
10 cells employed are *E. coli*, yeast or a mammalian cell line such as COS or CHO. Supernatants from suitable host/vector systems which secrete recombinant protein or polypeptide into culture media may be first concentrated using a commercially available filter. Following concentration, the concentrate may be applied to a suitable purification matrix such as an affinity matrix or an ion exchange resin. Finally, one or
15 more reverse phase HPLC steps can be employed to further purify a recombinant polypeptide.

Portions and other variants having fewer than about 100 amino acids, and generally fewer than about 50 amino acids, may also be generated by synthetic means, using techniques well known to those of ordinary skill in the art. For example,
20 such polypeptides may be synthesized using any of the commercially available solid-phase techniques, such as the Merrifield solid-phase synthesis method, where amino acids are sequentially added to a growing amino acid chain. *See Merrifield, J. Am. Chem. Soc.* 85:2149-2146, 1963. Equipment for automated synthesis of polypeptides is commercially available from suppliers such as Perkin Elmer/Applied BioSystems
25 Division (Foster City, CA), and may be operated according to the manufacturer's instructions.

Within certain specific embodiments, a polypeptide may be a fusion protein that comprises multiple polypeptides as described herein, or that comprises at least one polypeptide as described herein and an unrelated sequence, such as a known
30 tumor protein. A fusion partner may, for example, assist in providing T helper epitopes (an immunological fusion partner), preferably T helper epitopes recognized by humans,

or may assist in expressing the protein (an expression enhancer) at higher yields than the native recombinant protein. Certain preferred fusion partners are both immunological and expression enhancing fusion partners. Other fusion partners may be selected so as to increase the solubility of the protein or to enable the protein to be targeted to desired intracellular compartments. Still further fusion partners include affinity tags, which facilitate purification of the protein.

Fusion proteins may generally be prepared using standard techniques, including chemical conjugation. Preferably, a fusion protein is expressed as a recombinant protein, allowing the production of increased levels, relative to a non-fused protein, in an expression system. Briefly, DNA sequences encoding the polypeptide components may be assembled separately, and ligated into an appropriate expression vector. The 3' end of the DNA sequence encoding one polypeptide component is ligated, with or without a peptide linker, to the 5' end of a DNA sequence encoding the second polypeptide component so that the reading frames of the sequences are in phase. This permits translation into a single fusion protein that retains the biological activity of both component polypeptides.

A peptide linker sequence may be employed to separate the first and the second polypeptide components by a distance sufficient to ensure that each polypeptide folds into its secondary and tertiary structures. Such a peptide linker sequence is incorporated into the fusion protein using standard techniques well known in the art. Suitable peptide linker sequences may be chosen based on the following factors: (1) their ability to adopt a flexible extended conformation; (2) their inability to adopt a secondary structure that could interact with functional epitopes on the first and second polypeptides; and (3) the lack of hydrophobic or charged residues that might react with the polypeptide functional epitopes. Preferred peptide linker sequences contain Gly, Asn and Ser residues. Other near neutral amino acids, such as Thr and Ala may also be used in the linker sequence. Amino acid sequences which may be usefully employed as linkers include those disclosed in Maratea et al., *Gene* 40:39-46, 1985; Murphy et al., *Proc. Natl. Acad. Sci. USA* 83:8258-8262, 1986; U.S. Patent No. 4,935,233 and U.S. Patent No. 4,751,180. The linker sequence may generally be from 1 to about 50 amino acids in length. Linker sequences are not required when the first and second

polypeptides have non-essential N-terminal amino acid regions that can be used to separate the functional domains and prevent steric interference.

The ligated DNA sequences are operably linked to suitable transcriptional or translational regulatory elements. The regulatory elements responsible for expression of DNA are located only 5' to the DNA sequence encoding the first polypeptides. Similarly, stop codons required to end translation and transcription termination signals are only present 3' to the DNA sequence encoding the second polypeptide.

Fusion proteins are also provided that comprise a polypeptide of the present invention together with an unrelated immunogenic protein. Preferably the immunogenic protein is capable of eliciting a recall response. Examples of such proteins include tetanus, tuberculosis and hepatitis proteins (*see*, for example, Stoute et al. *New Engl. J. Med.*, 336:86-91, 1997).

Within preferred embodiments, an immunological fusion partner is derived from protein D, a surface protein of the gram-negative bacterium *Haemophilus influenza B* (WO 91/18926). Preferably, a protein D derivative comprises approximately the first third of the protein (*e.g.*, the first N-terminal 100-110 amino acids), and a protein D derivative may be lipidated. Within certain preferred embodiments, the first 109 residues of a Lipoprotein D fusion partner is included on the N-terminus to provide the polypeptide with additional exogenous T-cell epitopes and to increase the expression level in *E. coli* (thus functioning as an expression enhancer). The lipid tail ensures optimal presentation of the antigen to antigen presenting cells. Other fusion partners include the non-structural protein from influenzae virus, NS1 (hemagglutinin). Typically, the N-terminal 81 amino acids are used, although different fragments that include T-helper epitopes may be used.

In another embodiment, the immunological fusion partner is the protein known as LYTA, or a portion thereof (preferably a C-terminal portion). LYTA is derived from *Streptococcus pneumoniae*, which synthesizes an N-acetyl-L-alanine amidase known as amidase LYTA (encoded by the *LytA* gene; *Gene* 43:265-292, 1986). LYTA is an autolysin that specifically degrades certain bonds in the peptidoglycan backbone. The C-terminal domain of the LYTA protein is responsible

for the affinity to the choline or to some choline analogues such as DEAE. This property has been exploited for the development of *E. coli* C-LYTA expressing plasmids useful for expression of fusion proteins. Purification of hybrid proteins containing the C-LYTA fragment at the amino terminus has been described (see 5 *Biotechnology* 10:795-798, 1992). Within a preferred embodiment, a repeat portion of LYTA may be incorporated into a fusion protein. A repeat portion is found in the C-terminal region starting at residue 178. A particularly preferred repeat portion incorporates residues 188-305.

In general, polypeptides (including fusion proteins) and polynucleotides 10 as described herein are isolated. An "isolated" polypeptide or polynucleotide is one that is removed from its original environment. For example, a naturally-occurring protein is isolated if it is separated from some or all of the coexisting materials in the natural system. Preferably, such polypeptides are at least about 90% pure, more preferably at least about 95% pure and most preferably at least about 99% pure. A polynucleotide is 15 considered to be isolated if, for example, it is cloned into a vector that is not a part of the natural environment.

BINDING AGENTS

The present invention further provides agents, such as antibodies and 20 antigen-binding fragments thereof, that specifically bind to a lung tumor protein. As used herein, an antibody, or antigen-binding fragment thereof, is said to "specifically bind" to a lung tumor protein if it reacts at a detectable level (within, for example, an ELISA) with a lung tumor protein, and does not react detectably with unrelated proteins under similar conditions. As used herein, "binding" refers to a noncovalent association 25 between two separate molecules such that a complex is formed. The ability to bind may be evaluated by, for example, determining a binding constant for the formation of the complex. The binding constant is the value obtained when the concentration of the complex is divided by the product of the component concentrations. In general, two compounds are said to "bind," in the context of the present invention, when the binding 30 constant for complex formation exceeds about 10^3 L/mol. The binding constant may be determined using methods well known in the art.

Binding agents may be further capable of differentiating between patients with and without a cancer, such as lung cancer, using the representative assays provided herein. In other words, antibodies or other binding agents that bind to a lung tumor protein will generate a signal indicating the presence of a cancer in at least about 20% of patients with the disease, and will generate a negative signal indicating the absence of the disease in at least about 90% of individuals without the cancer. To determine whether a binding agent satisfies this requirement, biological samples (*e.g.*, blood, sera, sputum urine and/or tumor biopsies) from patients with and without a cancer (as determined using standard clinical tests) may be assayed as described herein for the presence of polypeptides that bind to the binding agent. It will be apparent that a statistically significant number of samples with and without the disease should be assayed. Each binding agent should satisfy the above criteria; however, those of ordinary skill in the art will recognize that binding agents may be used in combination to improve sensitivity.

Any agent that satisfies the above requirements may be a binding agent. For example, a binding agent may be a ribosome, with or without a peptide component, an RNA molecule or a polypeptide. In a preferred embodiment, a binding agent is an antibody or an antigen-binding fragment thereof. Antibodies may be prepared by any of a variety of techniques known to those of ordinary skill in the art. *See, e.g.*, Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, antibodies can be produced by cell culture techniques, including the generation of monoclonal antibodies as described herein, or via transfection of antibody genes into suitable bacterial or mammalian cell hosts, in order to allow for the production of recombinant antibodies. In one technique, an immunogen comprising the polypeptide is initially injected into any of a wide variety of mammals (*e.g.*, mice, rats, rabbits, sheep or goats). In this step, the polypeptides of this invention may serve as the immunogen without modification. Alternatively, particularly for relatively short polypeptides, a superior immune response may be elicited if the polypeptide is joined to a carrier protein, such as bovine serum albumin or keyhole limpet hemocyanin. The immunogen is injected into the animal host, preferably according to a predetermined schedule incorporating one or more booster immunizations, and the animals are bled periodically.

Polyclonal antibodies specific for the polypeptide may then be purified from such antisera by, for example, affinity chromatography using the polypeptide coupled to a suitable solid support.

Monoclonal antibodies specific for an antigenic polypeptide of interest may be prepared, for example, using the technique of Kohler and Milstein, *Eur. J. Immunol.* 6:511-519, 1976, and improvements thereto. Briefly, these methods involve the preparation of immortal cell lines capable of producing antibodies having the desired specificity (*i.e.*, reactivity with the polypeptide of interest). Such cell lines may be produced, for example, from spleen cells obtained from an animal immunized as described above. The spleen cells are then immortalized by, for example, fusion with a myeloma cell fusion partner, preferably one that is syngeneic with the immunized animal. A variety of fusion techniques may be employed. For example, the spleen cells and myeloma cells may be combined with a nonionic detergent for a few minutes and then plated at low density on a selective medium that supports the growth of hybrid cells, but not myeloma cells. A preferred selection technique uses HAT (hypoxanthine, aminopterin, thymidine) selection. After a sufficient time, usually about 1 to 2 weeks, colonies of hybrids are observed. Single colonies are selected and their culture supernatants tested for binding activity against the polypeptide. Hybridomas having high reactivity and specificity are preferred.

Monoclonal antibodies may be isolated from the supernatants of growing hybridoma colonies. In addition, various techniques may be employed to enhance the yield, such as injection of the hybridoma cell line into the peritoneal cavity of a suitable vertebrate host, such as a mouse. Monoclonal antibodies may then be harvested from the ascites fluid or the blood. Contaminants may be removed from the antibodies by conventional techniques, such as chromatography, gel filtration, precipitation, and extraction. The polypeptides of this invention may be used in the purification process in, for example, an affinity chromatography step.

Within certain embodiments, the use of antigen-binding fragments of antibodies may be preferred. Such fragments include Fab fragments, which may be prepared using standard techniques. Briefly, immunoglobulins may be purified from rabbit serum by affinity chromatography on Protein A bead columns (Harlow and Lane,

Antibodies: A Laboratory Manual, Cold Spring Harbor Laboratory, 1988) and digested by papain to yield Fab and Fc fragments. The Fab and Fc fragments may be separated by affinity chromatography on protein A bead columns.

Monoclonal antibodies of the present invention may be coupled to one or
5 more therapeutic agents. Suitable agents in this regard include radionuclides, differentiation inducers, drugs, toxins, and derivatives thereof. Preferred radionuclides include ^{90}Y , ^{123}I , ^{125}I , ^{131}I , ^{186}Re , ^{188}Re , ^{211}At , and ^{212}Bi . Preferred drugs include methotrexate, and pyrimidine and purine analogs. Preferred differentiation inducers include phorbol esters and butyric acid. Preferred toxins include ricin, abrin, diphtheria
10 toxin, cholera toxin, gelonin, *Pseudomonas* exotoxin, *Shigella* toxin, and pokeweed antiviral protein.

A therapeutic agent may be coupled (*e.g.*, covalently bonded) to a suitable monoclonal antibody either directly or indirectly (*e.g.*, via a linker group). A direct reaction between an agent and an antibody is possible when each possesses a
15 substituent capable of reacting with the other. For example, a nucleophilic group, such as an amino or sulfhydryl group, on one may be capable of reacting with a carbonyl-containing group, such as an anhydride or an acid halide, or with an alkyl group containing a good leaving group (*e.g.*, a halide) on the other.

Alternatively, it may be desirable to couple a therapeutic agent and an
20 antibody via a linker group. A linker group can function as a spacer to distance an antibody from an agent in order to avoid interference with binding capabilities. A linker group can also serve to increase the chemical reactivity of a substituent on an agent or an antibody, and thus increase the coupling efficiency. An increase in chemical reactivity may also facilitate the use of agents, or functional groups on agents,
25 which otherwise would not be possible.

It will be evident to those skilled in the art that a variety of bifunctional or polyfunctional reagents, both homo- and hetero-functional (such as those described in the catalog of the Pierce Chemical Co., Rockford, IL), may be employed as the linker group. Coupling may be effected, for example, through amino groups, carboxyl groups,
30 sulfhydryl groups or oxidized carbohydrate residues. There are numerous references describing such methodology, *e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.

Where a therapeutic agent is more potent when free from the antibody portion of the immunoconjugates of the present invention, it may be desirable to use a linker group which is cleavable during or upon internalization into a cell. A number of different cleavable linker groups have been described. The mechanisms for the intracellular release of an agent from these linker groups include cleavage by reduction of a disulfide bond (*e.g.*, U.S. Patent No. 4,489,710, to Spitler), by irradiation of a photolabile bond (*e.g.*, U.S. Patent No. 4,625,014, to Senter et al.), by hydrolysis of derivatized amino acid side chains (*e.g.*, U.S. Patent No. 4,638,045, to Kohn et al.), by serum complement-mediated hydrolysis (*e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.), and acid-catalyzed hydrolysis (*e.g.*, U.S. Patent No. 4,569,789, to Blattler et al.).

It may be desirable to couple more than one agent to an antibody. In one embodiment, multiple molecules of an agent are coupled to one antibody molecule. In another embodiment, more than one type of agent may be coupled to one antibody. Regardless of the particular embodiment, immunoconjugates with more than one agent may be prepared in a variety of ways. For example, more than one agent may be coupled directly to an antibody molecule, or linkers which provide multiple sites for attachment can be used. Alternatively, a carrier can be used.

A carrier may bear the agents in a variety of ways, including covalent bonding either directly or via a linker group. Suitable carriers include proteins such as albumins (*e.g.*, U.S. Patent No. 4,507,234, to Kato et al.), peptides and polysaccharides such as aminodextran (*e.g.*, U.S. Patent No. 4,699,784, to Shih et al.). A carrier may also bear an agent by noncovalent bonding or by encapsulation, such as within a liposome vesicle (*e.g.*, U.S. Patent Nos. 4,429,008 and 4,873,088). Carriers specific for radionuclide agents include radiohalogenated small molecules and chelating compounds. For example, U.S. Patent No. 4,735,792 discloses representative radiohalogenated small molecules and their synthesis. A radionuclide chelate may be formed from chelating compounds that include those containing nitrogen and sulfur atoms as the donor atoms for binding the metal, or metal oxide, radionuclide. For example, U.S. Patent No. 4,673,562, to Davison et al. discloses representative chelating compounds and their synthesis.

A variety of routes of administration for the antibodies and immunoconjugates may be used. Typically, administration will be intravenous, intramuscular, subcutaneous or in the bed of a resected tumor. It will be evident that the precise dose of the antibody/immunoconjugate will vary depending upon the antibody
5 used, the antigen density on the tumor, and the rate of clearance of the antibody.

T CELLS

Immunotherapeutic compositions may also, or alternatively, comprise T cells specific for a lung tumor protein. Such cells may generally be prepared *in vitro* or
10 *ex vivo*, using standard procedures. For example, T cells may be isolated from bone marrow, peripheral blood, or a fraction of bone marrow or peripheral blood of a patient, using a commercially available cell separation system, such as the Isolex™ System, available from Nexell Therapeutics, Inc. Irvine, CA (see also U.S. Patent No. 5,240,856; U.S. Patent No. 5,215,926; WO 89/06280; WO 91/16116 and WO
15 92/07243). Alternatively, T cells may be derived from related or unrelated humans, non-human mammals, cell lines or cultures.

T cells may be stimulated with a lung tumor polypeptide, polynucleotide encoding a lung tumor polypeptide and/or an antigen presenting cell (APC) that expresses such a polypeptide. Such stimulation is performed under conditions and for a
20 time sufficient to permit the generation of T cells that are specific for the polypeptide. Preferably, a lung tumor polypeptide or polynucleotide is present within a delivery vehicle, such as a microsphere, to facilitate the generation of specific T cells.

T cells are considered to be specific for a lung tumor polypeptide if the T cells specifically proliferate, secrete cytokines or kill target cells coated with the
25 polypeptide or expressing a gene encoding the polypeptide. T cell specificity may be evaluated using any of a variety of standard techniques. For example, within a chromium release assay or proliferation assay, a stimulation index of more than two fold increase in lysis and/or proliferation, compared to negative controls, indicates T cell specificity. Such assays may be performed, for example, as described in Chen et
30 al., *Cancer Res.* 54:1065-1070, 1994. Alternatively, detection of the proliferation of T cells may be accomplished by a variety of known techniques. For example, T cell

proliferation can be detected by measuring an increased rate of DNA synthesis (*e.g.*, by pulse-labeling cultures of T cells with tritiated thymidine and measuring the amount of tritiated thymidine incorporated into DNA). Contact with a lung tumor polypeptide (100 ng/ml - 100 µg/ml, preferably 200 ng/ml - 25 µg/ml) for 3 - 7 days should result in at least a two fold increase in proliferation of the T cells. Contact as described above for 2-3 hours should result in activation of the T cells, as measured using standard cytokine assays in which a two fold increase in the level of cytokine release (*e.g.*, TNF or IFN-γ) is indicative of T cell activation (*see* Coligan et al., Current Protocols in Immunology, vol. 1, Wiley Interscience (Greene 1998)). T cells that have been activated in response to a lung tumor polypeptide, polynucleotide or polypeptide-expressing APC may be CD4⁺ and/or CD8⁺. Lung tumor protein-specific T cells may be expanded using standard techniques. Within preferred embodiments, the T cells are derived from either a patient or a related, or unrelated, donor and are administered to the patient following stimulation and expansion.

For therapeutic purposes, CD4⁺ or CD8⁺ T cells that proliferate in response to a lung tumor polypeptide, polynucleotide or APC can be expanded in number either *in vitro* or *in vivo*. Proliferation of such T cells *in vitro* may be accomplished in a variety of ways. For example, the T cells can be re-exposed to a lung tumor polypeptide, or a short peptide corresponding to an immunogenic portion of such a polypeptide, with or without the addition of T cell growth factors, such as interleukin-2, and/or stimulator cells that synthesize a lung tumor polypeptide. Alternatively, one or more T cells that proliferate in the presence of a lung tumor protein can be expanded in number by cloning. Methods for cloning cells are well known in the art, and include limiting dilution.

PHARMACEUTICAL COMPOSITIONS AND VACCINES

Within certain aspects, polypeptides, polynucleotides, T cells and/or binding agents disclosed herein may be incorporated into pharmaceutical compositions or immunogenic compositions (*i.e.*, vaccines). Pharmaceutical compositions comprise one or more such compounds and a physiologically acceptable carrier. Vaccines may comprise one or more such compounds and an immunostimulant. An immunostimulant

may be any substance that enhances or potentiates an immune response to an exogenous antigen. Examples of immunostimulants include adjuvants, biodegradable microspheres (e.g., polylactic galactide) and liposomes (into which the compound is incorporated; see e.g., Fullerton, U.S. Patent No. 4,235,877). Vaccine preparation is generally described in, for example, M.F. Powell and M.J. Newman, eds., "Vaccine Design (the subunit and adjuvant approach)," Plenum Press (NY, 1995). Pharmaceutical compositions and vaccines within the scope of the present invention may also contain other compounds, which may be biologically active or inactive. For example, one or more immunogenic portions of other tumor antigens may be present, either incorporated into a fusion polypeptide or as a separate compound, within the composition or vaccine.

A pharmaceutical composition or vaccine may contain DNA encoding one or more of the polypeptides as described above, such that the polypeptide is generated *in situ*. As noted above, the DNA may be present within any of a variety of delivery systems known to those of ordinary skill in the art, including nucleic acid expression systems, bacteria and viral expression systems. Numerous gene delivery techniques are well known in the art, such as those described by Rolland, *Crit. Rev. Therap. Drug Carrier Systems* 15:143-198, 1998, and references cited therein. Appropriate nucleic acid expression systems contain the necessary DNA sequences for expression in the patient (such as a suitable promoter and terminating signal). Bacterial delivery systems involve the administration of a bacterium (such as *Bacillus-Calmette-Guerrin*) that expresses an immunogenic portion of the polypeptide on its cell surface or secretes such an epitope. In a preferred embodiment, the DNA may be introduced using a viral expression system (e.g., vaccinia or other pox virus, retrovirus, or adenovirus), which may involve the use of a non-pathogenic (defective), replication competent virus. Suitable systems are disclosed, for example, in Fisher-Hoch et al., *Proc. Natl. Acad. Sci. USA* 86:317-321, 1989; Flexner et al., *Ann. N.Y. Acad. Sci.* 569:86-103, 1989; Flexner et al., *Vaccine* 8:17-21, 1990; U.S. Patent Nos. 4,603,112, 4,769,330, and 5,017,487; WO 89/01973; U.S. Patent No. 4,777,127; GB 2,200,651; EP 0,345,242; WO 91/02805; Berkner, *Biotechniques* 6:616-627, 1988; Rosenfeld et al., *Science* 252:431-434, 1991; Kolls et al., *Proc. Natl. Acad. Sci. USA* 91:215-219, 1994; Kass-Eisler et al., *Proc. Natl.*

Acad. Sci. USA 90:11498-11502, 1993; Guzman et al., *Circulation* 88:2838-2848, 1993; and Guzman et al., *Cir. Res.* 73:1202-1207, 1993. Techniques for incorporating DNA into such expression systems are well known to those of ordinary skill in the art. The DNA may also be "naked," as described, for example, in Ulmer et al., *Science* 5 259:1745-1749, 1993 and reviewed by Cohen, *Science* 259:1691-1692, 1993. The uptake of naked DNA may be increased by coating the DNA onto biodegradable beads, which are efficiently transported into the cells.

While any suitable carrier known to those of ordinary skill in the art may be employed in the pharmaceutical compositions of this invention, the type of carrier 10 will vary depending on the mode of administration. Compositions of the present invention may be formulated for any appropriate manner of administration, including for example, topical, oral, nasal, intravenous, intracranial, intraperitoneal, subcutaneous or intramuscular administration. For parenteral administration, such as subcutaneous injection, the carrier preferably comprises water, saline, alcohol, a fat, a wax or a buffer. 15 For oral administration, any of the above carriers or a solid carrier, such as mannitol, lactose, starch, magnesium stearate, sodium saccharine, talcum, cellulose, glucose, sucrose, and magnesium carbonate, may be employed. Biodegradable microspheres (*e.g.*, polylactate polyglycolate) may also be employed as carriers for the pharmaceutical compositions of this invention. Suitable biodegradable microspheres 20 are disclosed, for example, in U.S. Patent Nos. 4,897,268 and 5,075,109.

Such compositions may also comprise buffers (*e.g.*, neutral buffered saline or phosphate buffered saline), carbohydrates (*e.g.*, glucose, mannose, sucrose or dextrans), mannitol, proteins, polypeptides or amino acids such as glycine, antioxidants, chelating agents such as EDTA or glutathione, adjuvants (*e.g.*, aluminum hydroxide) 25 and/or preservatives. Alternatively, compositions of the present invention may be formulated as a lyophilizate. Compounds may also be encapsulated within liposomes using well known technology.

Any of a variety of immunostimulants may be employed in the vaccines of this invention. For example, an adjuvant may be included. Most adjuvants contain a 30 substance designed to protect the antigen from rapid catabolism, such as aluminum hydroxide or mineral oil, and a stimulator of immune responses, such as lipid A,

Bordetella pertussis or *Mycobacterium tuberculosis* derived proteins. Suitable adjuvants are commercially available as, for example, Freund's Incomplete Adjuvant and Complete Adjuvant (Difco Laboratories, Detroit, MI); Merck Adjuvant 65 (Merck and Company, Inc., Rahway, NJ); AS-2 (SmithKline Beecham, Philadelphia, PA);
5 aluminum salts such as aluminum hydroxide gel (alum) or aluminum phosphate; salts of calcium, iron or zinc; an insoluble suspension of acylated tyrosine; acylated sugars; cationically or anionically derivatized polysaccharides; polyphosphazenes; biodegradable microspheres; monophosphoryl lipid A and quil A. Cytokines, such as GM-CSF or interleukin-2, -7, or -12, may also be used as adjuvants.

10 Within the vaccines provided herein, the adjuvant composition is preferably designed to induce an immune response predominantly of the Th1 type. High levels of Th1-type cytokines (*e.g.*, IFN- γ , TNF α , IL-2 and IL-12) tend to favor the induction of cell mediated immune responses to an administered antigen. In contrast, high levels of Th2-type cytokines (*e.g.*, IL-4, IL-5, IL-6 and IL-10) tend to favor the
15 induction of humoral immune responses. Following application of a vaccine as provided herein, a patient will support an immune response that includes Th1- and Th2-type responses. Within a preferred embodiment, in which a response is predominantly Th1-type, the level of Th1-type cytokines will increase to a greater extent than the level of Th2-type cytokines. The levels of these cytokines may be readily assessed using
20 standard assays. For a review of the families of cytokines, see Mosmann and Coffman, *Ann. Rev. Immunol.* 7:145-173, 1989.

Preferred adjuvants for use in eliciting a predominantly Th1-type response include, for example, a combination of monophosphoryl lipid A, preferably 3-de-O-acylated monophosphoryl lipid A (3D-MPL), together with an aluminum salt.
25 MPL adjuvants are available from Ribi ImmunoChem Research Inc. (Hamilton, MT) (*see* US Patent Nos. 4,436,727; 4,877,611; 4,866,034 and 4,912,094). CpG-containing oligonucleotides (in which the CpG dinucleotide is unmethylated) also induce a predominantly Th1 response. Such oligonucleotides are well known and are described, for example, in WO 96/02555 and WO 99/33488. Immunostimulatory DNA sequences
30 are also described, for example, by Sato et al., *Science* 273:352, 1996. Another preferred adjuvant is a saponin, preferably QS21 (Aquila Biopharmaceuticals Inc.,

Framingham, MA), which may be used alone or in combination with other adjuvants. For example, an enhanced system involves the combination of a monophosphoryl lipid A and saponin derivative, such as the combination of QS21 and 3D-MPL as described in WO 94/00153, or a less reactogenic composition where the QS21 is quenched with cholesterol, as described in WO 96/33739. Other preferred formulations comprises an oil-in-water emulsion and tocopherol. A particularly potent adjuvant formulation involving QS21, 3D-MPL and tocopherol in an oil-in-water emulsion is described in WO 95/17210.

Other preferred adjuvants include Montanide ISA 720 (Seppic, France), SAF (Chiron, California, United States), ISCOMS (CSL), MF-59 (Chiron), the SBAS series of adjuvants (*e.g.*, SBAS-2 or SBAS-4, available from SmithKline Beecham, Rixensart, Belgium), Detox (Ribi ImmunoChem Research Inc., Hamilton, MT), RC-529 (Ribi ImmunoChem Research Inc., Hamilton, MT) and Aminoalkyl glucosaminide 4-phosphates (AGPs).

Any vaccine provided herein may be prepared using well known methods that result in a combination of antigen, immune response enhancer and a suitable carrier or excipient. The compositions described herein may be administered as part of a sustained release formulation (*i.e.*, a formulation such as a capsule, sponge or gel (composed of polysaccharides, for example) that effects a slow release of compound following administration). Such formulations may generally be prepared using well known technology (*see, e.g.* Coombes et al., *Vaccine* 14:1429-1438, 1996) and administered by, for example, oral, rectal or subcutaneous implantation, or by implantation at the desired target site. Sustained-release formulations may contain a polypeptide, polynucleotide or antibody dispersed in a carrier matrix and/or contained within a reservoir surrounded by a rate controlling membrane.

Carriers for use within such formulations are biocompatible, and may also be biodegradable; preferably the formulation provides a relatively constant level of active component release. Such carriers include microparticles of poly(lactide-co-glycolide), as well as polyacrylate, latex, starch, cellulose and dextran. Other delayed-release carriers include supramolecular biovectors, which comprise a non-liquid hydrophilic core (*e.g.*, a cross-linked polysaccharide or oligosaccharide) and, optionally,

an external layer comprising an amphiphilic compound, such as a phospholipid (*see e.g.*, U.S. Patent No. 5,151,254 and PCT applications WO 94/20078, WO/94/23701 and WO 96/06638). The amount of active compound contained within a sustained release formulation depends upon the site of implantation, the rate and expected duration of release and the nature of the condition to be treated or prevented.

Any of a variety of delivery vehicles may be employed within pharmaceutical compositions and vaccines to facilitate production of an antigen-specific immune response that targets tumor cells. Delivery vehicles include antigen presenting cells (APCs), such as dendritic cells, macrophages, B cells, monocytes and other cells that may be engineered to be efficient APCs. Such cells may, but need not, be genetically modified to increase the capacity for presenting the antigen, to improve activation and/or maintenance of the T cell response, to have anti-tumor effects *per se* and/or to be immunologically compatible with the receiver (*i.e.*, matched HLA haplotype). APCs may generally be isolated from any of a variety of biological fluids and organs, including tumor and peritumoral tissues, and may be autologous, allogeneic, syngeneic or xenogeneic cells.

Certain preferred embodiments of the present invention use dendritic cells or progenitors thereof as antigen-presenting cells. Dendritic cells are highly potent APCs (Banchereau and Steinman, *Nature* 392:245-251, 1998) and have been shown to be effective as a physiological adjuvant for eliciting prophylactic or therapeutic antitumor immunity (*see* Timmerman and Levy, *Ann. Rev. Med.* 50:507-529, 1999). In general, dendritic cells may be identified based on their typical shape (stellate *in situ*, with marked cytoplasmic processes (dendrites) visible *in vitro*), their ability to take up, process and present antigens with high efficiency, and their ability to activate naïve T cell responses. Dendritic cells may, of course, be engineered to express specific cell-surface receptors or ligands that are not commonly found on dendritic cells *in vivo* or *ex vivo*, and such modified dendritic cells are contemplated by the present invention. As an alternative to dendritic cells, secreted vesicles antigen-loaded dendritic cells (called exosomes) may be used within a vaccine (*see* Zitvogel et al., *Nature Med.* 4:594-600, 1998).

Dendritic cells and progenitors may be obtained from peripheral blood,

bone marrow, tumor-infiltrating cells, peritumoral tissues-infiltrating cells, lymph nodes, spleen, skin, umbilical cord blood or any other suitable tissue or fluid. For example, dendritic cells may be differentiated *ex vivo* by adding a combination of cytokines such as GM-CSF, IL-4, IL-13 and/or TNF α to cultures of monocytes
5 harvested from peripheral blood. Alternatively, CD34 positive cells harvested from peripheral blood, umbilical cord blood or bone marrow may be differentiated into dendritic cells by adding to the culture medium combinations of GM-CSF, IL-3, TNF α , CD40 ligand, LPS, flt3 ligand and/or other compound(s) that induce differentiation, maturation and proliferation of dendritic cells.

10 Dendritic cells are conveniently categorized as "immature" and "mature" cells, which allows a simple way to discriminate between two well characterized phenotypes. However, this nomenclature should not be construed to exclude all possible intermediate stages of differentiation. Immature dendritic cells are characterized as APC with a high capacity for antigen uptake and processing, which
15 correlates with the high expression of Fc γ receptor and mannose receptor. The mature phenotype is typically characterized by a lower expression of these markers, but a high expression of cell surface molecules responsible for T cell activation such as class I and class II MHC, adhesion molecules (*e.g.*, CD54 and CD11) and costimulatory molecules (*e.g.*, CD40, CD80, CD86 and 4-1BB).

20 APCs may generally be transfected with a polynucleotide encoding a lung tumor protein (or portion or other variant thereof) such that the lung tumor polypeptide, or an immunogenic portion thereof, is expressed on the cell surface. Such transfection may take place *ex vivo*, and a composition or vaccine comprising such transfected cells may then be used for therapeutic purposes, as described herein.
25 Alternatively, a gene delivery vehicle that targets a dendritic or other antigen presenting cell may be administered to a patient, resulting in transfection that occurs *in vivo*. *In vivo* and *ex vivo* transfection of dendritic cells, for example, may generally be performed using any methods known in the art, such as those described in WO 97/24447, or the gene gun approach described by Mahvi et al., *Immunology and cell*
30 *Biology* 75:456-460, 1997. Antigen loading of dendritic cells may be achieved by incubating dendritic cells or progenitor cells with the lung tumor polypeptide, DNA

(naked or within a plasmid vector) or RNA; or with antigen-expressing recombinant bacterium or viruses (*e.g.*, vaccinia, fowlpox, adenovirus or lentivirus vectors). Prior to loading, the polypeptide may be covalently conjugated to an immunological partner that provides T cell help (*e.g.*, a carrier molecule). Alternatively, a dendritic cell may be pulsed with a non-conjugated immunological partner, separately or in the presence of the polypeptide.

Vaccines and pharmaceutical compositions may be presented in unit-dose or multi-dose containers, such as sealed ampoules or vials. Such containers are preferably hermetically sealed to preserve sterility of the formulation until use. In general, formulations may be stored as suspensions, solutions or emulsions in oily or aqueous vehicles. Alternatively, a vaccine or pharmaceutical composition may be stored in a freeze-dried condition requiring only the addition of a sterile liquid carrier immediately prior to use.

CANCER THERAPY

In further aspects of the present invention, the compositions described herein may be used for immunotherapy of cancer, such as lung cancer. Within such methods, pharmaceutical compositions and vaccines are typically administered to a patient. As used herein, a "patient" refers to any warm-blooded animal, preferably a human. A patient may or may not be afflicted with cancer. Accordingly, the above pharmaceutical compositions and vaccines may be used to prevent the development of a cancer or to treat a patient afflicted with a cancer. A cancer may be diagnosed using criteria generally accepted in the art, including the presence of a malignant tumor. Pharmaceutical compositions and vaccines may be administered either prior to or following surgical removal of primary tumors and/or treatment such as administration of radiotherapy or conventional chemotherapeutic drugs.

Within certain embodiments, immunotherapy may be active immunotherapy, in which treatment relies on the *in vivo* stimulation of the endogenous host immune system to react against tumors with the administration of immune response-modifying agents (such as polypeptides and polynucleotides disclosed herein).

Within other embodiments, immunotherapy may be passive immunotherapy, in which treatment involves the delivery of agents with established tumor-immune reactivity (such as effector cells or antibodies) that can directly or indirectly mediate antitumor effects and does not necessarily depend on an intact host immune system. Examples of effector cells include T cells as discussed above, T lymphocytes (such as CD8⁺ cytotoxic T lymphocytes and CD4⁺ T-helper tumor-infiltrating lymphocytes), killer cells (such as Natural Killer cells and lymphokine-activated killer cells), B cells and antigen-presenting cells (such as dendritic cells and macrophages) expressing a polypeptide provided herein. T cell receptors and antibody receptors specific for the polypeptides recited herein may be cloned, expressed and transferred into other vectors or effector cells for adoptive immunotherapy. The polypeptides provided herein may also be used to generate antibodies or anti-idiotypic antibodies (as described above and in U.S. Patent No. 4,918,164) for passive immunotherapy.

Effector cells may generally be obtained in sufficient quantities for adoptive immunotherapy by growth *in vitro*, as described herein. Culture conditions for expanding single antigen-specific effector cells to several billion in number with retention of antigen recognition *in vivo* are well known in the art. Such *in vitro* culture conditions typically use intermittent stimulation with antigen, often in the presence of cytokines (such as IL-2) and non-dividing feeder cells. As noted above, immunoreactive polypeptides as provided herein may be used to rapidly expand antigen-specific T cell cultures in order to generate a sufficient number of cells for immunotherapy. In particular, antigen-presenting cells, such as dendritic, macrophage, monocyte, fibroblast and/or B cells, may be pulsed with immunoreactive polypeptides or transfected with one or more polynucleotides using standard techniques well known in the art. For example, antigen-presenting cells can be transfected with a polynucleotide having a promoter appropriate for increasing expression in a recombinant virus or other expression system. Cultured effector cells for use in therapy must be able to grow and distribute widely, and to survive long term *in vivo*. Studies have shown that cultured effector cells can be induced to grow *in vivo* and to survive

long term in substantial numbers by repeated stimulation with antigen supplemented with IL-2 (*see*, for example, Cheever et al., *Immunological Reviews* 157:177, 1997).

Alternatively, a vector expressing a polypeptide recited herein may be introduced into antigen presenting cells taken from a patient and clonally propagated *ex vivo* for transplant back into the same patient. Transfected cells may be reintroduced into the patient using any means known in the art, preferably in sterile form by intravenous, intracavitary, intraperitoneal or intratumor administration.

Routes and frequency of administration of the therapeutic compositions disclosed herein, as well as dosage, will vary from individual to individual, and may be readily established using standard techniques. In general, the pharmaceutical compositions and vaccines may be administered by injection (*e.g.*, intracutaneous, intramuscular, intravenous or subcutaneous), intranasally (*e.g.*, by aspiration) or orally. Preferably, between 1 and 10 doses may be administered over a 52 week period. Preferably, 6 doses are administered, at intervals of 1 month, and booster vaccinations may be given periodically thereafter. Alternate protocols may be appropriate for individual patients. A suitable dose is an amount of a compound that, when administered as described above, is capable of promoting an anti-tumor immune response, and is at least 10-50% above the basal (*i.e.*, untreated) level. Such response can be monitored by measuring the anti-tumor antibodies in a patient or by vaccine-dependent generation of cytolytic effector cells capable of killing the patient's tumor cells *in vitro*. Such vaccines should also be capable of causing an immune response that leads to an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial or longer disease-free survival) in vaccinated patients as compared to non-vaccinated patients. In general, for pharmaceutical compositions and vaccines comprising one or more polypeptides, the amount of each polypeptide present in a dose ranges from about 25 μ g to 5 mg per kg of host. Suitable dose sizes will vary with the size of the patient, but will typically range from about 0.1 mL to about 5 mL.

In general, an appropriate dosage and treatment regimen provides the active compound(s) in an amount sufficient to provide therapeutic and/or prophylactic benefit. Such a response can be monitored by establishing an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial, or longer disease-free

survival) in treated patients as compared to non-treated patients. Increases in preexisting immune responses to a lung tumor protein generally correlate with an improved clinical outcome. Such immune responses may generally be evaluated using standard proliferation, cytotoxicity or cytokine assays, which may be performed using
5 samples obtained from a patient before and after treatment.

METHODS FOR DETECTING CANCER

In general, a cancer may be detected in a patient based on the presence of one or more lung tumor proteins and/or polynucleotides encoding such proteins in a
10 biological sample (for example, blood, sera, sputum urine and/or tumor biopsies) obtained from the patient. In other words, such proteins may be used as markers to indicate the presence or absence of a cancer such as lung cancer. In addition, such proteins may be useful for the detection of other cancers. The binding agents provided herein generally permit detection of the level of antigen that binds to the agent in the
15 biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding a tumor protein, which is also indicative of the presence or absence of a cancer. In general, a lung tumor sequence should be present at a level that is at least three fold higher in tumor tissue than in normal tissue

There are a variety of assay formats known to those of ordinary skill in
20 the art for using a binding agent to detect polypeptide markers in a sample. *See, e.g.,* Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, the presence or absence of a cancer in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c)
25 comparing the level of polypeptide with a predetermined cut-off value.

In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the polypeptide from the remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding
30 agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent

that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding agent. Suitable polypeptides for use within such assays include full length lung tumor proteins and portions thereof to which the binding agent binds, as described above.

The solid support may be any material known to those of ordinary skill in the art to which the tumor protein may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass, fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for a suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of a plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about 10 µg, and preferably about 100 ng to about 1 µg, is sufficient to immobilize an adequate amount of binding agent.

Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a functional group, such as a hydroxyl or amino group, on the

binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (*see, e.g.,* Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

In certain embodiments, the assay is a two-antibody sandwich assay. This assay may be performed by first contacting an antibody that has been immobilized on a solid support, commonly the well of a microtiter plate, with the sample, such that polypeptides within the sample are allowed to bind to the immobilized antibody. Unbound sample is then removed from the immobilized polypeptide-antibody complexes and a detection reagent (preferably a second antibody capable of binding to a different site on the polypeptide) containing a reporter group is added. The amount of detection reagent that remains bound to the solid support is then determined using a method appropriate for the specific reporter group.

More specifically, once the antibody is immobilized on the support as described above, the remaining protein binding sites on the support are typically blocked. Any suitable blocking agent known to those of ordinary skill in the art, such as bovine serum albumin or Tween 20™ (Sigma Chemical Co., St. Louis, MO). The immobilized antibody is then incubated with the sample, and polypeptide is allowed to bind to the antibody. The sample may be diluted with a suitable diluent, such as phosphate-buffered saline (PBS) prior to incubation. In general, an appropriate contact time (*i.e.,* incubation time) is a period of time that is sufficient to detect the presence of polypeptide within a sample obtained from an individual with lung cancer. Preferably, the contact time is sufficient to achieve a level of binding that is at least about 95% of that achieved at equilibrium between bound and unbound polypeptide. Those of ordinary skill in the art will recognize that the time necessary to achieve equilibrium may be readily determined by assaying the level of binding that occurs over a period of time. At room temperature, an incubation time of about 30 minutes is generally sufficient.

Unbound sample may then be removed by washing the solid support with an appropriate buffer, such as PBS containing 0.1% Tween 20™. The second

antibody, which contains a reporter group, may then be added to the solid support. Preferred reporter groups include those groups recited above.

The detection reagent is then incubated with the immobilized antibody-polypeptide complex for an amount of time sufficient to detect the bound polypeptide.

5 An appropriate amount of time may generally be determined by assaying the level of binding that occurs over a period of time. Unbound detection reagent is then removed and bound detection reagent is detected using the reporter group. The method employed for detecting the reporter group depends upon the nature of the reporter group. For radioactive groups, scintillation counting or autoradiographic methods are
10 generally appropriate. Spectroscopic methods may be used to detect dyes, luminescent groups and fluorescent groups. Biotin may be detected using avidin, coupled to a different reporter group (commonly a radioactive or fluorescent group or an enzyme). Enzyme reporter groups may generally be detected by the addition of substrate (generally for a specific period of time), followed by spectroscopic or other analysis of
15 the reaction products.

To determine the presence or absence of a cancer, such as lung cancer, the signal detected from the reporter group that remains bound to the solid support is generally compared to a signal that corresponds to a predetermined cut-off value. In one preferred embodiment, the cut-off value for the detection of a cancer is the average
20 mean signal obtained when the immobilized antibody is incubated with samples from patients without the cancer. In general, a sample generating a signal that is three standard deviations above the predetermined cut-off value is considered positive for the cancer. In an alternate preferred embodiment, the cut-off value is determined using a Receiver Operator Curve, according to the method of Sackett et al., *Clinical*
25 *Epidemiology: A Basic Science for Clinical Medicine*, Little Brown and Co., 1985, p. 106-7. Briefly, in this embodiment, the cut-off value may be determined from a plot of pairs of true positive rates (*i.e.*, sensitivity) and false positive rates (100%-specificity) that correspond to each possible cut-off value for the diagnostic test result. The cut-off value on the plot that is the closest to the upper left-hand corner (*i.e.*, the value that
30 encloses the largest area) is the most accurate cut-off value, and a sample generating a signal that is higher than the cut-off value determined by this method may be considered

positive. Alternatively, the cut-off value may be shifted to the left along the plot, to minimize the false positive rate, or to the right, to minimize the false negative rate. In general, a sample generating a signal that is higher than the cut-off value determined by this method is considered positive for a cancer.

5 In a related embodiment, the assay is performed in a flow-through or strip test format, wherein the binding agent is immobilized on a membrane, such as nitrocellulose. In the flow-through test, polypeptides within the sample bind to the immobilized binding agent as the sample passes through the membrane. A second, labeled binding agent then binds to the binding agent-polypeptide complex as a solution
10 containing the second binding agent flows through the membrane. The detection of bound second binding agent may then be performed as described above. In the strip test format, one end of the membrane to which binding agent is bound is immersed in a solution containing the sample. The sample migrates along the membrane through a region containing second binding agent and to the area of immobilized binding agent.
15 Concentration of second binding agent at the area of immobilized antibody indicates the presence of a cancer. Typically, the concentration of second binding agent at that site generates a pattern, such as a line, that can be read visually. The absence of such a pattern indicates a negative result. In general, the amount of binding agent immobilized on the membrane is selected to generate a visually discernible pattern when the
20 biological sample contains a level of polypeptide that would be sufficient to generate a positive signal in the two-antibody sandwich assay, in the format discussed above. Preferred binding agents for use in such assays are antibodies and antigen-binding fragments thereof. Preferably, the amount of antibody immobilized on the membrane ranges from about 25 ng to about 1 μ g, and more preferably from about 50 ng to about
25 500 ng. Such tests can typically be performed with a very small amount of biological sample.

Of course, numerous other assay protocols exist that are suitable for use with the tumor proteins or binding agents of the present invention. The above descriptions are intended to be exemplary only. For example, it will be apparent to
30 those of ordinary skill in the art that the above protocols may be readily modified to use lung tumor polypeptides to detect antibodies that bind to such polypeptides in a

biological sample. The detection of such lung tumor protein specific antibodies may correlate with the presence of a cancer.

A cancer may also, or alternatively, be detected based on the presence of T cells that specifically react with a lung tumor protein in a biological sample. Within certain methods, a biological sample comprising CD4⁺ and/or CD8⁺ T cells isolated from a patient is incubated with a lung tumor polypeptide, a polynucleotide encoding such a polypeptide and/or an APC that expresses at least an immunogenic portion of such a polypeptide, and the presence or absence of specific activation of the T cells is detected. Suitable biological samples include, but are not limited to, isolated T cells. For example, T cells may be isolated from a patient by routine techniques (such as by Ficoll/Hypaque density gradient centrifugation of peripheral blood lymphocytes). T cells may be incubated *in vitro* for 2-9 days (typically 4 days) at 37°C with polypeptide (e.g., 5 - 25 µg/ml). It may be desirable to incubate another aliquot of a T cell sample in the absence of lung tumor polypeptide to serve as a control. For CD4⁺ T cells, activation is preferably detected by evaluating proliferation of the T cells. For CD8⁺ T cells, activation is preferably detected by evaluating cytolytic activity. A level of proliferation that is at least two fold greater and/or a level of cytolytic activity that is at least 20% greater than in disease-free patients indicates the presence of a cancer in the patient.

As noted above, a cancer may also, or alternatively, be detected based on the level of mRNA encoding a lung tumor protein in a biological sample. For example, at least two oligonucleotide primers may be employed in a polymerase chain reaction (PCR) based assay to amplify a portion of a lung tumor cDNA derived from a biological sample, wherein at least one of the oligonucleotide primers is specific for (i.e., hybridizes to) a polynucleotide encoding the lung tumor protein. The amplified cDNA is then separated and detected using techniques well known in the art, such as gel electrophoresis. Similarly, oligonucleotide probes that specifically hybridize to a polynucleotide encoding a lung tumor protein may be used in a hybridization assay to detect the presence of polynucleotide encoding the tumor protein in a biological sample.

To permit hybridization under assay conditions, oligonucleotide primers and probes should comprise an oligonucleotide sequence that has at least about 60%,

preferably at least about 75% and more preferably at least about 90%, identity to a portion of a polynucleotide encoding a lung tumor protein that is at least 10 nucleotides, and preferably at least 20 nucleotides, in length. Preferably, oligonucleotide primers and/or probes will hybridize to a polynucleotide encoding a polypeptide disclosed herein under moderately stringent conditions, as defined above. Oligonucleotide primers and/or probes which may be usefully employed in the diagnostic methods described herein preferably are at least 10-40 nucleotides in length. In a preferred embodiment, the oligonucleotide primers comprise at least 10 contiguous nucleotides, more preferably at least 15 contiguous nucleotides, of a DNA molecule having a sequence recited in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349. Techniques for both PCR based assays and hybridization assays are well known in the art (*see*, for example, Mullis et al., *Cold Spring Harbor Symp. Quant. Biol.*, 51:263, 1987; Erlich ed., *PCR Technology*, Stockton Press, NY, 1989).

One preferred assay employs RT-PCR, in which PCR is applied in conjunction with reverse transcription. Typically, RNA is extracted from a biological sample, such as biopsy tissue, and is reverse transcribed to produce cDNA molecules. PCR amplification using at least one specific primer generates a cDNA molecule, which may be separated and visualized using, for example, gel electrophoresis. Amplification may be performed on biological samples taken from a test patient and from an individual who is not afflicted with a cancer. The amplification reaction may be performed on several dilutions of cDNA spanning two orders of magnitude. A two-fold or greater increase in expression in several dilutions of the test patient sample as compared to the same dilutions of the non-cancerous sample is typically considered positive.

In another embodiment, the disclosed compositions may be used as markers for the progression of cancer. In this embodiment, assays as described above for the diagnosis of a cancer may be performed over time, and the change in the level of reactive polypeptide(s) or polynucleotide evaluated. For example, the assays may be performed every 24-72 hours for a period of 6 months to 1 year, and thereafter performed as needed. In general, a cancer is progressing in those patients in whom the

level of polypeptide or polynucleotide detected increases over time. In contrast, the cancer is not progressing when the level of reactive polypeptide or polynucleotide either remains constant or decreases with time.

Certain *in vivo* diagnostic assays may be performed directly on a tumor.

5 One such assay involves contacting tumor cells with a binding agent. The bound binding agent may then be detected directly or indirectly via a reporter group. Such binding agents may also be used in histological applications. Alternatively, polynucleotide probes may be used within such applications.

As noted above, to improve sensitivity, multiple lung tumor protein
10 markers may be assayed within a given sample. It will be apparent that binding agents specific for different proteins provided herein may be combined within a single assay. Further, multiple primers or probes may be used concurrently. The selection of tumor protein markers may be based on routine experiments to determine combinations that results in optimal sensitivity. In addition, or alternatively, assays for tumor proteins
15 provided herein may be combined with assays for other known tumor antigens.

DIAGNOSTIC KITS

The present invention further provides kits for use within any of the above diagnostic methods. Such kits typically comprise two or more components
20 necessary for performing a diagnostic assay. Components may be compounds, reagents, containers and/or equipment. For example, one container within a kit may contain a monoclonal antibody or fragment thereof that specifically binds to a lung tumor protein. Such antibodies or fragments may be provided attached to a support material, as described above. One or more additional containers may enclose elements,
25 such as reagents or buffers, to be used in the assay. Such kits may also, or alternatively, contain a detection reagent as described above that contains a reporter group suitable for direct or indirect detection of antibody binding.

Alternatively, a kit may be designed to detect the level of mRNA encoding a lung tumor protein in a biological sample. Such kits generally comprise at
30 least one oligonucleotide probe or primer, as described above, that hybridizes to a polynucleotide encoding a lung tumor protein. Such an oligonucleotide may be used,

for example, within a PCR or hybridization assay. Additional components that may be present within such kits include a second oligonucleotide and/or a diagnostic reagent or container to facilitate the detection of a polynucleotide encoding a lung tumor protein.

The following Examples are offered by way of illustration and not by
5 way of limitation.

EXAMPLE 1
ISOLATION AND CHARACTERIZATION OF cDNA SEQUENCES
ENCODING LUNG TUMOR POLYPEPTIDES

5

This example illustrates the isolation of cDNA molecules encoding lung tumor-specific polypeptides from lung tumor cDNA libraries.

A. ISOLATION OF cDNA SEQUENCES FROM A LUNG SQUAMOUS CELL
10 CARCINOMA LIBRARY

A human lung squamous cell carcinoma cDNA expression library was constructed from poly A⁺ RNA from a pool of two patient tissues using a Superscript Plasmid System for cDNA Synthesis and Plasmid Cloning kit (BRL Life Technologies, Gaithersburg, MD) following the manufacturer's protocol. Specifically, lung carcinoma
15 tissues were homogenized with polytron (Kinematica, Switzerland) and total RNA was extracted using Trizol reagent (BRL Life Technologies) as directed by the manufacturer. The poly A⁺ RNA was then purified using an oligo dT cellulose column as described in Sambrook et al., *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989. First-strand cDNA was
20 synthesized using the NotI/Oligo-dT18 primer. Double-stranded cDNA was synthesized, ligated with BstXI/EcoRI adaptors (Invitrogen, San Diego, CA) and digested with NotI. Following size fractionation with cDNA size fractionation columns (BRL Life Technologies), the cDNA was ligated into the BstXI/NotI site of pcDNA3.1 (Invitrogen) and transformed into ElectroMax *E. coli* DH10B cells (BRL Life
25 Technologies) by electroporation.

Using the same procedure, a normal human lung cDNA expression library was prepared from a pool of four tissue specimens. The cDNA libraries were characterized by determining the number of independent colonies, the percentage of clones that carried insert, the average insert size and by sequence analysis. The lung
30 squamous cell carcinoma library contained 2.7×10^6 independent colonies, with 100% of clones having an insert and the average insert size being 2100 base pairs. The normal

lung cDNA library contained 1.4×10^6 independent colonies, with 90% of clones having inserts and the average insert size being 1800 base pairs. For both libraries, sequence analysis showed that the majority of clones had a full length cDNA sequence and were synthesized from mRNA

5 cDNA library subtraction was performed using the above lung squamous cell carcinoma and normal lung cDNA libraries, as described by Hara *et al.* (*Blood*, 84:189-199, 1994) with some modifications. Specifically, a lung squamous cell carcinoma-specific subtracted cDNA library was generated as follows. Normal tissue cDNA library (80 μ g) was digested with BamHI and XhoI, followed by a filling-in
10 reaction with DNA polymerase Klenow fragment. After phenol-chloroform extraction and ethanol precipitation, the DNA was dissolved in 133 μ l of H₂O, heat-denatured and mixed with 133 μ l (133 μ g) of Photoprobe biotin (Vector Laboratories, Burlingame, CA). As recommended by the manufacturer, the resulting mixture was irradiated with a 270 W sunlamp on ice for 20 minutes. Additional Photoprobe biotin (67 μ l) was added
15 and the biotinylation reaction was repeated. After extraction with butanol five times, the DNA was ethanol-precipitated and dissolved in 23 μ l H₂O to form the driver DNA.

To form the tracer DNA, 10 μ g lung squamous cell carcinoma cDNA library was digested with NotI and SpeI, phenol chloroform extracted and passed through Chroma spin-400 columns (Clontech, Palo Alto, CA). Typically, 5 μ g of
20 cDNA was recovered after the sizing column. Following ethanol precipitation, the tracer DNA was dissolved in 5 μ l H₂O. Tracer DNA was mixed with 15 μ l driver DNA and 20 μ l of 2 x hybridization buffer (1.5 M NaCl/10 mM EDTA/50 mM HEPES pH 7.5/0.2% sodium dodecyl sulfate), overlaid with mineral oil, and heat-denatured completely. The sample was immediately transferred into a 68 °C water bath and
25 incubated for 20 hours (long hybridization [LH]). The reaction mixture was then subjected to a streptavidin treatment followed by phenol/chloroform extraction. This process was repeated three more times. Subtracted DNA was precipitated, dissolved in 12 μ l H₂O, mixed with 8 μ l driver DNA and 20 μ l of 2 x hybridization buffer, and subjected to a hybridization at 68 °C for 2 hours (short hybridization [SH]). After
30 removal of biotinylated double-stranded DNA, subtracted cDNA was ligated into NotI/SpeI site of chloramphenicol resistant pBCSK⁺ (Stratagene, La Jolla, CA) and

transformed into ElectroMax *E. coli* DH10B cells by electroporation to generate a lung squamous cell carcinoma specific subtracted cDNA library (herein after referred to as "lung subtraction I").

A second lung squamous cell carcinoma specific subtracted cDNA library (referred to as "lung subtraction II") was generated in a similar way to the lung subtraction library I, except that eight frequently recovered genes from lung subtraction I were included in the driver DNA, and 24,000 independent clones were recovered.

To analyze the subtracted cDNA libraries, plasmid DNA was prepared from 320 independent clones, randomly picked from the subtracted lung squamous cell carcinoma specific libraries. Representative cDNA clones were further characterized by DNA sequencing with a Perkin Elmer/Applied Biosystems Division Automated Sequencer Model 373A and/or Model 377 (Foster City, CA). The cDNA sequences for sixty isolated clones are provided in SEQ ID NO: 1-60. These sequences were compared to known sequences in the gene bank using the EMBL and GenBank databases (release 96). No significant homologies were found to the sequences provided in SEQ ID NO: 2, 3, 19, 38 and 46. The sequences of SEQ ID NO: 1, 6-8, 10-13, 15, 17, 18, 20-27, 29, 30, 32, 34-37, 39-45, 47-49, 51, 52, 54, 55 and 57-59 were found to show some homology to previously identified expressed sequence tags (ESTs). The sequences of SEQ ID NO: 9, 28, 31 and 33 were found to show some homology to previously identified non-human gene sequences and the sequences of SEQ ID NO: 4, 5, 14, 50, 53, 56 and 60 were found to show some homology to gene sequences previously identified in humans.

The subtraction procedure described above was repeated using the above lung squamous cell carcinoma cDNA library as the tracer DNA, and the above normal lung tissue cDNA library and a cDNA library from normal liver and heart (constructed from a pool of one sample of each tissue as described above), plus twenty other cDNA clones that were frequently recovered in lung subtractions I and II, as the driver DNA (lung subtraction III). The normal liver and heart cDNA library contained 1.76×10^6 independent colonies, with 100% of clones having inserts and the average insert size being 1600 base pairs. Ten additional clones were isolated (SEQ ID NO: 61-70). Comparison of these cDNA sequences with those in the gene bank as described above,

revealed no significant homologies to the sequences provided in SEQ ID NO: 62 and 67. The sequences of SEQ ID NO: 61, 63-66, 68 and 69 were found to show some homology to previously isolated ESTs and the sequence provided in SEQ ID NO: 70 was found to show some homology to a previously identified rat gene.

5 In further studies, the subtraction procedure described above was repeated using the above lung squamous cell carcinoma cDNA library as the tracer DNA, and a cDNA library from a pool of normal lung, kidney, colon, pancreas, brain, resting PBMC, heart, skin and esophagus as the driver DNA, with esophagus cDNAs making up one third of the driver material. Since esophagus is enriched in normal
10 epithelial cells, including differentiated squamous cells, this procedure is likely to enrich genes that are tumor specific rather than tissues specific. The cDNA sequences of 48 clones determined in this subtraction are provided in SEQ ID NO: 177-224. The sequences of SEQ ID NO: 177, 178, 180, 181, 183, 187, 192, 195-197, 208, 211, 212, 215, 216, 218 and 219 showed some homology to previously identified genes. The
15 sequences of SEQ ID NO: 179, 182, 184-186, 188-191, 193, 194, 198-207, 209 210, 213, 214, 217, 220 and 224 showed some homology to previously determined ESTs. The sequence of SEQ ID NO: 221-223 showed no homology to any previously determined sequence.

20 B. ISOLATION OF cDNA SEQUENCES FROM A LUNG ADENOCARCINOMA LIBRARY

A human lung adenocarcinoma cDNA expression library was constructed as described above. The library contained 3.2×10^6 independent colonies, with 100% of clones having an insert and the average insert size being 1500 base pairs.
25 Library subtraction was performed as described above using the normal lung and normal liver and heart cDNA expression libraries described above as the driver DNA. Twenty-six hundred independent clones were recovered.

Initial cDNA sequence analysis from 100 independent clones revealed many ribosomal protein genes. The cDNA sequences for fifteen clones isolated in this
30 subtraction are provided in SEQ ID NO: 71-86. Comparison of these sequences with those in the gene bank as described above revealed no significant homologies to the

sequence provided in SEQ ID NO: 84. The sequences of SEQ ID NO: 71, 73, 74, 77, 78 and 80-82 were found to show some homology to previously isolated ESTs, and the sequences of SEQ ID NO: 72, 75, 76, 79, 83 and 85 were found to show some homology to previously identified human genes.

5 In further studies, a cDNA library (referred to as mets3616A) was constructed from a metastatic lung adenocarcinoma. The determined cDNA sequences of 25 clones sequenced at random from this library are provided in SEQ ID NO: 255-279. The mets3616A cDNA library was subtracted against a cDNA library prepared from a pool of normal lung, liver, pancreas, skin, kidney, brain and resting PBMC. To
10 increase the specificity of the subtraction, the driver was spiked with genes that were determined to be most abundant in the mets3616A cDNA library, such as EF1-alpha, integrin-beta and anticoagulant protein PP4, as well as with cDNAs that were previously found to be differentially expressed in subtracted lung adenocarcinoma cDNA libraries. The determined cDNA sequences of 51 clones isolated from the
15 subtracted library (referred to as mets3616A-S1) are provided in SEQ ID NO: 280-330.

Comparison of the sequences of SEQ ID NO: 255-330 with those in the public databases revealed no significant homologies to the sequences of SEQ ID NO: 255-258, 260, 262-264, 270, 272, 275, 276, 279, 281, 287, 291, 296, 300 and 310. The sequences of SEQ ID NO: 259, 261, 265-269, 271, 273, 274, 277, 278, 282-285, 288-
20 290, 292, 294, 297-299, 301, 303-309, 313, 314, 316, 320-324 and 326-330 showed some homology to previously identified gene sequences, while the sequences of SEQ ID NO: 280, 286, 293, 302, 310, 312, 315, 317-319 and 325 showed some homology to previously isolated expressed sequence tags (ESTs).

25

EXAMPLE 2

DETERMINATION OF TISSUE SPECIFICITY OF LUNG TUMOR POLYPEPTIDES

Using gene specific primers, mRNA expression levels for seven
30 representative lung tumor polypeptides described in Example 1 were examined in a variety of normal and tumor tissues using RT-PCR.

Briefly, total RNA was extracted from a variety of normal and tumor tissues using Trizol reagent as described above. First strand synthesis was carried out using 2 μ g of total RNA with SuperScript II reverse transcriptase (BRL Life Technologies) at 42 °C for one hour. The cDNA was then amplified by PCR with gene-specific primers. To ensure the semi-quantitative nature of the RT-PCR, β -actin was used as an internal control for each of the tissues examined. 1 μ l of 1:30 dilution of cDNA was employed to enable the linear range amplification of the β -actin template and was sensitive enough to reflect the differences in the initial copy numbers. Using these conditions, the β -actin levels were determined for each reverse transcription reaction from each tissue. DNA contamination was minimized by DNase treatment and by assuring a negative PCR result when using first strand cDNA that was prepared without adding reverse transcriptase.

mRNA Expression levels were examined in five different types of tumor tissue (lung squamous cell carcinoma from 3 patients, lung adenocarcinoma, colon tumor from 2 patients, breast tumor and prostate tumor), and thirteen different normal tissues (lung from 4 donors, prostate, brain, kidney, liver, ovary, skeletal muscle, skin, small intestine, stomach, myocardium, retina and testes). Using a 10-fold amount of cDNA, the antigen LST-S1-90 (SEQ ID NO: 3) was found to be expressed at high levels in lung squamous cell carcinoma and in breast tumor, and at low to undetectable levels in the other tissues examined.

The antigen LST-S2-68 (SEQ ID NO: 15) appears to be specific to lung and breast tumor, however, expression was also detected in normal kidney. Antigens LST-S1-169 (SEQ ID NO: 6) and LST-S1-133 (SEQ ID NO: 5) appear to be very abundant in lung tissues (both normal and tumor), with the expression of these two genes being decreased in most of the normal tissues tested. Both LST-S1-169 and LST-S1-133 were also expressed in breast and colon tumors. Antigens LST-S1-6 (SEQ ID NO: 7) and LST-S2-I2-5F (SEQ ID NO: 47) did not show tumor or tissue specific expression, with the expression of LST-S1-28 being rare and only detectable in a few tissues. The antigen LST-S3-7 (SEQ ID NO: 63) showed lung and breast tumor specific expression, with its message only being detected in normal testes when the PCR was performed for 30 cycles. Lower level expression was detected in some

normal tissues when the cycle number was increased to 35. Antigen LST-S3-13 (SEQ ID NO: 66) was found to be expressed in 3 out of 4 lung tumors, one breast tumor and both colon tumor samples. Its expression in normal tissues was lower compared to tumors, and was only detected in 1 out of 4 normal lung tissues and in normal tissues from kidney, ovary and retina. Expression of antigens LST-S3-4 (SEQ ID NO: 62) and LST-S3-14 (SEQ ID NO: 67) was rare and did not show any tissue or tumor specificity. Consistent with Northern blot analyses, the RT-PCT results on antigen LAT-S1-A-10A (SEQ ID NO: 78) suggested that its expression is high in lung, colon, stomach and small intestine tissues, including lung and colon tumors, whereas its expression was low or undetectable in other tissues.

A total of 2002 cDNA fragments isolated in lung subtractions I, II and III, described above, were colony PCR amplified and their mRNA expression levels in lung tumor, normal lung, and various other normal and tumor tissues were determined using microarray technology (Synteni, Palo Alto, CA). Briefly, the PCR amplification products were dotted onto slides in an array format, with each product occupying a unique location in the array. mRNA was extracted from the tissue sample to be tested, reverse transcribed, and fluorescent-labeled cDNA probes were generated. The microarrays were probed with the labeled cDNA probes, the slides scanned and fluorescence intensity was measured. This intensity correlates with the hybridization intensity. Seventeen non-redundant cDNA clones showed over-expression in lung squamous tumors, with expression in normal tissues tested (lung, skin, lymph node, colon, liver, pancreas, breast, heart, bone marrow, large intestine, kidney, stomach, brain, small intestine, bladder and salivary gland) being either undetectable, or 10-fold less compared to lung squamous tumors. The determined partial cDNA sequences for the clone L513S are provided in SEQ ID NO: 87 and 88; those for L514S are provided in SEQ ID NO: 89 and 90; those for L516S in SEQ ID NO: 91 and 92; that for L517S in SEQ ID NO: 93; that for L519S in SEQ ID NO: 94; those for L520S in SEQ ID NO: 95 and 96; those for L521S in SEQ ID NO: 97 and 98; that for L522S in SEQ ID NO: 99; that for L523S in SEQ ID NO: 100; that for L524S in SEQ ID NO: 101; that for L525S in SEQ ID NO: 102; that for L526S in SEQ ID NO: 103; that for L527S in SEQ ID NO: 104; that for L528S in SEQ ID NO: 105; that for L529S in SEQ ID NO: 106;

and those for L530S in SEQ ID NO: 107 and 108. Additionally, the full-length cDNA sequence for L530S is provided in SEQ ID NO: 151, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 152. L530S shows homology to a splice variant of a p53 tumor suppressor homologue, p63. The cDNA sequences of 7 known isoforms of p63 are provided in SEQ ID NO: 331-337, with the corresponding predicted amino acid sequences being provided in SEQ ID NO: 338-344, respectively.

Due to polymorphisms, the clone L531S appears to have two forms. A first determined full-length cDNA sequence for L531S is provided in SEQ ID NO: 109, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 110. A second determined full-length cDNA sequence for L531S is provided in SEQ ID NO: 111, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 112. The sequence of SEQ ID NO: 111 is identical to that of SEQ ID NO: 109, except that it contains a 27 bp insertion. Similarly, L514S also has two alternatively spliced forms; the first variant cDNA is listed as SEQ ID NO: 153, with the corresponding amino acid sequence being provided in SEQ ID NO: 155. The second variant form of L514S full-length cDNA is provided in SEQ ID NO: 154, with its corresponding amino acid sequence being provided in SEQ ID NO: 156.

Full length cloning for L524S (SEQ ID NO: 101) yielded two variants (SEQ ID NO: 163 and 164) with the corresponding predicted amino acid sequences of SEQ ID NO: 165 and 166, respectively. Both variants have been shown to encode parathyroid hormone-related peptide.

Attempts to isolate the full-length cDNA for L519S, resulted in the isolation of the extended cDNA sequence provided in SEQ ID NO: 173, which contains a potential open reading frame. The predicted amino acid sequence encoded by the sequence of SEQ ID NO: 173 is provided in SEQ ID NO: 174. Additionally, the full-length cDNA sequence for the clone of SEQ ID NO: 100 (known as L523S), a known gene, is provided in SEQ ID NO: 175, with the corresponding predicted amino acid sequence provided in SEQ ID NO: 176. In further studies, a full-length cDNA sequence for L523S was isolated from a L523S-positive tumor cDNA library by PCR amplification using gene specific primers designed from the sequence of SEQ ID NO: 175. The determined cDNA sequence is provided in SEQ ID NO: **. The amino acid

sequence encoded by this sequence is provided in SEQ ID NO: **. This protein sequence differs from the previously published protein sequence at two amino acid positions, namely at positions 158 and 410.

Comparison of the sequences of L514S and L531S (SEQ ID NO: 87 and 88, 89 and 90, and 109, respectively) with those in the gene bank, as described above, revealed no significant homologies to known sequences. The sequences of L513S, L516S, L517S, L519S, L520S and L530S (SEQ ID NO: 87 and 88, 91 and 92, 93, 94, 95 and 96, 107 and 108, respectively) were found to show some homology to previously identified ESTs. The sequences of L521S, L522S, L523S, L524S, L525S, L526S, L527S, L528S and L529S (SEQ ID NO: 97 and 98, 99, 99, 101, 102, 103, 104, 105, and 106, respectively) were found to represent known genes. The determined full-length cDNA sequences for L520S is provided in SEQ ID NO: 113, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 114. Subsequent microarray analysis has shown L520S to be overexpressed in breast tumors in addition to lung squamous tumors.

Further analysis has demonstrated that L529S (SEQ ID NO: 106 and 115), L525S (SEQ ID NO: 102 and 120) and L527S (SEQ ID NO: 104) are cytoskeletal components and potentially squamous cell specific proteins. L529S is connexin 26, a gap junction protein. It is highly expressed in lung squamous tumor 9688T, and moderately over-expressed in two others. However, lower level expression of connexin 26 is also detectable in normal skin, colon, liver and stomach. The over-expression of connexin 26 in some breast tumors has been reported and a mutated form of L529S may result in over-expression in lung tumors. L525S is plakophilin 1, a desmosomal protein found in plaque-bearing adhering junctions of the skin. Expression levels for L525S mRNA is highly elevated in three out of four lung squamous tumors tested, and in normal skin. L527S has been identified as keratin 6 isoform, type II 58 Kd keratin, and cytokeratin 13 and shows over-expression in squamous tumors and low expression in normal skin, breast and colon tissues. Notably, keratin and keratin-related genes have been extensively documented as potential markers for lung cancer including CYFRA2.1 (Pastor, A., et al, *Eur. Respir. J.*, 10:603-609, 1997). L513S (SEQ ID NO: 87 and 88)

shows moderate over-expression in several tumor tissues tested, and encodes a protein that was first isolated as a pemphigus vulgaris antigen.

L520S (SEQ ID NO: 95 and 96) and L521S (SEQ ID NO: 97 and 98) are highly expressed in lung squamous tumors, and L520S is up-regulated in normal salivary gland and L521S is over-expressed in normal skin. Both belong to a family of small proline rich proteins and represent markers for fully differentiated squamous cells. L521S has been described as a specific marker for lung squamous tumor (Hu, R., et al, *Lung Cancer*, 20:25-30, 1998). L515S (SEQ ID NO: 162) encodes IGF- β 2 and L516S is an aldose reductase homologue and both are moderately expressed in lung squamous tumors and in normal colon. Notably, L516S (SEQ ID NO: 91 and 92) is up-regulated in metastatic tumors but not primary lung adenocarcinoma, an indication of its potential role in metatasis and a potential prognostic marker. L522S (SEQ ID NO: 99) is moderately over-expressed in lung squamous tumors with minimum expression in normal tissues. L522S has been shown to belong to a class IV alcohol dehydrogenase, ADH7, and its expression profile suggests it is a squamous cell specific antigen. L523S (SEQ ID NO: 100) is moderately over-expressed in lung squamous tumor, human pancreatic cancer cell lines and pancreatic cancer tissues, suggesting this gene may be a shared antigen between pancreatic and lung squamous cell cancer.

L524S (SEQ ID NO: 101) is over-expressed in the majority of squamous tumors tested and is homologous with parathyroid hormone-related peptide (PTHrP), which is best known to cause humoral hypercalcaemia associated with malignant tumors such as leukemia, prostate and breast cancer. It is also believed that PTHrP is most commonly associated with squamous carcinoma of lung and rarely with lung adenocarcinoma (Davidson, L.A., et al, *J. Pathol.*, 178: 398-401, 1996). L528S (SEQ ID NO: 105) is highly over-expressed in two lung squamous tumors with moderate expression in two other squamous tumors, one lung adenocarcinoma and some normal tissues, including skin, lymph nodes, heart, stomach and lung. It encodes the NMB gene that is similar to the precursor of melanocyte specific gene Pmel17, wfhich is reported to be preferentially expressed in low-metastatic potential melanoma cell lines. This suggests that L528S may be a shared antigen in both melanoma and lung squamous cell carcinoma. L526S (SEQ ID NO: 103) is overexpressed in all lung

squamous cell tumor tissues tested and has been shown to share homology with a gene (ATM) in which a mutation causes ataxia telangiectasia, a genetic disorder in humans causing a predisposition to cancer, among other symptoms. ATM encodes a protein that activates p53 mediated cell-cycle checkpoint through direct binding and phosphorylation of the p53 molecule. Approximately 40% of lung cancer is associated with p53 mutations, and it is speculated that over-expression of ATM is a result of compensation for loss of p53 function, but it is unknown whether over-expression is the cause of result of lung squamous cell carcinoma. Additionally, expression of L526S (ATM) is also detected in a metastatic but not lung adenocarcinoma, suggesting a role in metastasis.

Expression of L523S (SEQ ID NO: 175), was also examined by real time RT-PCR as described above. In a first study using a panel of lung squamous tumors, L523S was found to be expressed in 4/7 lung squamous tumors, 2/3 head and neck squamous tumors and 2/2 lung adenocarcinomas, with low level expression being observed in skeletal muscle, soft palate and tonsil. In a second study using a lung adenocarcinoma panel, expression of L523S was observed in 4/9 primary adenocarcinomas, 2/2 lung pleural effusions, 1/1 metastatic lung adenocarcinomas and 2/2 lung squamous tumors, with little expression being observed in normal tissues.

Expression of L523S in lung tumors and various normal tissues was also examined by Northern blot analysis, using standard techniques. In a first study, L523S was found to be expressed in a number of lung adenocarcinomas and squamous cell carcinomas, as well as normal tonsil. No expression was observed in normal lung. In a second study using a normal tissue blot (HB-12) from Clontech, no expression was observed in brain, skeletal muscle, colon, thymus, spleen, kidney, liver, small intestine, lung or PBMC, although there was strong expression in placenta.

EXAMPLE 3

ISOLATION AND CHARACTERIZATION OF LUNG TUMOR POLYPEPTIDES BY PCR-BASED SUBTRACTION

Eight hundred and fifty seven clones from a cDNA subtraction library, containing cDNA from a pool of two human lung squamous tumors subtracted against eight normal human tissue cDNAs including lung, PBMC, brain, heart, kidney, liver, pancreas, and skin, (Clontech, Palo Alto, CA) were derived and submitted to a first
5 round of PCR amplification. This library was subjected to a second round of PCR amplification, following the manufacturer's protocol. The resulting cDNA fragments were subcloned into the vector P7- Adv vector (Clontech, Palo Alto, CA) and transformed into DH5 α *E. coli* (Gibco, BRL). DNA was isolated from independent clones and sequenced using a Perkin Elmer/Applied Biosystems Division Automated
10 Sequencer Model 373A.

One hundred and sixty two positive clones were sequenced. Comparison of the DNA sequences of these clones with those in the the EMBL and GenBank databases, as described above, revealed no significant homologies to 13 of these clones, hereinafter referred to as Contigs 13, 16, 17, 19, 22, 24, 29, 47, 49, 56-59. The
15 determined cDNA sequences for these clones are provided in SEQ ID NO: 125, 127-129, 131-133, 142, 144, 148-150, and 157, respectively. Contigs 1, 3-5, 7-10, 12, 11, 15, 20, 31, 33, 38, 39, 41, 43, 44, 45, 48, 50, 53, 54 (SEQ ID NO: 115-124, 126, 130, 134-141, 143, 145-147, respectively) were found to show some degree of homology to previously identified DNA sequences. Contig 57 (SEQ ID NO: 149) was found to
20 represent the clone L519S (SEQ ID NO: 94) disclosed in US. Patent Application No. 09/123,912, filed July 27, 1998. To the best of the inventors' knowledge, none of these sequences have been previously shown to be differentially over-expressed in lung tumors.

mRNA expression levels for representative clones in lung tumor tissues,
25 normal lung tissues (n=4), resting PBMC, salivary gland, heart, stomach, lymph nodes, skeletal muscle, soft palate, small intestine, large intestine, bronchial, bladder, tonsil, kidney, esophagus, bone marrow, colon, adrenal gland, pancreas, and skin, (all derived from human) were determined by RT-PCR as described above. Expression levels using microarray technology, as described above, were examined in one sample of each tissue
30 type unless otherwise indicated.

Contig 3 (SEQ ID NO: 116) was found to be highly expressed in all head and neck squamous cell tumors tested (17/17), and expressed in the majority (8/12) of lung squamous tumors, (high expression in 7/12, moderate in 2/12, and low in 2/12), while showing negative expression for 2/4 normal lung tissues and low expression in the remaining two samples. Contig 3 showed moderate expression in skin and soft palate, and lowered expression levels in resting PBMC, large intestine, salivary gland, tonsil, pancreas, esophagus, and colon. Contig 11 (SEQ ID NO: 124) was found to be expressed in all head and neck squamous cell tumors tested (17/17): highly expressed in 14/17, and moderately expressed in 3/17. Additionally, expression in lung squamous tumors showed high expression in 3/12 and moderate in 4/12. Contig 11 was negative for 3/4 normal lung samples, with the remaining sample having only low expression. Contig 11 showed low to moderate reactivity to salivary gland, soft palate, bladder, tonsil, skin, esophagus, and large intestine. Contig 13 (SEQ ID NO: 125) was found to be expressed in all head and neck squamous cell tumors tested (17/17): highly expressed in 12/17, and moderately expressed in 5/17. Contig 13 was expressed in 7/12 lung squamous tumors, with high expression in 4/12 and moderate expression in three samples. Analysis of normal lung samples showed negative expression for 2/4 and low to moderate expression in the remaining two samples. Contig 13 did show low to moderate reactivity to resting PBMC, salivary gland, bladder, pancreas, tonsil, skin, esophagus, and large intestine, as well as high expression in soft palate. Contig 16 (SEQ ID NO: 127) was found to be moderately expressed in some head and neck squamous cell tumors (6/17) and one lung squamous tumor; while showing no expression in any normal lung samples tested. Contig 16 did show low reactivity to resting PBMC, large intestine, skin, salivary gland, and soft palate. Contig 17 (SEQ ID NO: 128) was shown to be expressed in all head and neck squamous cell tumors tested (17/17): highly expressed in 5/17, and moderately expressed in 12/17. Expression levels in lung squamous tumors showed one tumor sample with high expression and 3/12 with moderate levels. Contig 17 was negative for 2/4 normal lung samples, with the remaining samples having only low expression. Additionally, low level expression was found in esophagus and soft palate. Contig 19 (SEQ ID NO: 129) was found to be expressed in most head and neck squamous cell tumors tested (11/17); with two

samples having high levels, 6/17 showing moderate expression, and low expression being found in 3/17. Testing in lung squamous tumors revealed only moderate expression in 3/12 samples. Expression levels in 2/4 of normal lung samples were negative, the two other samples having only low expression. Contig 19 showed low expression levels in esophagus, resting PBMC, salivary gland, bladder, soft palate and pancreas.

Contig 22 (SEQ ID NO: 131), was shown to be expressed in most head and neck squamous cell tumors tested (13/17) with high expression in four of these samples, moderate expression in 6/17, and low expression in 3/17. Expression levels in lung squamous tumors were found to be moderate to high for 3/12 tissues tested, with negative expression in two normal lung samples and low expression in two other samples (n=4). Contig 22 showed low expression in skin, salivary gland and soft palate. Similarly, Contig 24 (SEQ ID NO: 132) was found to be expressed in most head and neck squamous cell tumors tested (13/17) with high expression in three of these samples, moderate expression in 6/17, and low expression in 4/17. Expression levels in lung squamous tumors were found to be moderate to high for 3/12 tissues tested, with negative expression for three normal lung samples and low expression in one sample (n=4). Contig 24 showed low expression in skin, salivary gland and soft palate. Contig 29 (SEQ ID NO: 133) was expressed in nearly all head and neck squamous cell tumors tested (16/17): highly expressed in 4/17, moderately expressed in 11/17, with low expression in one sample. Also, it was moderately expressed in 3/12 lung squamous tumors, while being negative for 2/4 normal lung samples. Contig 29 showed low to moderate expression in large intestine, skin, salivary gland, pancreas, tonsil, heart and soft palate. Contig 47 (SEQ ID NO: 142) was expressed in most head and neck squamous cell tumors tested (12/17): moderate expression in 10/17, and low expression in two samples. In lung squamous tumors, it was highly expressed in one sample and moderately expressed in two others (n=13). Contig 47 was negative for 2/4 normal lung samples, with the remaining two samples having moderate expression. Also, Contig 47 showed moderate expression in large intestine, and pancreas, and low expression in skin, salivary gland, soft palate, stomach, bladder, resting PBMC, and tonsil.

Contig 48 (SEQ ID NO: 143) was expressed in all head and neck squamous cell tumors tested (17/17): highly expressed in 8/17 and moderately expressed in 7/17, with low expression in two samples. Expression levels in lung squamous tumors were high to moderate in three samples (n=13). Contig 48 was negative for one out of four normal lung samples, the remaining showing low or moderate expression. Contig 48 showed moderate expression in soft palate, large intestine, pancreas, and bladder, and low expression in esophagus, salivary gland, resting PBMC, and heart. Contig 49 (SEQ ID NO: 144) was expressed at low to moderate levels in 6/17 head and neck squamous cell tumors tested. Expression levels in lung squamous tumors were moderate in three samples (n=13). Contig 49 was negative for 2/4 normal lung samples, the remaining samples showing low expression. Moderate expression levels in skin, salivary gland, large intestine, pancreas, bladder and resting PBMC were shown, as well as low expression in soft palate, lymph nodes, and tonsil. Contig 56 (SEQ ID NO: 148) was expressed in low to moderate levels in 3/17 head and neck squamous cell tumors tested, and in lung squamous tumors, showing low to moderate levels in three out of thirteen samples. Notably, low expression levels were detected in one adenocarcinoma lung tumor sample (n=2). Contig 56 was negative for 3/4 normal lung samples, and showed moderate expression levels in only large intestine, and low expression in salivary gland, soft palate, pancreas, bladder, and resting PBMC. Contig 58, also known as L769P, (SEQ ID NO: 150) was expressed at moderate levels in 11/17 head and neck squamous cell tumors tested and low expression in one additional sample. Expression in lung squamous tumors showed low to moderate levels in three out of thirteen samples. Contig 58 was negative for 3/4 normal lung samples, with one sample having low expression. Moderate expression levels in skin, large intestine, and resting PBMC were demonstrated, as well as low expression in salivary gland, soft palate, pancreas, and bladder. Contig 59 (SEQ ID NO: 157) was expressed in some head, neck, and lung squamous tumors. Low level expression of Contig 59 was also detected in salivary gland and large intestine.

The full-length cDNA sequence for Contig 22, also referred to as L763P, is provided in SEQ ID NO: 158, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 159. Real-time RT-PCR analysis of L763P revealed

that it is highly expressed in 3/4 lung squamous tumors as well as 4/4 head and neck squamous tumors, with low level expression being observed in normal brain, skin, soft pallet and trachea. Subsequent database searches revealed that the sequence of SEQ ID NO: 158 contains a mutation, resulting in a frameshift in the corresponding protein sequence. A second cDNA sequence for L763P is provided in SEQ ID NO: 345, with the corresponding amino acid sequence being provided in SEQ ID NO: 346. The sequences of SEQ ID NO: 159 and 346 are identical with the exception of the C-terminal 33 amino acids of SEQ ID NO: 159.

The full-length cDNA sequence incorporating Contigs 17, 19, and 24, referred to as L762P, is provided in SEQ ID NO: 160, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 161. Further analysis of L762P has determined it to be a type I membrane protein and two additional variants have been sequenced. Variant 1 (SEQ ID NO: 167, with the corresponding amino acid sequence in SEQ ID NO: 169) is an alternatively spliced form of SEQ ID NO: 160 resulting in deletion of 503 nucleotides, as well as deletion of a short segment of the expressed protein. Variant 2 (SEQ ID NO: 168, with the corresponding amino acid sequence in SEQ ID NO: 170) has a two nucleotide deletion at the 3' coding region in comparison to SEQ ID NO: 160, resulting in a secreted form of the expressed protein. Real-time RT-PCR analysis of L762P revealed that is over-expressed in 3/4 lung squamous tumors and 4/4 head & neck tumors, with low level expression being observed in normal skin, soft pallet and trachea.

The full-length cDNA sequence for contig 56 (SEQ ID NO: 148), also referred to as L773P, is provided in SEQ ID NO: 171, with the predicted amino acid sequence in SEQ ID NO: 172. L773P was found to be identical to dihydroxyl dehydrogenase at the 3' portion of the gene, with divergent 5' sequence. As a result, the 69 N-terminal amino acids are unique. The cDNA sequence encoding the 69 N-terminal amino acids is provided in SEQ ID NO: 349, with the N-terminal amino acid sequence being provided in SEQ ID NO: 350. Real-time PCR revealed that L773P is highly expressed in lung squamous tumor and lung adenocarcinoma, with no detectable expression in normal tissues. Subsequent Northern blot analysis of L773P demonstrated that this transcript is differentially over-expressed in squamous tumors

and detected at approximately 1.6 Kb in primary lung tumor tissue and approximately 1.3 Kb in primary head and neck tumor tissue.

Subsequent microarray analysis has shown Contig 58, also referred to as L769S (SEQ ID NO: 150), to be overexpressed in breast tumors in addition to lung squamous tumors.

EXAMPLE 4 SYNTHESIS OF POLYPEPTIDES

Polypeptides may be synthesized on a Perkin Elmer/Applied Biosystems Division 430A peptide synthesizer using Fmoc chemistry with HPTU (O-Benzotriazole-N,N,N',N'-tetramethyluronium hexafluorophosphate) activation. A Gly-Cys-Gly sequence may be attached to the amino terminus of the peptide to provide a method of conjugation, binding to an immobilized surface, or labeling of the peptide. Cleavage of the peptides from the solid support may be carried out using the following cleavage mixture: trifluoroacetic acid:ethanedithiol:thioanisole:water:phenol (40:1:2:2:3). After cleaving for 2 hours, the peptides may be precipitated in cold methyl-t-butyl-ether. The peptide pellets may then be dissolved in water containing 0.1% trifluoroacetic acid (TFA) and lyophilized prior to purification by C18 reverse phase HPLC. A gradient of 0%-60% acetonitrile (containing 0.1% TFA) in water (containing 0.1% TFA) may be used to elute the peptides. Following lyophilization of the pure fractions, the peptides may be characterized using electrospray or other types of mass spectrometry and by amino acid analysis.

EXAMPLE 5 PREPARATION OF ANTIBODIES AGAINST LUNG CANCER ANTIGENS

Polyclonal antibodies against the lung cancer antigens L514S, L528S and L531S (SEQ ID NO: 155, 225 and 112, respectively) were prepared as follows.

Rabbits were immunized with recombinant protein expressed in and purified from *E. coli* as described above. For the initial immunization, 400 µg of

antigen combined with muramyl dipeptide (MDP) was injected subcutaneously (S.C.). Animals were boosted S.C. 4 weeks later with 200 µg of antigen mixed with incomplete Freund's Adjuvant (IFA). Subsequent boosts of 100 µg of antigen mixed with IFA were injected S.C. as necessary to induce high antibody titer responses. Serum bleeds
5 from immunized rabbits were tested for antigen-specific reactivity using ELISA assays with purified protein. Polyclonal antibodies against L514S, L528S and L531S were affinity purified from high titer polyclonal sera using purified protein attached to a solid support.

Immunohistochemical analysis using polyclonal antibodies against
10 L514S was performed on a panel of 5 lung tumor samples, 5 normal lung tissue samples and normal colon, kidney, liver, brain and bone marrow. Specifically, tissue samples were fixed in formalin solution for 24 hours and embedded in paraffin before being sliced into 10 micron sections. Tissue sections were permeabilized and incubated with antibody for 1 hr. HRP-labeled anti-mouse followed by incubation with DAB
15 chromogen was used to visualize L514S immunoreactivity. L514S was found to be highly expressed in lung tumor tissue with little or no expression being observed in normal lung, brain or bone marrow. Light staining was observed in colon and kidney. Staining was seen in normal liver but no mRNA has been detected in this tissue making this result suspect.

20

EXAMPLE 6

PEPTIDE PRIMING OF MICE AND PROPAGATION OF CTL LINES

Immunogenic peptides from the lung cancer antigen L762P (SEQ ID
25 NO: 161) for HLA-A2/K^b-restricted CD8⁺ T cells were identified as follows.

The location of HLA-A2 binding peptides within the lung cancer antigen L762P (SEQ ID NO: 161) was predicted using a computer program which predicts peptides sequences likely to being to HLA-A*0201 by fitting to the known peptide binding motif for HLA-A*0201 (Rupert *et al.* (1993) *Cell* 74:929; Rammensee *et al.*
30 (1995) *Immunogenetics* 41:178-228). A series of 19 synthetic peptides corresponding to a selected subset of the predicted HLA-A*0201 binding peptides was prepared as described above.

Mice expressing the transgene for human HLA A2/K^b (provided by Dr L. Sherman, The Scripps Research Institute, La Jolla, CA) were immunized with the synthetic peptides, as described by Theobald et al., *Proc. Natl. Acad. Sci. USA* 92:11993-11997, 1995 with the following modifications. Mice were immunized with 50µg of L726P peptide and 120µg of an I-A^b binding peptide derived from hepatitis B Virus protein emulsified in incomplete Freund's adjuvant. Three weeks later these mice were sacrificed and single cell suspensions prepared. Cells were then resuspended at 7×10^6 cells/ml in complete media (RPMI-1640; Gibco BRL, Gaithersburg, MD) containing 10% FCS, 2mM Glutamine (Gibco BRL), sodium pyruvate (Gibco BRL), non-essential amino acids (Gibco BRL), 2×10^{-5} M 2-mercaptoethanol, 50U/ml penicillin and streptomycin, and cultured in the presence of irradiated (3000 rads) L762P peptide- (5µg/ml) and 10mg/ml B₂-microglobulin- (3 µg/ml) LPS blasts (A2 transgenic spleens cells cultured in the presence of 7µg/ml dextran sulfate and 25µg/ml LPS for 3 days). After six days, cells (5×10^5 /ml) were restimulated with 2.5×10^6 /ml peptide pulsed irradiated (20,000 rads) EL4A2Kb cells (Sherman et al, *Science* 258:815-818, 1992) and 5×10^6 /ml irradiated (3000 rads) A2/K^b-transgenic spleen feeder cells. Cells were cultured in the presence of 10U/ml IL-2. Cells were restimulated on a weekly basis as described, in preparation for cloning the line.

Peptide-specific cell lines were cloned by limiting dilution analysis with irradiated (20,000 rads) L762P peptide-pulsed EL4 A2Kb tumor cells (1×10^4 cells/well) as stimulators and irradiated (3000 rads) A2/K^b-transgenic spleen cells as feeders (5×10^5 cells/ well) grown in the presence of 10U/ml IL-2. On day 7, cells were restimulated as before. On day 14, clones that were growing were isolated and maintained in culture.

Cell lines specific for L762P-87 (SEQ ID NO: 226; corresponding to amino acids 87-95 of SEQ ID NO: 161), L726P-145 (SEQ ID NO: 227; corresponding to amino acids 145-153 of SEQ ID NO: 161), L726P-585 (SEQ ID NO: 228; corresponding to amino acids 585-593 of SEQ ID NO: 161), L762P-425 (SEQ ID NO: 229; corresponding to amino acids 425-433 of SEQ ID NO: 161), L762P(10)-424 (SEQ ID NO: 230; corresponding to amino acids 424-433 of SEQ ID NO: 161) and L762P(10)-458 (SEQ ID NO: 231; corresponding to amino acids 458-467 of SEQ ID

NO: 161) demonstrated significantly higher reactivity (as measured by percent specific lysis) against L762P peptide-pulsed EL4-A2/K^b tumor target cells than control peptide-pulsed EL4-A2/K^b tumor target cells.

5

EXAMPLE 7

IDENTIFICATION OF CD4 IMMUNOGENIC T CELL EPITOPES DERIVED
FROM THE LUNG CANCER ANTIGEN L762P

CD4 T cell lines specific for the antigen L762P (SEQ ID NO: 161) were
10 generated as follows.

A series of 28 overlapping peptides were synthesized that spanned approximately 50% of the L762P sequence. For priming, peptides were combined into pools of 4-5 peptides, pulsed at 20 micrograms/ml into dendritic cells for 24 hours. The dendritic cells were then washed and mixed with positively selected CD4⁺ T cells in 96
15 well U-bottomed plates. Forty cultures were generated for each peptide pool. Cultures were restimulated weekly with fresh dendritic cells loaded with peptide pools. Following a total of 3 stimulation cycles, cells were rested for an additional week and tested for specificity to antigen presenting cells (APC) pulsed with peptide pools using interferon-gamma ELISA and proliferation assays. For these assays, adherent
20 monocytes loaded with either the relevant peptide pool or an irrelevant peptide were used as APC. T cell lines that appeared to specifically recognize L762P peptide pools both by cytokine release and proliferation were identified for each pool. Emphasis was placed on identifying T cells with proliferative responses. T cell lines that demonstrated either both L762P-specific cytokine secretion and proliferation, or strong proliferation
25 alone were further expanded to be tested for recognition of individual peptides from the pools, as well as for recognition of recombinant L762P. The source of recombinant L762P was *E. coli*, and the material was partially purified and endotoxin positive. These studies employed 10 micrograms of individual peptides, 10 or 2 micrograms of an irrelevant peptide, and 2 or 0.5 micrograms of either L762P protein or an irrelevant,
30 equally impure, *E. coli* generated recombinant protein. Significant interferon-gamma production and CD4 T cell proliferation was induced by a number of L762P-derived

peptides in each pool. The amino acid sequences for these peptides are provided in SEQ ID NO: 232-251. These peptides correspond to amino acids 661-680, 676-696, 526-545, 874-893, 811-830, 871-891, 856-875, 826-845, 795-815, 736-755, 706-725, 706-725, 691-710, 601-620, 571-590, 556-575, 616-635, 646-665, 631-650, 541-560 and 586-605, respectively, of SEQ ID NO: 161.

CD4 T cell lines that demonstrated specificity for individual L762P-derived peptides were further expanded by stimulation with the relevant peptide at 10 micrograms/ml. Two weeks post-stimulation, T cell lines were tested using both proliferation and IFN-gamma ELISA assays for recognition of the specific peptide. A number of previously identified T cells continued to demonstrate L762P-peptide specific activity. Each of these lines was further expanded on the relevant peptide and, following two weeks of expansion, tested for specific recognition of the L762P-peptide in titration experiments, as well as for recognition of recombinant *E. coli*-derived L762P protein. For these experiments, autologous adherent monocytes were pulsed with either the relevant L762P-derived peptide, an irrelevant mammaglobin-derived peptide, recombinant *E. coli*-derived L762P (approx. 50% pure), or an irrelevant *E. coli*-derived protein. The majority of T cell lines were found to show low affinity for the relevant peptide, since specific proliferation and IFN-gamma ratios dramatically decreased as L762P peptide was diluted. However, four lines were identified that demonstrated significant activity even at 0.1 micrograms/ml peptide. Each of these lines (referred to as A/D5, D/F5, E/A7 and E/B6) also appeared to specifically proliferate in response to the *E. coli*-derived L762P protein preparation, but not in response to the irrelevant protein preparation. The amino acid sequences of the L762P-derived peptides recognized by these lines are provided in SEQ ID NO: 234, 249, 236 and 245, respectively. No protein specific IFN-gamma was detected for any of the lines. Lines A/D5, E/A7 and E/B6 were cloned on autologous adherent monocytes pulsed with the relevant peptide at 0.1 (A/D5 and E/A7) or 1 (D/F5) microgram/ml. Following growth, clones were tested for specificity for the relevant peptide. Numerous clones specific for the relevant peptide were identified for lines A/D5 and E/A7.

EXAMPLE 8

PROTEIN EXPRESSION OF LUNG TUMOR-SPECIFIC ANTIGENS

5 a) Expression of L514S in *E. coli*

The lung tumor antigen L514S (SEQ ID NO: 89) was subcloned into the expression vector pE32b at NcoI and NotI sites, and transformed into *E. coli* using standard techniques. The protein was expressed from residues 3-153 of SEQ ID NO: 89. The expressed amino acid sequence and the corresponding DNA sequence are
10 provided in SEQ ID NO: 252 and 253, respectively.

b) Expression of L762P

Amino acids 32-944 of the lung tumor antigen L762P (SEQ ID NO: 161), with a 6X His Tag, were subcloned into a modified pET28 expression vector,
15 using kanamycin resistance, and transformed into BL21 CodonPlus using standard techniques. Low to moderate levels of expression were observed. The determined DNA sequence of the L762P expression construct is provided in SEQ ID NO: 254.

From the foregoing it will be appreciated that, although specific
20 embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

CLAIMS

1. An isolated polypeptide, comprising at least an
5 immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor
protein comprises an amino acid sequence that is encoded by a polynucleotide sequence
selected from the group consisting of:

(a) sequences recited in SEQ ID NO: 1-3, 6-8, 10-13, 15-
27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78,
10 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133,
142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175,
179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214,
217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-
281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317,
15 323, 345, 347 and 349;

(b) sequences that hybridize to a sequence recited in any
one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52,
54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109,
111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154,
20 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191,
193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258,
260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295,
296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and 349 under
moderately stringent conditions; and

25 (c) complements of sequences of (a) or (b).

2. An isolated polypeptide according to claim 1,
wherein the polypeptide comprises an amino acid sequence that is encoded by a
polynucleotide sequence recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29,
30 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-
109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158,

160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and 349 or a complement of any of the foregoing polynucleotide sequences.

5

3. An isolated polypeptide comprising a sequence recited in any one of SEQ ID NO: 110, 112, 114, 152, 155, 156, 159, 161, 165, 166, 169, 170, 172, 174, 176, 226-252, 346, 348 and 350.

4. An isolated polynucleotide encoding at least 15 amino acid
10 residues of a lung tumor protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide comprising a sequence recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29,
15 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and 349 or a
20 complement of any of the foregoing sequences.

5. An isolated polynucleotide encoding a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide comprising a sequence recited in any one of SEQ ID NO:
25 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317,
30 323, 345, 347 and 349 or a complement of any of the foregoing sequences.

6. An isolated polynucleotide, comprising a sequence recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and 349.
7. An isolated polynucleotide, comprising a sequence that hybridizes to a sequence recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and 349_ under moderately stringent conditions.
8. An isolated polynucleotide complementary to a polynucleotide according to any one of claims 4-7.
9. An expression vector, comprising a polynucleotide according to any one of claims claim 4-8.
10. A host cell transformed or transfected with an expression vector according to claim 9.
11. An isolated antibody, or antigen-binding fragment thereof, that specifically binds to a lung tumor protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84,

86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and
5 349_or a complement of any of the foregoing polynucleotide sequences.

12. A fusion protein, comprising at least one polypeptide according to claim 1.

10 13. A fusion protein according to claim 12, wherein the fusion protein comprises an expression enhancer that increases expression of the fusion protein in a host cell transfected with a polynucleotide encoding the fusion protein.

14. A fusion protein according to claim 12, wherein the fusion
15 protein comprises a T helper epitope that is not present within the polypeptide of claim 1.

15. A fusion protein according to claim 12, wherein the fusion protein comprises an affinity tag.

20

16. An isolated polynucleotide encoding a fusion protein according to claim 12.

17. A pharmaceutical composition, comprising a physiologically
25 acceptable carrier and at least one component selected from the group consisting of:

- (a) a polypeptide according to claim 1;
- (b) a polynucleotide according to claim 4;
- (c) an antibody according to claim 11;
- (d) a fusion protein according to claim 12; and
- 30 (e) a polynucleotide according to claim 16.

18. A vaccine comprising an immunostimulant and at least one component selected from the group consisting of:

- (a) a polypeptide according to claim 1;
- (b) a polynucleotide according to claim 4;
- (c) an antibody according to claim 11;
- (d) a fusion protein according to claim 12; and
- (e) a polynucleotide according to claim 16.

19. A vaccine according to claim 18, wherein the immunostimulant is an adjuvant.

20. A vaccine according to any claim 18, wherein the immunostimulant induces a predominantly Type I response.

21. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a pharmaceutical composition according to claim 17.

22. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a vaccine according to claim 18.

23. A pharmaceutical composition comprising an antigen-presenting cell that expresses a polypeptide according to claim 1, in combination with a pharmaceutically acceptable carrier or excipient.

24. A pharmaceutical composition according to claim 23, wherein the antigen presenting cell is a dendritic cell or a macrophage.

25. A vaccine comprising an antigen-presenting cell that expresses a polypeptide comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

5 (a) sequences recited in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349;

(b) sequences that hybridize to a sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171,
10 173, 175, 177-224, 255-337, 345, 347 and 349 under moderately stringent conditions; and

(c) complements of sequences of (i) or (ii);
in combination with an immunostimulant.

15 26. A vaccine according to claim 25, wherein the immunostimulant is an adjuvant.

27. A vaccine according to claim 25, wherein the immunostimulant induces a predominantly Type I response.

20

28. A vaccine according to claim 25, wherein the antigen-presenting cell is a dendritic cell.

29. A method for inhibiting the development of a cancer in a patient,
25 comprising administering to a patient an effective amount of an antigen-presenting cell that expresses a polypeptide comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

30 (a) sequences recited in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and

349;

(b) sequences that hybridize to a sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349 under moderately stringent conditions; and

(c) complements of sequences of (i) or (ii) encoded by a polynucleotide recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349; and thereby inhibiting the development of a cancer in the patient.

30. A method according to claim 29, wherein the antigen-presenting cell is a dendritic cell.

31. A method according to any one of claims 21, 22 and 29, wherein the cancer is lung cancer.

32. A method for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349; and

(ii) complements of the foregoing polynucleotides; wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the antigen from the sample.

33. A method according to claim 32, wherein the biological sample is blood or a fraction thereof.

34. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated according to the method of claim 32.

5

35. A method for stimulating and/or expanding T cells specific for a lung tumor protein, comprising contacting T cells with at least one component selected from the group consisting of:

(a) polypeptides comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) sequences recited in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349;

(ii) sequences that hybridize to a sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349 under moderately stringent conditions; and

(iii) complements of sequences of (i) or (ii);

(b) polynucleotides encoding a polypeptide of (a); and

(c) antigen presenting cells that express a polypeptide of (a);

under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.

25

36. An isolated T cell population, comprising T cells prepared according to the method of claim 35.

37. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population according to claim 36.

30

38. A method for inhibiting the development of a cancer in a patient, comprising the steps of:

(a) incubating CD4⁺ and/or CD8⁺ T cells isolated from a patient with at least one component selected from the group consisting of:

(i) polypeptides comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(1) sequences recited in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349;

(2) sequences that hybridize to a sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349 under moderately stringent conditions; and

(3) complements of sequences of (1) or (2);

(ii) polynucleotides encoding a polypeptide of (i); and

(iii) antigen presenting cells that expresses a polypeptide of

(i);

such that T cells proliferate; and

(b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the patient.

39. A method for inhibiting the development of a cancer in a patient, comprising the steps of:

(a) incubating CD4⁺ and/or CD8⁺ T cells isolated from a patient with at least one component selected from the group consisting of:

(i) polypeptides comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence

86

selected from the group consisting of:

(1) sequences recited in SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349;

(2) sequences that hybridize to a sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349 under moderately stringent conditions; and

(3) complements of sequences of (1) or (2);

(ii) polynucleotides encoding a polypeptide of (i); and

(iii) antigen presenting cells that express a polypeptide of (i);
such that T cells proliferate;

(b) cloning at least one proliferated cell to provide cloned T cells;

and

(c) administering to the patient an effective amount of the cloned T cells, and thereby inhibiting the development of a cancer in the patient.

40. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with a binding agent that binds to a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349 or a complement of any of the foregoing polynucleotide sequences;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(c) comparing the amount of polypeptide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.

41. A method according to claim 40, wherein the binding agent is an

antibody.

42. A method according to claim 43, wherein the antibody is a monoclonal antibody.

5

43. A method according to claim 40, wherein the cancer is lung cancer.

44. A method for monitoring the progression of a cancer in a patient,
10 comprising the steps of:

(a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160,
15 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347 and 349 or a complement of any of the foregoing polynucleotide sequences;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent;

(c) repeating steps (a) and (b) using a biological sample obtained
20 from the patient at a subsequent point in time; and

(d) comparing the amount of polypeptide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

25 45. A method according to claim 44, wherein the binding agent is an antibody.

46. A method according to claim 45, wherein the antibody is a monoclonal antibody.

30

47. A method according to claim 44, wherein the cancer is a lung

cancer.

48. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

5 (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347
10 and 349 or a complement of any of the foregoing polynucleotide sequences;

(b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

(c) comparing the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the
15 presence or absence of a cancer in the patient.

49. A method according to claim 48, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

20

50. A method according to claim 48, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

25 51. A method for monitoring the progression of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a
30 polynucleotide sequence recited in any one of SEQ ID NO: 1-109, 111, 113, 115-151, 153, 154, 157, 158, 160, 162-164, 167, 168, 171, 173, 175, 177-224, 255-337, 345, 347

and 349 or a complement of any of the foregoing polynucleotide sequences;

(b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide;

(c) repeating steps (a) and (b) using a biological sample obtained
5 from the patient at a subsequent point in time; and

(d) comparing the amount of polynucleotide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

10 52. A method according to claim 51, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

15 53. A method according to claim 51, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

54. A diagnostic kit, comprising:

(a) one or more antibodies according to claim 11; and
20 (b) a detection reagent comprising a reporter group.

55. A kit according to claim 54, wherein the antibodies are immobilized on a solid support.

25 56. A kit according to claim 54, wherein the detection reagent comprises an anti-immunoglobulin, protein G, protein A or lectin.

30 57. A kit according to claim 54, wherein the reporter group is selected from the group consisting of radioisotopes, fluorescent groups, luminescent groups, enzymes, biotin and dye particles.

58. An oligonucleotide comprising 10 to 40 contiguous nucleotides that hybridize under moderately stringent conditions to a polynucleotide that encodes a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and 349 or a complement of any of the foregoing polynucleotides.

59. A oligonucleotide according to claim 58, wherein the oligonucleotide comprises 10-40 contiguous nucleotides recited in any one of SEQ ID NO: 1-3, 6-8, 10-13, 15-27, 29, 30, 32, 34-49, 51, 52, 54, 55, 57-59, 61-69, 71, 73, 74, 77, 78, 80-82, 84, 86-96, 107-109, 111, 113, 125, 127, 128, 129, 131-133, 142, 144, 148-151, 153, 154, 157, 158, 160, 167, 168, 171, 173, 175, 179, 182, 184-186, 188-191, 193, 194, 198-207, 209, 210, 213, 214, 217, 220-224, 253, 254-258, 260, 262-264, 270, 272, 275, 276, 279-281, 286, 287, 291, 293, 295, 296, 300, 302, 308-310, 313, 315-317, 323, 345, 347 and 349.

60. A diagnostic kit, comprising:
(a) an oligonucleotide according to claim 59; and
(b) a diagnostic reagent for use in a polymerase chain reaction or hybridization assay.

SEQUENCE LISTING

<110> Corixa Corporation et al.

<120> COMPOUNDS AND METHODS FOR THERAPY
AND DIAGNOSIS OF LUNG CANCER

<130> 210121.45501PC

<140> PCT

<141> 2000-04-03

<160> 350

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 315

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (315)

<223> n = A,T,C or G

<400> 1

gcagagacag	actggtgggt	gaacctggag	gtgccaaaaa	agccagctgc	gggccaggga	60
cagctgccgt	gagactcccg	atgtcacagg	cagtctgtgt	ggttacagcg	cccctcagtg	120
ttcatctcca	gcagagacaa	cggaggaggc	tcccaccagg	acggttctca	ttatttatat	180
gttaatatgt	ttgtaaactc	atgtacagtt	ttttttgggg	gggaagcaat	gggaanggta	240
naaattacaa	atagaatcat	ttgctgtaat	ccttaaattg	caaacggtca	ggccacgtga	300
aaaaaaaaaa	aaaaa					315

<210> 2

<211> 380

<212> DNA

<213> Homo sapien

<400> 2

atttaggctt	aagattttgt	ttacccttgt	tactaaggag	caaattagta	ttaaagtata	60
atatatataa	acaaatacaa	aaagttttga	gtggttcagc	ttttttat	tttttaattg	120
cataactttt	aacaacactg	ctctgtaatg	ggttgaactg	tggactcag	actgagataa	180
ctgaaatgag	tggtatgtata	gtgttattgc	ataattatcc	cactatgaag	caaagggact	240
ggataaattc	ccagtctaga	ttattagcct	ttgttaacca	tcaagcacct	agaagaagaa	300
ttattggaaa	ttttgtcctc	tgtaactggc	actttggggg	gtgacttata	ttttgccttt	360
gtaaaaaaaa	aaaaaaaaaa					380

<210> 3

<211> 346

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<220>
 <221> misc_feature
 <222> (1)...(346)
 <223> n = A,T,C or G

<400> 3
 ttgtaagtat acaatttttag aaaggattaa atgttattga tcatttttact gaatactgca 60
 catcctcacc atacaccatc cacttttcaa taacatttaa tccttttctaa aattgtaagt 120
 atacaattgt actttctttg gattttcata acaaataac catagactgt taattttatt 180
 gaagtttctt taatggaatg agtcattttt gtcttgtgct tttgaggtta cctttgcttt 240
 gacttccaac aatttgatca tatagtgttg agctgtggaa atctttaagt ttattctata 300
 gcaataattt ctattnnnag annccngggn naaaannann annaaa 346

<210> 4
 <211> 372
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(372)
 <223> n = A,T,C or G

<400> 4
 actagtctca ttactccaga attatgctct tgtacctgtg tggctggggt tcttagtcgt 60
 tggtttgggt tggttttttg aactgggtatg taggggtggt cacagttcta atgtaagcac 120
 tctcttctcc aagttgtgct ttgtggggac aatcattctt tgaacattag agaggaaggc 180
 agttcaagct gttgaaaaga ctattgctta tttttgtttt taaagacctt cttgacgtca 240
 tgtggacagt gcacgtgcct tacgctacat cttgttttct aggaagaagg ggatgcnggg 300
 aaggantggg tgctttgtga tggataaaac gnctaaataa cacaccttta cattttgaaa 360
 aaaacaaaac aa 372

<210> 5
 <211> 698
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(698)
 <223> n = A,T,C or G

<400> 5
 actagtanga tagaaacact gtgtcccgag agtaaggaga gaagctacta ttgattagag 60
 cctaaccag gttaactgca agaagaggcg ggatactttc agctttccat gtaactgtat 120
 gcataaagcc aatgtagtcc agtttctaag atcatgttcc aagctaactg aatcccactt 180
 caatacacac tcatgaactc ctgatggaac aataacaggc ccaagcctgt ggtatgatgt 240
 gcacacttgc tagactcaga aaaaatacta ctctcataaa tgggtggggag tattttgggt 300
 gacaacctac tttgcttggc tgagtgaagg aatgatattc atatnttcat ttattccatg 360
 gacatttagt tagtgctttt tatataccag gcatgatgct gagtgacact cttgtgtata 420
 tntccaaatn ttngtnngt cgctgcacat atctgaaatc ctatattaag antttcccaa 480
 natgangtcc ctggtttttc cagccactt gatcngtcaa ngatctcacc tctgtntgtc 540
 ctaaaaccnt ctntnnang gttagacngg acctctcttc tcccttcccg aanaatnaag 600
 tgtnggaaga nancncnch ccccccctnch tncnnctng ccngctnnnc cncntgtngg 660

gggngccgcc cccgcggggg gacccccccn ttttcccc

698

<210> 6
<211> 740
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(740)
<223> n = A,T,C or G

<400> 6
actagtcaaa aatgctaaaa taatttgga gaaaatattt ttaagtagt gttatagttt 60
catgtttatc ttttattatg tnttggaag ttgtgtcttt tcactaatta cctatactat 120
gccaatattt ccttatatct atccataaca ttatactac atttgtaaga gaatatgcac 180
gtgaaactta acactttata aggtaaaaat gaggtttcca agatttaata atctgatcaa 240
gttcttggtta ttccaaata gaatggactt ggtctgttaa ggggctaagg gagaagaaga 300
agataagggt aaaagttggt aatgaccaa cattctaaaa gaaatgcaa aaaaaattta 360
ttttcaagcc ttogaactat ttaaggaaa caaatcatt tcctanatgc atatcatttg 420
tgagantttc tcantaatat cctgaatcat tcatttcagc tnaggcttca tgttgactcg 480
atatgtcatc tagggaaagt ctatttcag gtccaaacct gttgccatag ttggttaggc 540
tttccttta ntgtgaanta ttnacangaa attttctctt tnanagttct tnatagggtt 600
aggggtgtgg gaaaagcttc taacaatctg tagtgtnccg tggtatctgt ncagaaccan 660
aatnacggat cgnangaagg actgggtcta ttacangaa cgaatnatct ngtnnnntgt 720
gtnnncaact ccngggagcc 740

<210> 7
<211> 670
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(670)
<223> n = A,T,C or G

<400> 7
gctggggagc tcggcatggc ggtccccgct gcagccatgg ggcctcggc gttgggcccag 60
agcggccccg gctcgatggc cccgtgggtgc tcagtgaaga gcggcccgtc gcgctacgtg 120
cttgggatgc aggagctggt ccggggccac agcaagaccg cgagttcctg gcgcacagcg 180
ccaaggtgca ctccgtggcc tggagtgcg acgggcgtcg cctacctcgg ggtcttcgac 240
aagacgccac gtcttcttgc tgganaanga ccgttggtca aagaaaacaa ttatcgggga 300
catggggata gtgtggacca ctttggtggc atccaagtaa tcctgacctt tttgttacgg 360
cgtctggaga taaaaccatt cgcatctggg atgtgaggac tacaaaatgc attgccactg 420
tgaacactaa aggggagaac attaatatct gctggantcc tgatgggcan accattgctg 480
tagcnacaag gatgatgtgg tgactttatt gatgccaaga aaccccgttc caaagcaaaa 540
aaacanttcc aanttcgaag tcaccnaaat ctccctggaac aatgaacatn aatatnttct 600
tcctgacaat ggnccctggg tgnntcacat cctcagctnc cccaaaactg aancctgtnc 660
natccacccc 670

<210> 8
<211> 689
<212> DNA
<213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(689)
 <223> n = A,T,C or G

<400> 8
 actagtatct aggaatgaac agtaaaagag gagcagttgg ctacttgatt acaacagagt 60
 aaatgaagta ctggatttgg gaaaacctgg ttttattaga acatatggaa tgaaagccta 120
 cacctagcat tgcctactta gccccctgaa ttaacagagc ccaattgaga caaacccttg 180
 gcaacaggaa attcaaggga gaaaaagtaa gcaacttggg ctaggatgag ctgactccct 240
 tagagcaaag ganagacagc cccattacc aaataccatt tttgcctggg gcttgtgcag 300
 ctggcagtg tctgccccca gcatggcacc ttatngtttt gatagcaact tcgttgaatt 360
 ttcaccaact tattacttga aattataata tagcctgtcc gtttgcgtgn tccaggctgt 420
 gatataatnt cctagtgggt tgactttnaa aataaatnag gtttantttt cccccccnn 480
 cnntnctncc nntnctcnn cnntcccccc cncctengtcc tccnnnttn gggggggccn 540
 ccccnccggn ggacccccct ttgggtccctt agtggagggt natggccctt ggnnttatcc 600
 nggcctann tttccccgt nnaaatgntt cccctccca ntccnccac ctcaanccgg 660
 aagcctaagt ttntaccctg ggggtcccc 689

<210> 9
 <211> 674
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(674)
 <223> n = A,T,C or G

<400> 9
 gtccactctc ttttgagtgt actgtcttac tgtgcaactct gtttttcaac tttctagata 60
 taaaaaatgc ttgttctata gtggagtaag agctcacaca cccaaggcag caagataact 120
 gaaaaaagcg aggctttttt gccaccttgg taaaggccag ttcactgcta tagaactgct 180
 ataagcctga agggaagtag ctatgagact ttccattttt cttagtcttc ccaataggct 240
 ctttcatgga aaaaggcttc ctgtaataat tttcacctaa tgaattagca gtgtgattat 300
 ttctgaaata agagacaaat tgggccgcag agtcttctctg tgatttataa taaacaaccc 360
 aaagtgttgt ttggtcttca ccaaaggaca tactctaggg ggtatgttgt tgaagacatt 420
 caaaaacatt agctgttctg tctttcaatt tcaagttatt ttggagactg cctccatgtg 480
 agttaattac tttgctctgg aactagcatt attgtcatta tcatcacatt ctgtcatcat 540
 catctgaata atattgtgga tttccccctc tgcttgcatc ttcttttgac tctctggga 600
 anaaatgtca aaaaaaaagg tcgatctact cngcaaggnc catctaata caatgcgtgga 660
 aggaccnct gcc 674

<210> 10
 <211> 346
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(346)
 <223> n = A,T,C or G

<400> 10

```

actagtctgc tgatagaaaag cactatacat cctattgttt ctttctttcc aaaatcagcc      60
ttctgtctgt aacaaaaaatg tactttatag agatggagga aaaggtctaa tactacatag      120
ccttaagtgt ttctgtcatt gttcaagtgt attttctgta acagaaacat atttggaatg      180
tttttctttt ccccttataa attgtaattc ctgaaatact gctgctttta aaagtccac      240
tgtcagatta tattatctaa caattgaata ttgtaaatat acttgtctta cctctcaata      300
aaaggtact tttctattan nnagnngnnn gnnnnataaa anaaaa      346

```

<210> 11

<211> 602

<212> DNA

<213> Homo sapien

<400> 11

```

actagtaaaa agcagcattg ccaaataatc cctaattttc cactaaaaat ataatgaaat      60
gatgttaagc tttttgaaaa gtttaggtta aacctactgt tgttagatta atgtatttgt      120
tgcttccctt tatctggaat gtggcattag cttttttatt ttaaccctct ttaattctta      180
ttcaattcca tgacttaagg ttggagagct aaacactggg atttttggat aacagactga      240
cagttttgca taattataat cggcattgta catagaaagg atatggctac cttttgttaa      300
atctgcactt tctaaatata aaaaaaggga aatgaagtta taaatcaatt tttgtataat      360
ctgtttgaaa catgagtttt atttgcttaa tattagggtt ttgccccttt tctgtaagtc      420
tcttgggagc ctgtgtagaa ctgttctcat taaacaccaa acagttaagt ccattctctg      480
gtactagcta caaattcggg ttcatattct acttaacaat ttaaataaac tgaaatattt      540
ctagatggtc tacttctgtt catataaaaa caaaacttga tttccaaaaa aaaaaaaaaa      600
aa                                                                                   602

```

<210> 12

<211> 685

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(685)

<223> n = A,T,C or G

<400> 12

```

actagtcttg tgaaagtaca actgaaggca gaaagtgtta ggatttttgca tctaattgttc      60
attatcatgg tattgatgga cctaagaaaa taaaaattag actaagcccc caaataagct      120
gcatgcattt gtaacatgat tagtagattt gaatatatag atgtagtatn ttgggtatct      180
agggtgtttt tcattatgta aaggaattaa agtaaaggac tttgtagttg tttttattaa      240
atatgcatat agtagagtgc aaaaatatag caaaaatana aactaaagggt agaaaagcat      300
tttagatatg ccttaatnta nnaactgtgc cagggtggccc tcggaataga tgccaggcag      360
agaccagtgc ctgggtgggtg cctccccttg tctgcccccc tgaagaactt ccctcacgtg      420
angtagtgcc ctcttaggtg tcacgtggan tantggganc aggccgnncn gtnanaagaa      480
ancanngtga nagtttcncc gtngangcng aactgtccct gngccnnnac gctcccanaa      540
cntntccaat ngacaatcga gtttcennnc tccngnaacc tngccgnnnn cngcccnnc      600
cantntgnta accccgcgcc cggatcgctc tennntcggt ctncncnaa ngggntttcn      660
cnnccgcgct cncnnccccg cnncc                                                                                   685

```

<210> 13

<211> 694

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature
 <222> (1) ... (694)
 <223> n = A,T,C or G

<400> 13
 cactagtcac tcattagcgt tttcaatagg gctcttaagt ccagtagatt acgggtagtc 60
 agttgacgaa gatctggttt acaagaacta attaaatggt tcattgcatt tttgtaagaa 120
 cagaataatt ttataaaatg tttgtagttt ataattgccg aaaataattt aaagacactt 180
 tttctctgtg tgtgcaaagt tgtgtttgtg atccattttt tttttttttt taggacacct 240
 gtttactagc tagctttaca atatgccaaa aaaggatttc tccttgacct catccgtggt 300
 tcacctctt tccccccat gctttttgcc ctagtttata acaaaggaat gatgatgatt 360
 taaaaagtag ttctgtatct tcagtatctt ggtcttccag aacctcttg ttgggaaggg 420
 gatcattttt tactggtcat ttcccttttg agtgactac tttaacagat ggaaagaact 480
 cattggccat ggaaacagcc gangtggttg gagccagcag tgcattggac cgtccggcat 540
 ctggcntgat tggctctggt gccgtcattg tcagcacagt gccatgggac atggggaana 600
 ctgactgcac ngccaatggt tttcatgaag aatacngcat ncnngtgat cagctnancc 660
 angacgtat gggggncana gggccanttg cttc 694

<210> 14
 <211> 679
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (679)
 <223> n = A,T,C or G

<400> 14
 cagccgctg catctgtatc cagcgccang tcccgccagt cccagctgcg cgcgccccc 60
 agtcccgnc cgttcggcc cangctnagt tagncctcac catnccggtc aaaggangca 120
 ccaagtgcac caaataacct cngtncggat ntaaattcat cttctggctt gccgggattg 180
 ctgtccntgc cattggacta nggctccgat ncgactctca gaccanganc atcttcganc 240
 naganactaa tnatnatnt tccagcttct acacaggagt ctatattctg atcggtaccg 300
 gcnccctcnt gatgctggtg ggcttcctga gctgctgcg ggctgtgcaa gagtcccant 360
 gcatgctggg actgttcttc ggcttcntct tggtgatatn cgccattgaa atacctgcg 420
 ccatctgggg atattccact ncgatnatgt gattaaggaa ntccacggag ttttacaagg 480
 acacgtacaa cnacctgaaa accnnggatg anccccaccg ggaancnctg aangccatcc 540
 actatgcgtt gaactgcaat gggttggtg gggnccttga acaatttaat cncatacatc 600
 tggccccann aaaggacntn ctcgannct tcnccgtgna attcngttct gatnccatca 660
 cagaagtctc gaacaatcc 679

<210> 15
 <211> 695
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (695)
 <223> n = A,T,C or G

<400> 15
 actagtggat aaaggccagg gatgctgctc aacctcctac catgtacagg gacgtctccc 60
 cattacaact acccaatccg aagtgtcaac tgtgtcagga ctaanaaacc ctggttttga 120

ttaaaaaagg	gcctgaaaaa	aggggagcca	caaattctgtc	tgtttcctca	cnttantcnt	180
tggcaaatna	gcattctgtc	tcnttggtcg	cngcctcanc	ncaaaaaanc	ngaactcnat	240
cngggcccagg	aatacatctc	ncaatnaacn	aaattganca	aggcnntggg	aaatgccnga	300
tgggattatc	ntccgcttgt	tganccttcta	agtttctntc	ccttcattcn	accctgccag	360
ccnagtcttg	ttagaaaaat	gccngaattc	naacnccggg	tttctactc	ngaatttaga	420
tctncanaaa	cttctgggcc	acnattcnaa	ttnanggnca	cgnacanatn	ccttccatna	480
anencacccc	acntttgana	gccangacaa	tgactgcntn	aantgaaggc	ntgaaggaan	540
aactttgaaa	ggaaaaaaa	ctttgtttcc	ggccccctcc	aacncttctg	tgtnnancac	600
tgccttctng	naaccctgga	agcccngnga	cagtgttaca	tggtgttcta	nnaaacngac	660
ncttnaatnt	cnatcttccc	nanaacgatt	ncncc			695

<210> 16

<211> 669

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(669)

<223> n = A,T,C or G

<400> 16

cgccgaagca	gcagcgcagg	ttgtccccgt	tccccctccc	ccttccccctc	tccggttgcc	60
ttcccggggc	ccttactact	cacagtcccc	gtccccccat	gtcccagaaa	caagaagaag	120
agaaccctgc	ggaggagacc	ggcgaggaga	agcaggacac	gcaggagaaa	gaaggatttc	180
tgcttgagag	agctgaagag	gcaaagctaa	aggccaaata	cccaagccta	ggacaaaagc	240
ctggaggctc	cgacttcttc	atgaagagac	tccagaaagg	gcaaaaagta	tttgactcng	300
gagactacaa	catggccaaa	gccaacatga	agaataagca	gctgccaagt	gcangaccag	360
acaagaacct	ggtgactggt	gatcacatcc	ccaccccaca	ggatctgccc	agagaaagtc	420
ctcgtctgtc	accagcaagc	ttgcgggtgg	ccaagttgaa	tgatgctgcc	ggggctctgc	480
canatctgag	acgtttccct	ccctgcccc	cccgggtcct	gtgctggctc	ctgcccttcc	540
tgcttttgca	gccangggtc	aggaagtggc	ncnggtngtg	gctggaaagc	aaaacccttt	600
cctgttggtg	tcccacccat	ggagcccctg	gggcgagccc	angaacttga	ncctttttgt	660
tntcttncc						669

<210> 17

<211> 697

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(697)

<223> n = A,T,C or G

<400> 17

gcaagatatg	gacaactaag	tgagaaggta	atnctctact	gtctctagntn	ctcenggcnn	60
gacgcgtga	ggagannnac	gctggtccan	ctgcgggcca	cacacgggga	tentggtnat	120
gcctgtccan	gggancccca	ncnctcgga	cccatntcac	acccgnncn	tnccccaen	180
ncctggctcn	cncngccng	nccagctenc	gnccccctcc	gcnnnctcn	ttnnctctc	240
cncnccctcc	ncnacnac	cctaccnccg	gtccctctcc	cagccccccc	ccgaancct	300
ccacnacncc	ntcnnncga	anencnctc	genctengcc	cngccccct	gccccccgce	360
cncnacnccg	cgntcccccg	cgncngcngc	ctnccccct	cccacnacag	ncncccccgc	420
agncaagcnc	tecgcenct	gacgcccnn	cccgcgcgc	tcaccttcac	ggncnccng	480
ccccgtcnc	ncnctgcnc	gcccgnngg	cgcgcgcgc	cnccgngtn	ccnccgngg	540

```

ccccngcngn angcngtgcg cnnangncc gngccggnncn ncaccctccg nccnccgccc 600
cgcccgcgtgg gggctcccgc cncgcggntc antcccccnc cntncgccc ctntccgntc 660
cnnnctcnc gctcngcgcn cgcccnccnc cccccc 697

```

```

<210> 18
<211> 670
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(670)
<223> n = A,T,C or G

```

```

<400> 18
ctcgtgtgaa ggggtgcagta cctaagccgg agcggggtag aggcggggccg gcaccccctt 60
ctgacctcca gtgcgcggcg cctcaagatc agacatggcc cagaacttga acgacttggc 120
gggacggctg cccgcggggc cccggggcat gggcacggcc ctgaagctgt tgctgggggc 180
cggcgccgtg gcctacgggtg tgcgcgaatc tgtgttcacc gtggaaggcg ggcncagagc 240
catcttcttc aatcggatcg gtggagtgc caggacacta tcttggggccg anggccttca 300
cttcaggatc cttggttcca gtaccccanc atctatgaca ttccgggccag acctcgaaaa 360
aatctcctcc ctacaggctc caaagaccta cagatgggtga atatctccct gcgagtgttg 420
tctcgaccaa tgctcangaa ctctctaaca tgttccancg cctaagggtc ggactacnaa 480
gaacgantgt tgccgtccat tgtcacgaag tgcacaagaa tttnggtggc caagttcaat 540
gncctcacnn ctgatcnccc agcggggcca agttanccct ggttgatccc cgggganctg 600
acnaaaaagg gccaaaggact tcccctcatc ctggataatg tggccntcac aaagctcaac 660
tttancacc 670

```

```

<210> 19
<211> 606
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(606)
<223> n = A,T,C or G

```

```

<400> 19
actagtgcc accctcagtc ccaggccagt tctctgaatg togaggagtt ccaggatctc 60
tggcctcagt tgtccttggt tattgatggg ggacaaattg gggatggcca gagccccgag 120
tgtgccttg gctcaactgt ggttgatttg tctgtgccg gaaagtttg catcattcgt 180
ccaggctgtg ccctggaaag tactacagcc atcctccaac agaagtacgg actgctcccc 240
tcacatgcgt cctacctgtg aaactctggg aagcaggaag gcccaagacc tgggtgctgga 300
tactatgtgt ctgtccactg acgactgtca aggcctcatt tgcagaggcc accggagcta 360
gggcactagc ctgactttta aggcagtgtg tctttctgag cactgtagac caagcccttg 420
gagctgctgg ttttagccttg cacctgggga aaggatgtat ttatttgtat tttcatatat 480
cagccaaaag ctgaatggaa aagttnagaa cattcctagg tggccttatt ctaataagtt 540
tcttctgtct gttttgtttt tcaattgaaa agttattaaa taacagattt agaatctagt 600
gagacc 606

```

```

<210> 20
<211> 449
<212> DNA
<213> Homo sapien

```

```

<400> 20
actagtaaac aacagcagca gaaacatcag tatcagcagc gtcgccagca ggagaatatg      60
cagcgccaga gccgaggaga acccccgcctc cctgaggagg acctgtccaa actcttcaaa      120
ccaccacagc cgctgccag gatggactcg ctgctcattg caggccagat aaacaattac      180
tgccagaaca tcaaggagtt cactgcccac aacttaggca agctcttcat ggcccaggct      240
cttcaagaat acaacaacta agaaaaggaa gtttccagaa aagaagttaa catgaactct      300
tgaagtcaca ccagggcaac tcttggaaga aatatatttg catattgaaa agcacagagg      360
atctcttttag tgtcattgcc gattttggct ataacagtgt ctttctagcc ataataaaat      420
aaaacaaaat cttgactgct tgcacaaaa      449

```

```

<210> 21
<211> 409
<212> DNA
<213> Homo sapien

```

```

<400> 21
tatcaatcaa ctggtgaata attaaacaat gtgtggtgtg atcatacaaa ggggtaccact      60
caatgataaa aggaacaagc tgcctatatg tggaacaaca tggatgcatt tcagaaactt      120
tatgttgagt gaaagaacaa acacggagaa catactatgt ggttctcttt atgtaacatt      180
acagaaataa aaacagaggc aaccaccttt gaggcagtat ggagtgagat agactggaaa      240
aaggaaggaa ggaaactcta cgctgatgga aatgtctgtg tcttcattgg gtggtagtta      300
tgtggggata tacatttgct aaaatttatt gaactatata ctaaagaact ctgcatttta      360
ttgggatgta aataatacct caattaaaaa gacaaaaaaa aaaaaaaaaa      409

```

```

<210> 22
<211> 649
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(649)
<223> n = A,T,C or G

```

```

<400> 22
acaattttca ttatcttaag cacattgtac atttctacag aacctgtgat tattctcgca      60
tgataaggat ggtacttgca tatggtgaat tactactggt gacagtttcc gcagaaatcc      120
tatttcagtg gaccaacatt gtggcatggc agcaaatgcc aacattttgt ggaatagcag      180
caaatctaca agagaccctg gttggttttt cgttttgttt tctttgtttt ttcccccttc      240
tcttgaatca gcagggatgg aangagggta gggaagttat gaattactcc ttccagtagt      300
agctctgaag tgtcacattt aatatcagtt tttttttaaac atgattctag ttnaatgtag      360
aagagagaag aaagaggaag tgttcacttt tttaatacac tgatttagaa atttgatgtc      420
ttatatcagt agttctgagg tattgatagc ttgctttatt tctgccttta cgttgacagt      480
gttgaagcag ggtgaataac taggggcata tatatttttt ttttttgtaa gctgtttcat      540
gatgttttct ttggaatttc cggataagtt caggaaaaca tctgcatgtt gttatctagt      600
ctgaagttn tatccatctc attacaacaa aaacnccag aacggnnttg      649

```

```

<210> 23
<211> 669
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature

```

<222> (1)...(669)

<223> n = A,T,C or G

<400> 23

actagtgcg	tactggctga	aatccctgca	ggaccaggaa	gagaaccagt	tcagactttg	60
tactctcagt	caccagctct	ggaattagat	aaattccttg	aagatgtcag	gaatgggac	120
tatcctctga	cagccttttg	gctgcctcgg	ccccagcagc	cacagcagga	ggaggtgaca	180
tcacctgtcg	tgtcaagact	ccgacacctg	aaccagctga	ggtggagact		240
cgcaaggtgg	tgtgatgca	gtgcaacatt	gagtcggtgg	aggagggagt	caaacaccac	300
ctgacacttc	tgtgaagtt	ggaggacaaa	ctgaaccggc	acctgagctg	tgacctgatg	360
ccaaatgaga	atatccccga	gttggcggt	gagctggtgc	agctgggctt	cattagttag	420
gctgaccaga	gccggttgac	ttctctgcta	gaagagactt	gaacaagttc	aattttgcc	480
ggaacagtac	cctcaactca	gccgctgtca	ccgtctcttc	ttagagctca	ctcgggccag	540
gccctgatct	gcgctgtggc	tgtcctggac	gtgctgcacc	ctctgtcctt	ccccccagtc	600
agtattacct	gtgaagccct	tccctccttt	attattcagg	anggctgggg	gggctccttg	660
nttctaacc						669

<210> 24

<211> 442

<212> DNA

<213> Homo sapien

<400> 24

actagtacca	tcttgacaga	ggatacatgc	tcccaaaacg	tttgttacca	cacttaaaaa	60
tcactgccat	cattaagcat	cagtttcaaa	attatagcca	ttcatgattt	actttttcca	120
gatgactatc	attattctag	tcctttgaat	ttgtaagggg	aaaaaaaaca	aaaacaaaaa	180
cttacgatgc	actttttctcc	agcacatcag	atttcaaatt	gaaaattaaa	gacatgctat	240
ggtaatgcac	ttgctagtac	tacacacttt	ggtacaacaa	aaaacagagg	caagaaacaa	300
cggaaagaga	aaagccttcc	tttgttggcc	cttaaaactga	gtcaagatct	gaaatgtaga	360
gatgatctct	gacgatacct	gtatgttctt	attgtgtaaa	taaaattgct	ggtatgaaat	420
gacctaaaaa	aaaaaaaaaga	aa				442

<210> 25

<211> 656

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(656)

<223> n = A,T,C or G

<400> 25

tgcaagtacc	acacactggt	tgaattttgc	acaaaaagtg	actgtaggat	caggtgatag	60
ccccggaatg	tacagtgtct	tggtgcacca	agatgccttc	taaaggctga	cataccttgg	120
accctaattg	ggcagagagt	atagccctag	cccagtgggt	acatgaccac	tccttttggg	180
aggcctgagg	tagaggggag	tggtatgtgt	tttctcagtg	gaagcagcac	atgagtgggt	240
gacaggatgt	tagataaaag	ctctagttag	ggtgtcattg	tcatttgaga	gactgacaca	300
ctcctagcag	ctggtaaagg	ggtgctggan	gccatggagg	anctctagaa	acattagcat	360
gggctgatct	gattacttcc	tggcatcccc	ctcactttta	tgggaagtct	tattagangg	420
atgggacagt	tttccatata	cttgctgtgg	agctctggaa	cactctctaa	atttcctctc	480
attaaaaatc	actgccctaa	ctacacttcc	tccttgaagg	aatagaaatg	gaactttctc	540
tgacatannt	cttggcatgg	ggagccagcc	acaaatgana	atctgaacgt	gtccagggtt	600
ctcctganac	tcctctacat	agaattgggt	aaacctcccc	ttggaataag	gaaaaa	656

<210> 26
 <211> 434
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(434)
 <223> n = A,T,C or G

<400> 26
 actagttcag actgccacgc caaccccaga aaatacccca catgccagaa aagtgaagtc 60
 ctaggtgttt ccatctatgt ttcaatctgt ccatctacca ggcctcgcga taaaaacaaa 120
 acaaaaaaac gctgccaggt tttagaagca gttctggtct caaaaccatc aggatcctgc 180
 caccagggtt cttttgaaat agtaccacat gtaaaaggga atttggcttt cacttcattc 240
 aataactgaa ttgtcaggct ttgattgata attgtagaaa taagtagcct tctgttgtgg 300
 gaataagtta taatcagtat tcatctcttt gttttttgtc actcttttct ctctaattgt 360
 gtcatttgta ctgtttgaaa aatattttct ctatnaaatt aaactaacct gccttaaaaa 420
 aaaaaaaaaa aaaa 434

<210> 27
 <211> 654
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(654)
 <223> n = A,T,C or G

<400> 27
 actagtccaa cacagtcaga aacattgttt tgaatcctct gtaaaccaag gcattaatct 60
 taataaaacca ggatccattt aggtaccact tgatataaaa aggatatcca taatgaatat 120
 tttatactgc atcctttaca ttagccacta aatacgttat tgcttgatga agacctttca 180
 cagaatccta tggattgcag catttcactt ggctacttca tacccatgcc ttaaagaggg 240
 gcagttttctc aaaagcagaa acatgccgcc agttctcaag ttttcctcct aactccattt 300
 gaatgtaagg gcagctggcc cccaatgtgg ggagggtccga acattttctg aattcccatt 360
 ttcttgttcg cggctaaatg acagtttctg tcattactta gattccgatc tttcccaaag 420
 gtgttgattt acaaagaggc cagctaatag cagaaatcat gaccctgaaa gagagatgaa 480
 attcaagctg tgagccaggc agganctcag tatggcaaag gtcttgagaa tcngccattt 540
 ggtacaaaaa aaatttttaa gcntttatgt tataccatgg aaccatagaa anggcaaggg 600
 aattgttaag aanaatttta agtgtccaga cccanaanga aaaaaaaaaa aaaa 654

<210> 28
 <211> 670
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(670)
 <223> n = A,T,C or G

<400> 28
 cgtgtgcaca tactgggagg atttccacag ctgcacggtc acagccctta cggattgccca 60

```

ggaaggggcg aaagatatgt gggataaact gagaaaagaa nccaaaaacc tcaacatcca 120
aggcagctta ttcgaactct gcggcagcgg caacggggcg gcgggggtccc tgcctccggc 180
gttcccgggtg ctcttggtgt ctctctcggc agcttttagcg acctgncttt ccttctgagc 240
gtggggccag cccccccgc ggcgcccacc cacnctcact ccatgctccc ggaaatcgag 300
aggaagatca ttagttcttt ggggacgttn gtgattctct gtgatgctga aaaacactca 360
tatagggaat gtgggaaatc ctganctctt tnttatntcg tntgatttct tgtgttttat 420
ttgccaaaat gttaccaatc agtgaccaac cnagcacagc caaaaatcgg acntcngctt 480
tagtccgtct tcacacacag aataagaaaa cggcaaacc accccacttt tnantttnat 540
tattactaan ttttttctgt tgggcaaaag aatctcagga acngccctgg ggccnccgta 600
ctanagttaa ccnagctagt tncatgaaaa atgatgggct ccncttcaat gggaaagcca 660
agaaaaagnc 670

```

<210> 29

<211> 551

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(551)

<223> n = A,T,C or G

<400> 29

```

actagtcttc cacagcctgt gaatccccct agacctttca agcatagtga gcggagaaga 60
agatctcagc gtttagccac cttacccatg cctgatgatt ctgtagaaaa ggtttcttct 120
ccctctccag ccactgatgg gaaagtattc tccatcagtt ctcaaaatca gcaagaatct 180
tcagtaccag aggtgcctga tgttgacat ttgccacttg agaagctggg accctgtctc 240
cctcttgact taagtctgtg ttcagaagtt acagcaccgg tagcctcaga ttcctcttac 300
cgtaatgaat gtcccagggc agaaaaagag gatacncaga tgcttccaaa tccttcttcc 360
aaagcaatag ctgatgggaa gaggagctcc agragcagca ggaatatcga aaacagaaaa 420
aaaagtgaaa ttgggaagac aaaagctcaa cagcatttgg taaggagaaa aganaagatg 480
aggaaggaag agagaagaga gacnaagatc nctacggacc gnnncggaag aagaagaagn 540
aaaaaanaaa a 551

```

<210> 30

<211> 684

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(684)

<223> n = A,T,C or G

<400> 30

```

actagttcta tctggaaaaa gcccggttg gaagaagctg tggagagtgc gtgtgcaatg 60
cgagactcat ttcttggaag catccctggc aaaaatgcag ctgagtacaa gggttatcact 120
gtgatagaac ctggactgct ttttgagata atagagatgc tgcagtctga agagacttcc 180
agcacctctc agttgaatga attaataatg gcttctgagt caactttact ggctcaggaa 240
ccacgagaga tgactgcaga tgtaatcgag cttaaaggga aattcctcat caacttagaa 300
gggtggtgata ttctggaaga gtcttcttat aaagtaattg tcatgccgac tacgaaagaa 360
aaatgcccc gttgttgga gtatacagcg ggagtcttca gatacactgt gtcctcgatg 420
tgcagaagtt gtcagtggga aaatagtatt aacagctcac tgcagcaaga accctcctga 480
cagtactggg ctagaagttt ggatggatta tttacaatat aggaaagaaa gccaaagaatt 540
aggtnatgag tggatgagta aatggtggan gatggggaat tcaaatcaga attatggaag 600

```

aagtntttcc tgttactata gaaaggaatt atgtttatattt acatgcagaa aatatanatg 660
 tgtggtgtgt accgtggatg gaan 684

<210> 31
 <211> 654
 <212> DNA
 <213> Homo sapien

 <220>
 <221> misc_feature
 <222> (1) ... (654)
 <223> n = A,T,C or G

<400> 31
 gcgcagaaaa ggaaccaata tttcagaaac aagcttaata ggaacagctg cctgtacatc 60
 aacatcttct cagaatgacc cagaagttat catcgtggga gctggcgtgc ttggctctgc 120
 tttggcagct gtgctttcca gagatggaag aaaggtgaca gtcattgaga gagacttaaa 180
 agagcctgac agaatagttg gagaattcct gcagccgggt gggtatcatg ttctcaaaga 240
 ccttgggtctt ggagatacag tggaaggtct tgatgccag gttgtaaag gttacatgat 300
 tcatgatcag ggaagcaaa tcagangttc agattcctta cctctgtca gaaaacaatc 360
 aagtgcagag tggaagagct ttccatcacg gaagattcat catgagtctc cggaaagcag 420
 ctatggcaga gcccaatgca aagtttattg aaggtgttgt gttacagtta ttagaggaag 480
 atgatgttgt gatgggagtt cagtacaagg ataaagagac tgggagatat caaggaactc 540
 catgctccac tgactgttgt tgcagatggg cttttctcca anttcaggaa aagcctgggc 600
 tcaataaagt ttctgtatca ctcatctggt tggcttctta tgaagaatgc nccc 654

<210> 32
 <211> 673
 <212> DNA
 <213> Homo sapien

 <220>
 <221> misc_feature
 <222> (1) ... (673)
 <223> n = A,T,C or G

<400> 32
 actagtgaag aaaaagaaat tctgatacgg gacaaaaatg ctcttcaaaa catcattctt 60
 tatcacctga caccaggagt tttcattgga aaaggatttg aacctgggtg tactaacatt 120
 ttaaagacca cacaaggaag caaaatcttt ctgaaagaag taaatgatac acttctgggtg 180
 aatgaattga aatcaaaaga atctgacatc atgacaacaa atgggtgtaat tcatgttgta 240
 gataaactcc tctatccagc agacacacct gttggaaatg atcaactgct ggaaataactt 300
 aataaattaa tcaaatacat ccaaattaag tttgttcgtg gtagcacctt caaagaaatc 360
 cccgtgactg tctatnagcc aattattaaa aaatacacca aaatcattga tgggagtgcc 420
 tgtgggaaat aactgaaaaa gagaccgaga agaacgaatc attacaggtc ctgaaataaa 480
 atacctagga tttctactgg aggtggagaa acagaagaac tctgaagaaa ttgttacaag 540
 aagangtccc aaggtcacca aattcattga aggtgggtgat ggtctttatt tgaagatgaa 600
 gaaattaaaa gacgcttcag ggagacnccc catgaaggaa ttgccagcca caaaaaaatt 660
 cagggattag aaa 673

<210> 33
 <211> 673
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(673)
 <223> n = A,T,C or G

<400> 33
 actagttatt tactttcctc cgcttcagaa gggttttcag actgagagcc taagcatact 60
 ggatctgttg tttcttttgg gtctcacctc atcagtgtgc atagtggcag aaattataaa 120
 gaaggttgaa aggagcaggg aaaagatcca gaagcatgtt agttcgacat catcatcttt 180
 tcttgaagta tgatgcatat tgcattattt tatttgcaaa ctaggaattg cagtctgagg 240
 atcatttaga agggcaagtt caagaggata tgaagatttg agaacttttt aactattcat 300
 tgactaaaaa tgaacattaa tgttnaagac ttaagacttt aacctgctgg cagtcccaaa 360
 tgaaattatg caactttgat atcatattcc ttgatttaaa ttgggctttt gtgattgant 420
 gaaactttat aaagcatatg gtcagttatt tnattaaaaa ggcaaaacct gaaccacctt 480
 ctgcacttaa agaagtctaa cagtacaaat acctatctat cttagatgga tntatttntt 540
 tntattttta aatattgtac tatttatggg nggtggggct ttcttactaa tacacaaatn 600
 aatttatcat ttcaanggca ttctatttgg gtttagaagt tgattccaag nantgcatat 660
 ttcgtactg tnt 673

<210> 34
 <211> 684
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(684)
 <223> n = A,T,C or G

<400> 34
 actagtttat tcaagaaaag aacttactga ttctctgtgt cctaaagcaa gagtggcagg 60
 tgatcagggc tgggtgtagca tccggttctt ttagtgcagc taactgcatt tgtcactgat 120
 gaccaaggag gaaatcacta agacatttga gaagcagtgg tatgaacgtt cttggacaag 180
 ccacagttct gagccttaac cctgtagttt gcacacaaga acgagctcca cctccccttc 240
 ttccaggagga atctgtgcgg atagattggc tggacttttc aatggttctg ggttgcaagt 300
 gggcactggt atggctgggt atggagcggg cagccccagg aatcagagcc tcagcccggc 360
 tgcttgggtg gaaggtacag gtgttcagca ccttcggaaa aagggcataa agtngtgggg 420
 gacaattctc agtccaagaa gaatgcattg accattgctg gctatttgct tncctagtan 480
 gaattggatn catttttgac cangatnntt ctncatgtct ttnttgcaat gaaatcaaat 540
 cccgcattat ctacaagtgg tatgaagtcc tgcnncccc agagaggctg ttcaggcnat 600
 gtcttccaag ggcaggggtg gttacaccat ttacacctcc ctctcccccc agattatgna 660
 cncagaagga atttntttcc tccc 684

<210> 35
 <211> 614
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(614)
 <223> n = A,T,C or G

<400> 35
 actagtccaa cgcgttngcn aatattcccc tggtagccta ctctcttacc cccgaatatt 60

```

ggtaagatcg agcaatggct tcaggacatg ggttctcttc tectgtgatc attcaagtgc      120
tcaactgcacg aagactggct tgtctcagtg tntcaacctc accagggctg tctcttggtc      180
cacacctcgc tccctgttag tgccgtatga cagcccccat canatgacct tggccaagtc      240
acggtttctc tgtgggtcaat gttggtnngc tgattgggtg aaagtanggt ggaccaaagg      300
aagncncgtg agcagncanc nccagttctg caccagcagc gcctccgtcc tactnnggtg      360
ttcncgtttc tcctggccct gngtgggcta nggcctgatt cgggaanatg cctttgcang      420
gaaggganga taantgggat ctaccaattg attctggcaa aacnatntct aagattnttn      480
tgctttatgt ggganacana tctanctctc atttntgtct gnanatnaca ccctactcgt      540
gntcgancnc gtcttcgatt ttcgganaca cnccantnaa tactggcggt ctgttggtta      600
aaaaaaaaaa aaaa

```

```

<210> 36
<211> 686
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(686)
<223> n = A,T,C or G

```

```

<400> 36
gtggctggcc cggttctccg cttctcccca tccctacttt tctccctccc ctccctttcc      60
ctccctcgtc gactgttgct tgctggtcgc agactccctg accctccctc caccctcccc      120
taacctcggg gccaccgat tgcccttctt ttctgttgcc ccagcccagc cctagtgtca      180
gggcgggggc ctggagcagc ccgaggcact gcagcagaag anaaaaaga cagcacnaac      240
ctcagctcgc cagtccggtc gctngcttcc cgccgcatgg caatnagaca gacgcgcgtc      300
acctgtctct ggacacgcgc acccgtgggt gatttggcct tcagtggcat cacccttatg      360
ggtatttctt aatcagcgct tgcaaagatg gttaacctat gctacgccag ggagatacag      420
gagactggat tggaaacatt ttgggggtcta aaggtctggt tgggggtgcaa cactgaataa      480
ggatgccacc aaagcagcta cagcagctgc agatttcaca gcccaagtgt gggatgctgt      540
ctcagganat naattgataa cctgggtcat aacacattgt caagaatgtg gatttcccca      600
ggatattatt atttgtttac cggggganag gataactggt tcncntattt taattgaaca      660
aactnaaaca aanctaagg aatcc

```

```

<210> 37
<211> 681
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(681)
<223> n = A,T,C or G

```

```

<400> 37
gagacanacn naacgtcang agaanaaaaag angcatggaa cacaanccag gcncgatggc      60
caccttccca ccagcancca gcgcccccca gcngccccca ngnccggang accangactc      120
cancctgnat caatctganc tctattcctg gcccatnctt acctcggagg tggangccgn      180
aaaggtcgca cnnncagaga agctgctgcc ancaccancc gccccncccc tngcgggctn      240
nataggaaac tggtgaccnn gctgcanaat tcatacagga gcacgcgang ggcacnnnct      300
cacactgagt tnnngatgan gcctnaccan ggacctnccc cagcnnattg annacnggac      360
tgccggaggaa ggaagacccc gnacnggatc ctggccggcn tgccaccccc ccaccctag      420
gattatnccc cttgactgag tctctgaggg gctaccgcaa cccgcctcca ttccctacca      480
natnntgctc natcgggact gacangctgg ggatnggagg ggctatcccc cancatcccc      540

```

```

tnanaccaac agcnacngan natngggggt ccccnngggtc ggngcaacnc tectncccc 600
cggcgcnnggc cttcggtgnt gtcctccntc aacnaattcc naaanggcgg gcccccnngt 660
ggactcctcn ttgttccctc c 681

```

```

<210> 38
<211> 687
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(687)
<223> n = A,T,C or G

```

```

<400> 38
canaaaaaaa aaaacatggc cgaaaccagn aagctgcgcg atggcgccac ggccccctctt 60
ctccccggcct gtgtccggaa ggtttccctc cgaggcgccc cggctcccgc aagcggagga 120
gagggcgggga cntgcggggg cggagctca naggccttg ggccgctctg ctctcccgcc 180
atcgcaaggg cggcgctaac ctnaggcctc cccgcaaagg tccccnangc ggnggcggcg 240
gggggctgtg anaaccgcaa aaanaacgct gggcgcgcn cgaaccgctc ccccccgcg 300
aaggananac ttccacagan gcagcgtttc cacagccan agccacnttt ctagggtgat 360
gcaccccgagt aagttcctgn cggggaagct caccgctgtc aaaaaanctc ttcgctccac 420
cggcgcacna aggggangan ggcangangc tgccgcccgc acaggtcac tgatcacgctc 480
gcccgccta ntctgctttt gtgaatctcc actttgttca accccacccg ccgttctctc 540
ctccttgcgc cttcctctna ccttaanaac cagcttctc taccnatng tanttntctc 600
gcncnngtng aaattaattc ggtcnccgg aacctcttnc ctgtggcaac tgctnaaaga 660
aactgctgtt ctgnttactg cngtccc 687

```

```

<210> 39
<211> 695
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(695)
<223> n = A,T,C or G

```

```

<400> 39
actagtctgg cctacaatag tgtgattcat gtaggacttc tttcatcaat tcaaaacccc 60
tagaaaaacg tatacagatt atataagtag ggataagatt tctaacatth ctgggctctc 120
tgacccttgc gctagactgt ggaaaggag tattattata gtatacaaca ctgctgttgc 180
cttattagtt ataacatgat aggtgctgaa ttgtgattca caatttaaaa aactgtaat 240
ccaaactttt ttttttaact gtagatcatg catgtgaatg ttaatgttaa tttgttcaan 300
gttgttatgg gtagaaaaaa ccacatgcct taaaatttta aaaagcaggg ccaaaactta 360
ttagtttaaa attaggggta tgtttccagt ttgttattaa ntgggttatag ctctgtttag 420
aanaaatcna ngaacangat ttngaaantt aagntgacat tatttnccag tgacttgtaa 480
atttgaaatc anacacggca ccttccgttt tggtnctatt ggnntttgaa tccaancngg 540
ntccaaatct tnttggaac ngtcnnttta acttttttac nanatcttat ttttttatth 600
tggaatggcc ctatttaang ttaaaagggg ggggnnccac naccattcnt gaataaaact 660
naatatatat ccttggtccc ccaaaattta agngg 695

```

```

<210> 40
<211> 674
<212> DNA

```

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(674)

<223> n = A,T,C or G

<400> 40

actagtagtc	agttgggagt	ggttgctata	ccttgacttc	atztatatga	atttccactt	60
tattaaataa	tagaaaagaa	aatcccgggtg	cttgccagtag	agttatagga	cattctatgc	120
ttacagaaaa	tatagccatg	attgaaatca	aatagtaaag	gctgttctgg	ctttttatct	180
tcttagctca	tcttaaataa	gtagtacact	tgggatgcag	tgcgtctgaa	gtgctaataca	240
ggtgtaacaa	tagcacaaat	cgaacttagg	atgtgtttct	tctcttctgt	gtttcgattt	300
tgatcaattc	tttaattttg	ggaacctata	atacagtttt	cctattcttg	gagataaaaa	360
ttaaatggat	cactgatatt	taagtcattc	tgcttctcat	ctnaatattc	catattctgt	420
attagganaa	antacctccc	agcacagccc	cctctcaaac	cccacccaaa	accaagcatt	480
tggaatgagt	ctccttttatt	tccgaantgt	ggatgggtata	acccatatacn	ctccaatttc	540
tgnttgggtt	gggtattaat	ttgaactgtg	catgaaaagn	ggnaatcttt	nccttgggtc	600
aaantttnc	ggttaatttg	nctngncaaa	tccaatttnc	tttaagggtg	tctttataaa	660
atttgctatt	cngg					674

<210> 41

<211> 657

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(657)

<223> n = A,T,C or G

<400> 41

gaaacatgca	agtaccacac	actgtttgaa	ttttgcacaa	aaagtgactg	tagggatcag	60
gtgatagccc	cggaatgtac	agtgtcttgg	tgcaccaaga	tgccctctaa	aggctgacat	120
accttgggac	cctaattggg	cagagagtat	agccctagcc	cagtgggtgac	atgaccactc	180
cctttgggag	gctgaagtta	aagggaatgg	tatgtgtttt	ctcatggaag	cagcacatga	240
atnggtnaca	ngatgttaaa	ntaaggntct	antttgggtg	tcttgtcatt	tgaaaaantg	300
acacactcct	ancantgggt	aaaggggtgc	tggaagccat	ggaagaactc	taaaaacatt	360
agcatgggct	gatctgatta	cttcctggca	tcccgtcac	ttttatggga	agtcttatta	420
naaggatggg	ananttttcc	atatacttgc	tggttggact	ctggaacact	ctctaaattt	480
ccctctatta	aaaatcactg	nccttactac	acttcctcct	tganggaata	gaaatggacc	540
tttctctgac	ttagtctctg	gcatggganc	cagcccaaata	taaaatctga	cttntccggt	600
ttctccngaa	ctcacctact	tgaattggta	aaacctcctt	tggaattagn	aaaaacc	657

<210> 42

<211> 389

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(389)

<223> n = A,T,C or G

<400> 42

```

actagtgtctg aggaatgtaa acaagtttgc tgggccttgc gagacttcac caggtttgttt      60
cgatagctca cactcctgca ctgtgcctgt caccaggaa tgtctttttt aattagaaga      120
caggaagaaa acaaaaacca gactgtgtcc cacaatcaga aacctccgtt gtggcagang      180
ggccttcacc gccaccaggg tgtcccgcca gacagggaga gactccagcc ttctgaggcc      240
atcctgaaga attcctgttt ggggggttgtg aaggaaaatc acccggattt aaaaagatgc      300
tgttgcctgc ccgcgtngtn gggaagggaac tggtttctctg gtgaatttct taaaagaaaa      360
atattttaag ttaagaaaaa aaaaaaaaaa      389

```

<210> 43

<211> 279

<212> DNA

<213> Homo sapien

<400> 43

```

actagtgaca agtccttggg cttgagatgt cttctcgtta aggagatggg ccttttggag      60
gtaaaggata aaatgaatga gttctgtcat gattcactat tctagaactt gcatgacctt      120
tactgtgtta gctctttgaa tgttcttgaa attttagact ttctttgtaa acaaataata      180
tgctcttatt attgtataaa agctgttatg tgcaacagtg tggagatcct tgtctgattt      240
aataaaatac ttaaactctg aaaaaaaaaa aaaaaaaaaa      279

```

<210> 44

<211> 449

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (449)

<223> n = A,T,C or G

<400> 44

```

actagtagca tcttttctac aacgttaaaa ttgcagaagt agcttatcat taaaaaacia      60
caacaacaac aataacaata aatcctaagt gtaaatacagt tattctaccc cctaccaagg      120
atatcagcct gttttttccc ttttttctcc tgggaataat tgtgggcttc ttcccaaatt      180
tctacagcct ctttctctct ctcatgcttg agcttccctg tttgcacgca tgcgttgtgc      240
aagantgggc tgtttngctt ggantncggt ccnagtggaa ncatgctttc ccttgttact      300
gttggaagaa actcaaacct tcnancccta ggtgttncca ttttgtcaag tcatcactgt      360
atttttgtac tggcattaac aaaaaagaa atnaaatatt gttccattaa actttaataa      420
aactttaaaa gggaaaaaaa aaaaaaaaaa      449

```

<210> 45

<211> 559

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (559)

<223> n = A,T,C or G

<400> 45

```

actagtgtgg gggaatcacg gacacttaaa gtcaatctgc gaaataattc ttttattaca      60
cactcactga agttttttgag tcccagagag ccattctatg tcaaacattc caagtactct      120
ttgagagccc agcattacat caacatgccc gtgcagttca aaccgaagtc cgcaggcaaa      180
tttgaagctt tgcttgtcat tcaaacagat gaaggcaaga gtattgctat tcgactaatt      240

```

```

ggtgaagctc ttggaaaaaa ttnactagaa tactttttgt gttaagttaa ttacataagt 300
tgtattttgt taactttatc tttctacact acaattatgc ttttgtatat atattttgta 360
tgatggatat ctataattgt agattttgtt tttacaagct aatactgaag actcgactga 420
aatattatgt atctagccca tagtattgta cttaactttt acaggggtgaa aaaaaaattc 480
tgtgtttgca ttgattatga tattctgaat aaatatggga atatatttta atgtgggtaa 540
aaaaaaaaaa aaaaaggaa 559

```

```

<210> 46
<211> 731
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(731)
<223> n = A,T,C or G

```

```

<400> 46
actagttcta gtaccatggc tgatcatagat gcaaccatta tattccattt agtttcttcc 60
tcagggtccc taacaattgt ttgaaactga atatatatgt ttatgtatgt gtgtgtgttc 120
actgtcatgt atatgggtgta tatgggatgt gtgcagtttt cagttatata tatattcata 180
tatacatatg catatatatg tataatatac atatatacat gcatacactt gtataatata 240
catatatata cacatatatg cacacatatn atcactgagt tccaaagtga gtctttattt 300
ggggcaattg tattctctcc ctctgtctgc tcaactgggc tttgcaagac atagcaattg 360
cttgatttcc tttggataag agtcttatct tgggcactct tgactctagc cttaacttta 420
gatttctatt ccagaatacc tctcatatct atcttaaaac ctaaganggg taaagangtc 480
ataagattgt agtatgaaag antttgctta gttaaattat atctcaggaa actcattcat 540
ctacaaatta aattgtaaaa tgatggtttg ttgtatctga aaaaatgttt agaacaagaa 600
atgtaactgg gtacctgtta tatcaagaa cctcnattta ttaagtctcc tcatagccan 660
atccttatat ngccctctct gacctgantt aatananact tgaataatga atagttaatt 720
taggnttggg c 731

```

```

<210> 47
<211> 640
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(640)
<223> n = A,T,C or G

```

```

<400> 47
tgcgngccgg tttggccctt ctttgtanga cactttcatc cgccctgaaa tcttcccgat 60
cgtttaataa tcctcaggtc cctgcctgca cagggttttt tcttantttg ttgcctaaca 120
gtacaccaaa tgtgacatcc tttcaccaat atngattnct tcataccaca tcntcnatgg 180
anacgactnc aacaattttt tgatnaccn aaanactggg ggctnnaana agtacantct 240
ggagcagcat ggacctgtcn gcnactaang gaacaanagt nntgaacatt tacacaacct 300
ttggtatgtc ttactgaaag anagaaacat gcttctnncc ctagaccacg aggncaaccg 360
caganattgc caatgccaaag tccgagcggg tagatcaggg aatacattcc atggatgcat 420
tacatacntt gtccccgaaa nanaagatgc cctaanggct tcttcanact ggtccngaaa 480
acanctacac ctggtgcttg ganaacanac tctttggaag atcatctggc acaagttccc 540
cccagtgggt tttnccttgg cacctantct accanatcna ttcggaancc attctttgcc 600
ntggcnttnt nttgggacca ntcttctcac aactgnaccc 640

```

<210> 48
 <211> 257
 <212> DNA
 <213> Homo sapien

<400> 48
 actagtatat gaaaatgtaa atatcacttg tgtactcaaa caaaagttgg tcttaagctt 60
 ccaccttgag cagccttgga aacctaacct gcctctttta gcataatcac attttctaaa 120
 tgattttctt tgttcctgaa aaagtgattt gtattagttt tacatttggt ttttggaaga 180
 ttatatttgt atatgtatca tcataaaata tttaaataaa aagtatcttt agagtgaaaa 240
 aaaaaaaaaa aaaaaaaa 257

<210> 49
 <211> 652
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(652)
 <223> n = A,T,C or G

<400> 49
 actagttcag atgagtggct gctgaagggg ccccttgctc attttcatta taaccaatt 60
 tccacttatt tgaactctta agtcataaat gtataatgac ttatgaatta gcacagttaa 120
 gttgacacta gaaactgccc atttctgtat tacactatca aataggaaac attggaaaga 180
 tggggaaaaa aatcttattt taaaatggct tagaaagttt tcagattact ttgaaaattc 240
 taaacttctt tctgtttcca aaacttgaaa atatgtagat ggactcatgc attaagactg 300
 ttttcaaagc tttcctcaca tttttaaagt gtgattttcc ttttaataata catatttatt 360
 ttctttaaag cagctatatc ccaacccatg actttggaga tatacctatn aaaccaatat 420
 aacagcangg ttattgaagc agctttctca aatgttgctt cagatgtgca agttgcaaat 480
 tttattgtat ttgtanaata caatttttgt tttaaactgt atttcaatct atttctcaa 540
 gatgcttttc atatagagtg aaatatccca ngataactgc ttctgtgtcg tcgcatttga 600
 cgcataactg cacaaatgaa cagtgtatac ctcttggttg tgcattnacc cc 652

<210> 50
 <211> 650
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(650)
 <223> n = A,T,C or G

<400> 50
 ttgcgctttg attttttttag ggcttgtgcc ctgtttcact tatagggtct agaatgcttg 60
 tgttgagtaa aaaggagatg cccaatattc aaagctgcta aatgttctct ttgccataaa 120
 gactccgtgt aactgtgtga acacttggga tttttctcct ctgtcccgag gtgcgtctct 180
 gctttctttt ttgggttctt tctagaagat tgagaaatgc atatgacagg ctgagancac 240
 ctcccaaac acacaagctc tcagccacan gcagcttctc cacagcccca gcttcgcaca 300
 ggctcctgga nggctgcctg ggggaggcag acatgggagt gccaaagggtg ccagatgggt 360
 ccaggactac aatgtcttta tttttaactg tttgccactg ctgccctcac ccctgcccg 420
 ctctggagta ccgtctgccc canacaagtg ggantgaaat ggggggtggg gggaacactg 480
 attcccantt agggggtgcc taactgaaca gtagggatan aagggtgtgaa cctgngaant 540

gcttttataa attatnttcc ttgttanatt tatttttttaa tttaatctct gttnaactgc 600
ccngggaaaa ggggaaaaaa aaaaaaaaat tctnttttaa cacatgaaca 650

<210> 51
<211> 545
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)... (545)
<223> n = A,T,C or G

<400> 51
tggcgtgcaa ccagggtagc tgaagtttgg gtctgggact ggagattggc cattaggcct 60
cctganattc cagctccctt ccaccaagcc cagtcttgct acgtggcaca gggcaaacct 120
gactcccttt gggcctcagt tccccctccc ctccatgana tgaaaagaat actacttttt 180
cttgtttggtc taacnttgct ggacncaaag tgtngtcatt attgttgtat tgggtgatgt 240
gtncaaaact gcagaagctc actgcctatg agaggaanta agagagatag tggatganag 300
ggacanaagg agtcattatt tggatatagat ccaccntcc caacctttct ctccctcagtc 360
cctgcncctc atgtntctgg tntggtgagt cctttgtgcc accanccatc atgctttgca 420
ttgctgccat cctgggaagg gggtnatcg tctcacaact tgttgatcgc gtttganatg 480
catgctttct tnatnaaaca aanaaannaa tgtttgacag ngtttaaaat aaaaaanaaa 540
caaaa 545

<210> 52
<211> 678
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)... (678)
<223> n = A,T,C or G

<400> 52
actagtagaa gaacttttgc gcttttgtgc ctctcacagg cgcctaaagt cattgccatg 60
ggaggaagac gatttggggg gggagggggg gggggcangg tccgtggggc tttccctant 120
ntatctccat ntccantggn cnntgtcgcc tcttccctcg tcn cattnga anttantccc 180
tggneccn nccctctecn nectnecct cccccctccg nncctccnn cttttntan 240
nettecccat cteentcccc cetnanngtc ccaacnccgn cagcaatnnc ncacttnctc 300
netecnence teennecgtt cttctnttct cnaentntnc nonnntnccn tgccnntnaa 360
annctctccc cnetgcaanc gattctctcc cteennann ctntccactc cntncttctc 420
nncgctect ntntentnnc ccacctctcn ccttegnecc cantacnctc nccncccttn 480
cgnntenttn nnntectenn accnccncc tcccttence cctcttctcc cgggtntntc 540
tctctccnnc nnennnccct cncnccntcc nngcgneent ttecgcccn cncnccntt 600
ccttntenc cantccatcn cntntnccat netnccntcc netcaenccc gctncccccn 660
ntctctttca cacngtcc 678

<210> 53
<211> 502
<212> DNA
<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(502)

<223> n = A,T,C or G

<400> 53

tgaagatcct	ggtgtcgcca	tgggcccgcg	ccccgcccgt	tgttaccggg	attgtaagaa	60
caagccgtac	ccaaagtctc	gcttctgccg	aggtgtccct	gatgccaaaa	ttcgcatttt	120
tgacctgggg	cggaaaaang	caaaantgga	tgagtctccg	ctttgtggcc	acatgggtgc	180
agatcaatat	gagcagctgt	cctctgaagc	cctgnangct	gcccgaattt	gtgccaataa	240
gtacatggta	aaaagtngtg	gcnaagatgc	ttccatatcc	gggtgcggn	ccaccccttc	300
cacgtcatcc	gcatcaacaa	gatgttgtcc	tgtgctgggg	ctgacaggct	cccaacaggc	360
atgcgaagtg	ccttttgaaa	acccanggca	ctgtggccag	ggttcacatt	gggccaattn	420
atcatgttca	tcgcaccaa	ctgcagaaca	angaacntgt	naattnaagc	cctgcccagg	480
gncaanttca	aatttcccgg	cc				502

<210> 54

<211> 494

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(494)

<223> n = A,T,C or G

<400> 54

actagtccaa	gaaaaatatg	cttaatgtat	attacaaagg	ctttgtatat	gttaacctgt	60
tttaatgcc	aaagtttgct	ttgtccacaa	tttccttaag	acctcttcag	aaagggattt	120
gtttgcctta	atgaatactg	ttgggaaaaa	acacagtata	atgagtgaag	agggcagaag	180
caagaaattt	ctacatctta	gcgactccaa	gaagaatgag	tatccacatt	tagatggcac	240
attatgagga	ctttaatctt	tccttaaaca	caataatggt	ttcttttttc	ttttattcac	300
atgatttcta	agtatatatt	tcatgcagga	cagtttttca	accttgatgt	acagtgactg	360
tgttaaaatt	ttcttttcagt	ggcaacctct	ataatcttta	aaatatgggtg	agcatcttgt	420
ctgttttgaa	ngggatatga	cnatnaatct	atcagatggg	aaatcctggt	tccaagttag	480
aaaaaaaaaa	aaaa					494

<210> 55

<211> 606

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(606)

<223> n = A,T,C or G

<400> 55

actagtaaaa	agcagcattg	ccaaataatc	cctaattttc	cactaaaaat	ataatgaaat	60
gatgttaagc	tttttgaaaa	gttttaggtta	aacctactgt	tgttagatta	atgtatttgt	120
tgcttccctt	tatctggaat	gtggcattag	cttttttatt	ttaacctctt	ttaatcttta	180
ttcaattcca	tgacttaagg	ttggagagct	aaacactggg	atttttggat	aacagactga	240
cagttttgca	taattataat	cggcattgta	catagaaagg	atatggctac	cttttgtaa	300
atctgcactt	tctaaatatc	aaaaaaggg	aatgaagtat	aaatcaattt	ttgtataatc	360
tgtttgaaac	atgantttta	tttgcttaat	attanggctt	tgcccttttc	tgttagtctc	420
ttgggatcct	gtgtaaaact	gttctcatta	aacaccaaac	agttaagtcc	attctctggt	480

```

actagctaca aattccgttt catattctac ntaacaatth aaattaactg aaatatttct 540
anatggtcta cttctgtcnt ataaaaacna aacttgantt nccaaaaaaa aaaaaaaaaa 600
aaaaaa 606

```

```

<210> 56
<211> 183
<212> DNA
<213> Homo sapien

```

```

<400> 56
actagtatat ttaaacttac aggcttattt gtaatgtaaa ccaccatttt aatgtactgt 60
aattaacatg gttataatac gtacaatcct tccctcatcc catcacacaa ctttttttgt 120
gtgtgataaa ctgatttttg tttgcaataa aaccttgaaa aataaaaaaa aaaaaaaaaa 180
aaa 183

```

```

<210> 57
<211> 622
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1) ... (622)
<223> n = A,T,C or G

```

```

<400> 57
actagtcact actgtcttct ccttgtagct aatcaatcaa tattcttccc ttgcctgtgg 60
gcagtggaga gtgctgctgg gtgtacgctg cacctgcccc ctgagttggg gaaagaggat 120
aatcagtgag cactgttctg ctacagagctc ctgatctacc ccacccccta ggatccagga 180
ctgggtcaaa gctgcatgaa accaggccct ggcagcaacc tgggaatggc tggaggtggg 240
agagaacctg acttctcttt cctctccct cctccaacat tactggaact ctatcctgtt 300
agggatcttc tgagcttggt tccctgctgg gtgggacaga agacaaagga gaagggangg 360
tctacaanaa gcagcccttc tttgtcctct ggggttaatg agcttgacct ananttcagt 420
gaganaccan aagcctctga tttttaattt ccntnaaatg tttgaagtnt atatntacat 480
atatatatth ctttnaatnt ttgagtcttt gatatgtctt aaaatccant cctctgccn 540
gaaacctgaa ttaaaacat gaanaaaaat gtttnoctta aagatgttan taattaattg 600
aaacttgaaa aaaaaaaaaa aa 622

```

```

<210> 58
<211> 433
<212> DNA
<213> Homo sapien

```

```

<400> 58
gaacaaattc tgattgggta tgtaccgtca aaagacttga agaaatttca tgattttgca 60
gtgtggaagc gttgaaaatt gaaagttact gcttttccac ttgctcatat agtaaaggga 120
tcctttcagc tgccagtgtt gaataatgta tcatccagag tgatgttatc tgtgacagtc 180
accagcttta agctgaacca ttttatgaat accaaataaa tagacctctt gtactgaaaa 240
catattttgtg actttaatcg tgctgcttgg atagaaatat ttttactggg tcttctgaat 300
tgacagtaaa cctgtccatt atgaatggcc tactgttcta ttatttgttt tgacttgaat 360
ttatccacca aagacttcat ttgtgtatca tcaataaagt tgtatgtttc aactgaaaaa 420
aaaaaaaaa aaa 433

```

```

<210> 59
<211> 649

```

<212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(649)
 <223> n = A,T,C or G

<400> 59
 actagttatt atctgacttt cnggttataa tcattctaata gagtgtgaag tagcctctgg 60
 tgtcatttgg atttgcattt ctctgatgag tgatgctatc aagcaccttt gctgggtgctg 120
 ttggccatat gtgtatgttc cctggagaag tgtctgtgct gagccttggc ccacttttta 180
 attaggcgtn tgtcttttta ttactgagtt gtaaganttc tttatatatt ctggattcta 240
 gacccttatac agatacatgg ttgcaaata tttctccca ttctgtgggt tgtgttttca 300
 ctttatcgat aatgtcctta gacatataat aaatttgtat tttaaaagtg acttgatttg 360
 ggctgtgcaa ggtgggctca cgcttgtaat ccagcactt tgggagactg aggtgggtgg 420
 atcatatgan gangctagga gtctgaggtc agcctggcca gcatagcgaa aacttgtctc 480
 tacnaaaaat acaaaaatta gtcaggcatg gtggtgcacg tctgtaatac cagcttctca 540
 ggangctgan gcacaaggat cacttgaacc ccagaangaa gangttgcag tganctgaag 600
 atcatgccag ggcaacaaaa atgagaactt gtttaaaaaa aaaaaaaaaa 649

<210> 60
 <211> 423
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(423)
 <223> n = A,T,C or G

<400> 60
 actagttcag gccttccagt tcaactgaaa acatggggaa gtgtgcccag ctggctggaa 60
 acctggcagt gataccatca agcctgatgt ccaaaagagc aaagaatatt tctccaagca 120
 gaagtgagcg ctgggctgtt ttagtgccag gctgcgggtg gcagccatga gaacaaaacc 180
 tcttctgtat ttttttttct cattagtana acacaagact cngattcagc cgaattgtgg 240
 tgtcttaciaa ggcagggcct tctacaggg ggtgganaaa acagcctttc ttcctttggt 300
 aggaatggcc tgagttggcg ttgtgggcag gctactggtt tgtatgatgt attagtagag 360
 caaccatta atcttttgta gtttgatatna aacttgantc gagaccttaa aaaaaaaaaa 420
 aaa 423

<210> 61
 <211> 423
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(423)
 <223> n = A,T,C or G

<400> 61
 cgggactgga atgtaaagtg aagttcggag ctctgagcac gggctcttcc cgccgggtcc 60
 tccctcccca gacccagag ggagaggccc accccgcccc gccccgcccc agccctgct 120
 caggtctgag tatggctggg agtcgggggc cacaggcctc tagctgtgct gctcaagaag 180

```

actggatcag ggtanctaca agtggccggg ccttgccctt gggattctac cctgttcccta 240
atttgggtgtt ggggtgcggt gtccctggcc cctttttcca cactnccctcc ctcngacag 300
caacctccct tggggcaatt gggcctggnt ctcnccccgn tgttgcnacc ctttgttgggt 360
ttaaggncctt taaaaatgtt anntttttccc ntgccnggggt taaaaaagga aaaaactnaa 420
aaa 423

```

```

<210> 62
<211> 683
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(683)
<223> n = A,T,C or G

```

```

<400> 62
gctggagagg ggtacggact ttcttggagt tgtcccagggt tggaatgaga ctgaactcaa 60
gaagagaccc taagagactg gggaatggtt cctgccttca ggaaagtga agacgcttag 120
gctgtcaaca cttaaaggaa gtccccttga agcccagagt ggacagacta gaccattga 180
tggggccact ggccatggtc cgtggacaag acattccngt gggccatggc acaccggggg 240
ggatcaaaat gtgtacttgt ggggtctcgc cccttgccaa aaccaaacca ntccactcc 300
tgtcnttggga ctttcttccc attccctcct ccccaaattgc acttcccctc ctcctctgc 360
ccctcctgtg tttttggaat tctgtttccc tcaaaattgt taatttttta nttttngacc 420
atgaacttat gtttggggtc nangttcccc ttnccaatgc atactaatat attaattggtt 480
atattttttt gaaatatattt ttaatgaact tggaaaaaat tnntggaatt tccttntctt 540
cntttntttt ggggggggtg ggggggntggg ttaaaatttt tttggaancc cnatnggaaa 600
ttnttacttg gggccccctt naaaaaantn anttccaatt cttnnatngc ccctnttccn 660
ctaaaaaaaa ananannaaa aan 683

```

```

<210> 63
<211> 731
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(731)
<223> n = A,T,C or G

```

```

<400> 63
actagtcata aagggtgtgc gcgtcttcga cgtggcggtc ttggcgccac tgctgcgaga 60
cccggccctg gacctcaagg tcatccactt ggtgcgtgat cccgcgcggg tggcgagttc 120
acggatccgc tcgcgccacg gcctcatccg tgagagccta cagggtggtc gcagccgaga 180
ccgcgagctc accgcatgcc cttcttggag gccgcgggcc acaagcttgg cgcccaaaa 240
gaaggcgtn gggggccgca aantaccacg ctctgggcgc tatggaangt cctcttgcaa 300
taatattggt tnaaaanctg canaanagcc cctgcancct cctgaactgg gntgcagggc 360
cncttacctn gtttggnctg ggttacaaa gaaacctgtt ngaaaaaccct ncnnaaaacc 420
ttccgggaaa attntncaaa ttttntttgg ggaattnttg ggtaaaacccc cnnaaaatgg 480
gaaacntttt tgccctnnaa antaaaccat tnggttccgg gggccccccc ncaaaaccct 540
ttttnttttt tttntgcccc cantnncccc cgggggcccc tttttttngg ggaaaaanccc 600
ccccctncc nanantttta aaaggngggg anaatttttn ntnccccccc gggncccccn 660
ggngntaaaa nggtttcncc ccccgagg gngggggnnc ctcnnaaacc cntntcnna 720
ccncttttn n 731

```

<210> 64
 <211> 313
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(313)
 <223> n = A,T,C or G

<400> 64
 actagttgtg caaaccacga ctgaagaaag acgaaaagtg ggaaataact tgcaacgtct 60
 gttagagatg gttgctacac atgttggtgc tgtagagaaa catcttgagg agcagattgc 120
 taaagttgat agagaatatg aagaatgcat gtcagaagat ctctcggaaa atattaaaga 180
 gattagagat aagtatgaga agaaagctac tctaattaag tcttctgaag aatgaagatn 240
 aaatgttgat catgtatata tatccatagt gaataaaatt gtctcagtaa agttgtaaaa 300
 aaaaaaaaaaaa aaa 313

<210> 65
 <211> 420
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(420)
 <223> n = A,T,C or G

<400> 65
 actagttccc tggcaggcaa gggcttccaa ctgaggcagt gcatgtgtgg cagagagagg 60
 caggaagctg gcagtggcag cttctgtgtc tagggagggg tgtggctccc tccttccctg 120
 tctgggaggt tggagggaag aatctaggcc ttagcttgcc ctcccgccac cttcccctt 180
 gtagatactg ccttaacact ccctcctctc tcagctgtgg ctgccacca agccaggttt 240
 ctccgtgctc actaattttat ttccaggaaa ggtgtgtgga agacatgagc cgtgtataat 300
 atttgtttta acatttttcat tgcaagtatt gaccatcatc cttggttgtg tatcgttgta 360
 acacaaatta atgatattaa aaagcatcca aacaaagccn annnnnaana nnannngaaa 420

<210> 66
 <211> 676
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(676)
 <223> n = A,T,C or G

<400> 66
 actagtttcc tatgatcatt aaactcattc tcagggttaa gaaaggaatg taaatttctg 60
 cctcaatttg tacttcatca ataagttttt gaagagtgcg gatttttagt caggctctta 120
 aaataaaact acaaatctgg atgcatttct aaattctgca aatgtttcct ggggtgactt 180
 aacaaggaat aatcccacaa tatacctagc tacctaatac atggagctgg ggctcaaccc 240
 actgttttta aggatttgcg cttacttgtg gctgaggaaa aataagtagt tccgagggaa 300
 gtagttttta aatgtgagct tatagatngg aaacagaata tcaacttaat tatggaaatt 360
 gttagaaacc tgttctcttg ttatctgaat cttgattgca attactattg tactggatag 420

actccagccc	attgcaaagt	ctcagatatc	ttanctgtgt	agttgaattc	cttggaaatt	480
ctttttaaga	aaaaattgga	gtttnaaaga	aataaacccc	tttgttaaat	gaagcttggc	540
tttttgggtga	aaaanaatca	tcccgcaggg	cttattgttt	aaaaanggaa	ttttaagcct	600
ccctggaaaa	anttgttaat	taaatgggga	aaatgntggg	naaaaattat	ccgttagggg	660
ttaaagggaa	aactta					676

<210> 67

<211> 620

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(620)

<223> n = A,T,C or G

<400> 67

caccattaaa	gctgcttacc	aagaacttcc	ccagcatttt	gacttccttg	tttgatagct	60
gaattgtgag	caggtgatag	aagagccttt	ctagttgaac	atacagataa	tttgctgaat	120
acattccatt	taatgaagg	gttacatctg	ttacgaagct	actaagaagg	agcaagagca	180
taggggaaaa	aaatctgatc	agaacgcac	aaactcacat	gtgccccctc	tactacaaac	240
agattgtagt	gctgtggtgg	tttattccgt	tgtgcagaac	ttgcaagctg	agtcactaaa	300
cccaaagaga	ggaaattata	ggtagttaa	acattgtaac	cccaggaact	aagttaaatt	360
cacttttgaa	gtgttttggt	ttttattttt	ggttgtctg	atttactttg	ggggaaaang	420
ctaaaaaaa	agggatatca	atctctaatt	cagtgcccac	taaaagttgt	ccctaaaaag	480
tctttactgg	aanttatggg	actttttaag	ctccaggnt	tttggtcctc	caaattaacc	540
ttgcatgggc	cccttaaaat	tgttgaangg	cattcctgcc	tctaagtttg	gggaaaattc	600
ccccnttttn	aaaatttggg					620

<210> 68

<211> 551

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(551)

<223> n = A,T,C or G

<400> 68

actagtagct	ggtacataat	cactgaggag	ctattttctta	acatgctttt	atagaccatg	60
ctaattgctag	accagtattt	aagggctaata	ctcacacctc	cttagctgta	agagtctggc	120
ttagaacaga	cctctctgtg	caataacttg	tggccactgg	aaatccctgg	gccggcattt	180
gtattggggg	tgcaatgact	cccaagggcc	aaaagagtta	aaggcacgac	tgggatttct	240
tctgagactg	tgggtgaaact	ccttccaagg	ctgagggggg	cagtangtgc	tctgggaggg	300
actcggcacc	actttgatat	tcaacaagcc	acttgaagcc	caattataaa	attgttattt	360
tacagctgat	ggaactcaat	ttgaaccttc	aaaactttgt	tagtttatcc	tattatattg	420
ttaaaccctaa	ttacatttgt	ctagcattgg	atttggttcc	tgtngcatat	gtttttttcn	480
cctatgtgct	cccccccc	nmatcttaat	ttaaaccnca	attttgcnat	tcnccnnnnn	540
nannnnanna	a					551

<210> 69

<211> 396

<212> DNA

<213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(396)
 <223> n = A,T,C or G

<400> 69
 cagaaatgga aagcagagtt ttcattttctg tttataaaacg tctccaaaca aaaatggaaa 60
 gcagagtttt cattaaatcc ttttaccttt tttttttctt ggtaatcccc tcaaataaca 120
 gtatgtggga tattgaatgt taaagggata tttttttcta ttatttttat aattgtacaa 180
 aattaagcaa atgttaaaag ttttatatgc tttattaatg ttttcaaaag gtatnatata 240
 tgtgatacat tttttaagct tcagttgctt gtcttctggg actttctgtt atgggctttt 300
 ggggagccan aaaccaatct acnatctctt tttgtttgcc aggacatgca ataaaattta 360
 aaaaataaat aaaaactatt nagaaattga aaaaaa 396

<210> 70
 <211> 536
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(536)
 <223> n = A,T,C or G

<400> 70
 actagtgcga aagcaaatat aaacatcgaa aaggcggttc tcacgttagc tgaagatata 60
 cttcgaaaga cccctgtaaa agagcccaac agtgaaaatg tagatatcag cagtggagga 120
 ggcgtgacag gctggaagag caaatgctgc tgagcattct cctgttccat cagttgccat 180
 ccactacccc gttttctctt cttgctgcaa aataaaccac tctgtccatt ttaactcta 240
 aacagatatt tttgtttctc atcttaacta tccaagccac ctattttatt tgttctttca 300
 tctgtgactg cttgctgact ttatcataat tttcttcaaa caaaaaaatg tatagaaaaa 360
 tcatgtctgt gacttcattt ttaaagtnta cttgctcagc tcaactgcat ttcagttggt 420
 ttatagtcca gttcttatca acattnaaac ctatngcaat catttcaaat ctattctgca 480
 aattgtataa gaataaaagt tagaatttaa caattaaaaa aaaaaaaaaa aaaaaa 536

<210> 71
 <211> 865
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(865)
 <223> n = A,T,C or G

<400> 71
 gacaaagcgt taggagaaga anagaggcag ggaanactnc ccaggcacga tggccncctt 60
 cccaccagca accagcgccc cccaccagcc cccaggcccc gacgacgaag actccatcct 120
 ggattaatct nacctctntc gcctgnccca ttcctacctc ggaggtggag gccggaaagg 180
 tcncaccaag aganaantcgt ctgccaacac caaccgcccc agccctggcg ggcacganag 240
 gaaactgggtg accaatctgc agaattctna gaggaanaag cnaggggccc cgcgctnaga 300
 cagagctgga tatgangcca gaccatggac nctacnccn ncaatncana cgggactgcy 360
 gaagatggan gaccncgcac nngatcaggc cngctnncca nccccccacc cctatgaatt 420
 attcccgcgt aangaatctc tgannggctt ccannaaagc gcctccccnc cnaacgnaan 480

tncaacatng	ggattanang	ctgggaactg	naaggggcaa	ancctnnaat	atccccagaa	540
acaanctctc	ccnaanaaac	tggggcncct	catnggtggn	accaactatt	aactaaaccg	600
cacgccaagn	aantataaaa	ggggggcccc	tcnccggngg	accccttttt	gtcccttaat	660
ganggttatc	cnccttgctg	accatgggtnc	ccnnttctgt	ntgnatgttt	ccnctcccct	720
ccncttatnt	cnagccgaac	tcnnatttnc	ccgggggtgc	nacnnaantng	tncncttttn	780
ttngttgncc	cngccccttc	cgncggaacn	cgtttccccg	ttantaacgg	cacccggggg	840
aagggtgntt	ggccccctcc	ctccc				865

<210> 72

<211> 560

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(560)

<223> n = A,T,C or G

<400> 72

cctggacttg	tcttggttcc	agaacctgac	gacccggcga	cggcgacgtc	tcttttgact	60
aaaagacagt	gtccagtgtc	ccngcctagg	agtctacggg	gaccgcctcc	cgcgccgcca	120
ccatgcccac	cttctctggc	aactggaaaa	tcateccgatc	ggaaaacttc	gangaattgc	180
tcnaantgct	gggggtgaat	gtgatgctna	ngaanattgc	tgtggctgca	gcgtccaagc	240
cagcagtgga	gacnaacag	gagggagaca	ctttctacat	caaaacctcc	accaccgtgc	300
gcaccacaaa	gattaacttc	nnngttgggg	aggantttga	ggancaaact	gtggatngga	360
ngcctgtnaa	aacctggtga	aatgggagaa	tganaataaa	atggtctgtg	ancanaaact	420
cctgaaayga	gaaggccccc	anaactcctg	gaccngaaaa	actgaccnc	cnatngggga	480
actgatnctt	gaacctgaa	cgggcgggat	ganccttttt	tnttgccncc	naanggggtc	540
tttcnctttc	cccaaaaaaa					560

<210> 73

<211> 379

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(379)

<223> n = A,T,C or G

<400> 73

ctggggancc	ggcggttnng	nccatntcnn	gncgcgaagg	tggcaataaa	aancnctga	60
aaccgcncac	naaacatgcc	naagatatgg	acgaggaaga	tngngctttc	nngnacaanc	120
gnanngagga	acanaacaaa	ctcnangagc	tctcaagcta	atgccgcggg	gaagggggccc	180
ttggccacnn	gtggaattaa	gaaatctggc	aaanngtann	tgttccttgt	gcctnangag	240
ataaangacc	ctttattttca	tctgtattta	aacctctctn	ttccctgnca	taacttcttt	300
tnccacgtan	agntggaant	anttggtgtc	ttggactggt	gtncatttta	gannaaactt	360
ttgttcaaaa	aaaaaataa					379

<210> 74

<211> 437

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature
 <222> (1)...(437)
 <223> n = A,T,C or G

<400> 74
 actagttcag actgccacgc caaccccaga aaatacccca catgccagaa aagtgaagtc 60
 ctaggtgttt ccatctatgt ttcaatctgt ccatctacca ggccctcgca taaaaacaaa 120
 acaaaaaaac gctgccaggt ttanaagca gttctggtct caaaaccatc aggatcctgc 180
 caccagggtt cttttgaaat agtaccacat gtaaaaggga atttggcttt cacttcatct 240
 aatcactgaa ttgtcaggct ttgattgata attgtagaaa taagtagcct tctgttgtgg 300
 gaataagtta taatcagtat tcatctcttt gttttttgtc actcttttct ctctnattgt 360
 gtcatttgta ctgtttgaaa aatatttctt ctataaaatt aaactaacct gccttaaaaa 420
 aaaaaaaaaa aaaaaaa 437

<210> 75
 <211> 579
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(579)
 <223> n = A,T,C or G

<400> 75
 ctccgtcgcc gccaagatga tgtgcggggc gccctccgcc acgcagccgg ccaccgccga 60
 gaccagcac atcgccgacc aggtgaggtc ccagcttgaa gagaaagaaa acaagaagtt 120
 ccctgtgttt aaggccgtgt cattcaagag ccaggtggct gcggggacaa actacttcat 180
 caaggtgcac gtcggcgagc aggacttcgt acacctgcga gtgttccaat ctctccctca 240
 tgaaaaacaag cccttgacct tatctaacta ccagaccaac aaagccaagc atgatgagct 300
 gacctatttc tgatcctgac ttgggacaag gcccttcagc cagaagactg acaaagtcac 360
 cctccgtcta ccagagcgtg cacttgatgat cctaaaataa gttcatctc cgggctgtgc 420
 ccttgggggtg gaagggggcan gatctgcact gcttttgcac ttctcttcct aaatttcatt 480
 gtgttgattc tttccttcca ataggtgatc ttnattactt tcagaatatt ttccaaatna 540
 gatataatttt naaaatcctt aaaaaaaaaa aaaaaaaaaa 579

<210> 76
 <211> 666
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(666)
 <223> n = A,T,C or G

<400> 76
 gtttatccta tctctccaac cagattgtca gtccttgag ggcaagagcc acagtatatt 60
 tcctgtttc ttccacagtg cctaataata ctgtggaact aggttttaata aatttttttaa 120
 ttgatgttgt tatgggcagg atggcaacca gaccattgtc tcagagcagg tgctggctct 180
 ttcttggtta ctccatgttg gctagcctct ggtaacctct tacttattat cttcaggaca 240
 ctactacag ggaccagga tgatgcaaca tccttgctct tttatgacag gatgtttgct 300
 cagcttctcc aacaataaaa agcacgtggc aaaacacttg cggatattct ggactgtttt 360
 taaaaaatat acagtttacc gaaaatcata ttatcttaca atgaaaagga ntttatagat 420
 cagccagtga acaacctttt cccaccatac aaaaattcct tttcccgaa gaaaanggct 480

ttctcaataa	ncctcacttt	cttaanatct	tacaagatag	ccccganatc	ttatcgaaac	540
tcatttttagg	caaatatgan	ttttattgtt	cgttacttgt	ttcaaaattt	gggtattgtga	600
atatcaatta	ccacccccat	ctcccatgaa	anaaanggga	aanggtgaan	ttcntaanccg	660
cttaaa						666

<210> 77

<211> 396

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(396)

<223> n = A,T,C or G

<400> 77

ctgcagccccg	ggggatccac	taatctacca	nggttatttg	gcagctaatt	ctanatttgg	60
atcattgccc	aaagttgcac	ttgctggtct	cttgggattt	ggccttgga	aggtatcata	120
catanganta	tgccanaata	aattccattt	ttttgaaaat	canctccntg	gggctggttt	180
tggtccacag	cataacangc	actgcctcct	tacctgtgag	gaatgcaaaa	taaagcatgg	240
attaagttag	aaggagact	ctcagccttc	agcttcctaa	attctgtgtc	tgtgactttc	300
gaagtttttt	aaacctctga	atttgtacac	atttaaaatt	tcaagtgtac	tttaaaataa	360
aatacttcta	atgggaacaa	aaaaaaaaaa	aaaaaa			396

<210> 78

<211> 793

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(793)

<223> n = A,T,C or G

<400> 78

gcctcctagc	cgccgactca	cacaaggcag	gtgggtgagg	aaatccagag	ttgccatgga	60
gaaaattcca	gtgtcagcat	tcttgctcct	tgtggccctc	tcctacactc	tgccagaga	120
taccacagtc	aaacctggag	caaaaaagga	cacaaaggac	tctcgaccca	aactgcccc	180
gacctctcc	agaggttggg	gtgaccaact	catctggact	cagacatatg	aagaagctct	240
atataaatcc	aagacaagca	acaaaccctt	gatgattatt	catcacttgg	atgagtggcc	300
acacagtcna	gctttaaaga	aagtgtttgc	tgaaaataaa	gaaatccaga	aattggcaga	360
gcagtttgtc	ctcctcaatc	tggtttatga	aacaactgac	aaacaccttt	ctcctgatgg	420
ccagtatgtc	ccaggattat	gtttgttgac	ccatctctga	cagttgaagc	cgatatcctg	480
ggaagatatt	cnaaccgtct	ctatgcttac	aaactgcaga	tacgctctgt	tgcttgacac	540
atgaaaaagc	tctcaagttg	ctnaaaatga	attgtgaagaa	aaaaaatctc	cagccttctg	600
tctgtcggct	tgaaaattga	aaccagaaaa	atgtgaaaaa	tggctattgt	ggaacanatn	660
gacacctgat	taggttttgg	ttatgttcac	cactattttt	anaaaanan	nttttaaaat	720
ttggttcaat	tntctttttt	aaacaatntg	tttctacntt	gnganctgat	ttctaaaaaa	780
aataatnttt	ggc					793

<210> 79

<211> 456

<212> DNA

<213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(456)
 <223> n = A,T,C or G

<400> 79
 actagtattgg ggtgggaggc cccacccttc tcccctaggc gctgttcttg ctccaaaggg 60
 ctccgtggag agggactggc agagctgang ccacctgggg ctggggatcc cactcttctt 120
 gcagctgttg agcgcaccta accactgggc atgccccac ccctgctctc cgcacccgct 180
 tcctcccgac cccangacca ggctacttct cccctcctct tgccctccctc ctgcccctgc 240
 tgccctctgat cgtangaatt gangantgtc ccgccttggtg gctganaatg gacagtggca 300
 ggggctggaa atgggtgtgt gtgtgtgtgt gtgtgtgtgt gtgtgtgtgt gnccccccc 360
 tgcaagaccg agattgaggg aaancatgtc tgctgggtgt gaccatgttt cctctccata 420
 aantnccct gtgacnctca naaaaaaaaa aaaaaa 456

<210> 80
 <211> 284
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(284)
 <223> n = A,T,C or G

<400> 80
 ctttgtacct ctagaaaaga taggtattgt gtcatgaaac ttgagtttaa attttatata 60
 taaaactaaa agtaatgtct acttttagcaa cacatactaa aattggaacc atactgagaa 120
 gaatagcatg acctccgtgc aaacaggaca agcaaatttg tgatgtgttg attaaaaaga 180
 aataaataaaa tgtgtatatg tgtaacttgt atgtttatgt ggaatacaga ttgggaaata 240
 aaatgtattt cttactgtga aaaaaaaaaa aaaaaaaaaa aana 284

<210> 81
 <211> 671
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(671)
 <223> n = A,T,C or G

<400> 81
 gccaccaaca ttccaagcta ccctgggtac ctttgtgcag tagaagctag tgagcatgtg 60
 agcaagcggg gtgcacacgg agactcatcg ttataattta ctatctgcca agagtagaaa 120
 gaaaggctgg ggatatttgg gttggcttgg ttttgatttt ttgcttgttt gtttgttttg 180
 tactaaaaca gtattatctt ttgaatatcg tagggacata agtatataca tgttatccaa 240
 tcaagatggc tagaatgggtg cttttctgag tgtctaaaac ttgacacccc tggtaaattct 300
 ttcaacacac ttccactgcc tgcgtaatga agttttgatt catttttaac cactggaatt 360
 tttcaatgcc gtcattttca gttagatnat tttgcacttt gagattaaaa tgccatgtct 420
 atttgattag tcttattttt ttattttttac aggcattatca gtctcactgt tggctgtcat 480
 tgtgacaaag tcaaataaac ccccnaggac aacacacagt atgggatcac atattgtttg 540
 acattaagct ttggccaaaa aatgttgcac gtgttttacc tgcacttgct aaatcaatan 600
 canaaaggct ggctnataat gttgggtggtg aaataattaa tnantaacca aaaaaaaaaa 660
 aaaaaaaaaa a 671

<210> 82
 <211> 217
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(217)
 <223> n = A,T,C or G

<400> 82
 ctgcagatgt ttcttgaatg ctttgtcaaa ttaanaaagt taaagtgcaa taatgtttga 60
 agacaataag tgggtggtgta tcttgtttct aataagataa acttttttgt ctttgcctta 120
 tcttattagg gagttgtatg tcagtgtata aaacatactg tgtggtataa caggcttaat 180
 aaattcttta aaaggaaaaa aaaaaaaaaa aaaaaaa 217

<210> 83
 <211> 460
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(460)
 <223> n = A,T,C or G

<400> 83
 cgcgagtggg agcaccagga tctcgggctc ggaacgagac tgcacggatt gttttaagaa 60
 aatggcagac aaaccagaca tgggggaaat cgccagcttc gatnaggcca agctgaanaa 120
 aacggagacg caggagaaga acaccctgcc gaccaaagag accattgagc angagaagcg 180
 gagtgaaatt tcctaagatc ctggaggatt tcctaccccc gtcctcttcg agaccccgat 240
 cgtgatgtgg aggaagagcc acctgcaaga tggacacgag ccacaagctg cactgtgaac 300
 ctgggcactc cgcgccgatg ccaccggcct gtgggtctct gaagggaccc cccccaatcg 360
 gactgccaaa ttctccggtt tgccccggga tattatacaa nattatttgt atgaataatg 420
 annataaaac acacctcgtg gcancaana aaaaaaaaaa 460

<210> 84
 <211> 323
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(323)
 <223> n = A,T,C or G

<400> 84
 tgggtgatct tggctctgtg gagctgctgg gacgggatct aaaagactat tctggaagct 60
 gtgggtccaan gcatttttct ggcttaacgg gtcccgaac aaaggacacc agctctctaa 120
 aattgaagtt taccoganat aacaatcttt tgggcagaga tgcctatttt aacaaacncc 180
 gtccctgcgc aacaacnaac aatctctggg aaataccggc catgaacntg ctgtctcaat 240
 cnancatctc tctagctgac cgatcatatc gtcccagatt actacanatc ataataattg 300
 atttcctgta naaaaaaaaaa aaa 323

<210> 85
 <211> 771
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(771)
 <223> n = A,T,C or G

<400> 85
 aaactgggta ctcaacactg agcagatctg ttctttgagc taaaaacccat gtgctgtacc 60
 aanagtttgc tcctggctgc tttgatgtca gtgctgctac tccacctctg cggcgaaatca 120
 gaagcaagca actttgactg ctgtcttgga tacacagacc gtattcttca tcctaaattt 180
 attgtgggct tcacacggca gctggccaat gaaggctgtg acatcaatgc tatcatcttt 240
 cacacaaaga aaaagtgtgc tgtgtgcgca aatccaaaac agacttgggt gaaatatatt 300
 gtgctctctc tcagtaaaaa agtcaagaac atgtaaaaac tgtggctttt ctggaatgga 360
 attggacata gcccaagaac agaaagaact tgctgggggt ggagggttca cttgcacatc 420
 atgganggtt tagtgcttat cttatttttg cctcctggac ttgtccaatt natgaagtta 480
 atcatattgc atcatanttt gctttgttta acatcacatt naaattaaac tgtattttat 540
 gttatttata gctntaggtt ttctgtgttt aactttttat acnaantttc ctaaaactatt 600
 ttggtntant gcaanttaaa aattatattt ggggggggaa taaatattgg antttctgca 660
 gccacaagct ttttttaaaa aaccantaca nccnngtta atggtnggtc ccnaatgggt 720
 tttgcttttn antagaaat ttnttagaac natttgaaaa aaaaaaaaaa a 771

<210> 86
 <211> 628
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(628)
 <223> n = A,T,C or G

<400> 86
 actagtttgc tttacatttt tgaaaagtat tatttttgtc caagtgttta tcaactaaac 60
 cttgtgttag gtaagaatgg aatttattaa gtgaatcagt gtgacccttc ttgtcataag 120
 attatcttaa agctgaagcc aaaatatgct tcaaaagaaa angactttat tgttcattgt 180
 agttcataca ttcaaagcat ctgaactgta gtttctatag caagccaatt acatccataa 240
 gtggagaang aaatagatta atgtcnaagt atgattgggt gagggagcaa ggttgaagat 300
 aatctgggggt tgaaattttc tagttttcat tctgtacatt tttagttnga catcagattt 360
 gaaatattaa tgtttacctt tcaatgtgtg gtatcagctg gactcantaa caccctttc 420
 ttccctnngg gatggggaat ggattattgg aaaatggaaa gaaaaaagta cttaaagcct 480
 tcctttcnca gtttctggct cctaccctac tgatttancc agaataagaa aacattttat 540
 catcntctgc tttattccca ttaatnaant tttgatgaat aaatctgctt ttatgcnnac 600
 ccaaggaatt nagtggnttc ntcnttgt 628

<210> 87
 <211> 518
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature

<222> (1) ... (518)

<223> n = A,T,C or G

<400> 87

ttttttat	tttttagaga	gtagttcagc	ttttat	aaatttattg	cctgttttat	60
tataacaaca	ttatactggt	tatggtttaa	tacatatggg	tcaaaatgta	taatacatca	120
agtagtacag	ttttaaaatt	ttatgcttaa	aacaagtttt	gtgtaaaaaa	tgcagataca	180
ttttacatgg	caaatacaatt	tttaagtcac	cctaaaaatt	gatttttttt	tgaaatttaa	240
aaacacattt	aatttcaatt	tctctcttat	ataaccctta	ttactatagc	atggtttcca	300
ctacagttta	acaatgcagc	aaaattccca	tttcacggta	aattgggttt	taagcggcaa	360
ggttaaaatg	ctttgaggat	cctnaatacc	ctttgaactt	caaatagaag	ttatgggtgt	420
naatttaacc	ctcatgccat	aagcagaagc	acaagtttag	ctgcattttg	ctctaaactg	480
taaaancgag	ccccccgttg	aaaaagcaaa	agggaccc			518

<210> 88

<211> 1844

<212> DNA

<213> Homo sapien

<400> 88

gagacagtga	atcctagtat	caaaggattt	ttggcctcag	aaaaagttgt	tgattat	60
tattttat	tatttttoga	gactccgtct	caaaaaaaa	aaaaaaaaa	agaatcacia	120
ggtatttgc	aaagcatttt	gagctgcttg	gaaaaaggga	agtagttgca	gtagagtttc	180
ttccatcttc	ttggtgctgg	gaagccatat	atgtgtcttt	tactcaagct	aaggggtata	240
agcttatgtg	ttgaatttgc	tacatctata	tttcacatat	tctcacaata	agagaatttt	300
gaaatagaaa	taataagaa	catttaagaa	agtttagtat	aaataatatt	ttgtgtgttt	360
taatcccttt	gaagggatct	atccaaagaa	aataattttac	actgagctcc	ttcctacacg	420
tctcagtaac	agatcctgtg	ttagtctttg	aaaatagctc	atttttttaa	tgtagtgag	480
tagatgtagc	atacatatga	tgtataatga	cgtgtattat	gttaacaatg	tctgcagatt	540
ttgtaggaat	acaaaacatg	gcctttttta	taagcaaaac	gggccaatga	ctagaataac	600
acatagggca	atctgtgaat	atgtattata	agcagcattc	cagaaaagta	ggtgggtgaaa	660
taattttcaa	gtcaaaaagg	gatattggaaa	gggaattatg	agtaacctct	attttttaag	720
ccttgctttt	aaattaaacg	ctacagccat	ttaagccttg	aggataataa	agcttgagag	780
taataatggt	aggttagcaa	aggttttagat	gtatcacttc	atgcatgcta	ccatgatagt	840
aatgcagctc	ttcgagtcac	ttctgggtcat	tcaagatatt	cacctttttg	cccatagaaa	900
gcacctacc	tcacctgctt	actgacattg	tcttagctga	tcacaagatc	attatcagcc	960
tccattat	cttactgtat	ataaaatata	gagttttata	ttttcctttc	ttcgtttttc	1020
accatattca	aaacctaaat	ttgtttttgc	agatggaatg	caaagtaatc	aagtgttcgt	1080
gctttcacct	agaaggggtg	ggtcctgaag	gaaagagggtc	cctaaatata	ccccacctg	1140
ggtgctcctc	cttccctggg	acctgacta	ccagaagtc	ggtgctagag	cagctggaga	1200
agtgcagcag	cctgtgcttc	cacagatggg	ggtgctgctg	caacaaggct	ttcaatgtgc	1260
ccatcttagg	gggagaagct	agatcctgtg	cagcagcctg	gtaagtcctg	aggagggtcc	1320
attgctcttc	ctgctgctgt	cctttgcttc	tcaacggggc	tcgctctaca	gtctagagca	1380
catgcagcta	acttgtgcct	ctgcttatgc	atgaggggtta	aattaacaac	cataaccttc	1440
atttgaagtt	caaagggtga	ttcaggatcc	tcaaagcatt	ttaaccttgc	cgcttaaaac	1500
ccaatttacc	gtgaaatggg	aattttgctg	cattgtttaa	ctgtagtggg	aacctatgcta	1560
tagtaataaa	ggttatataa	gagagaaatt	gaaattaaat	gtgtttttta	atttcaaaaa	1620
aaaatcaatc	tttaggatga	cttaaaaaatt	gatttgccat	gtaaaatgta	tctgcatttt	1680
ttacacaaaa	cttgttttta	gcataaaaatt	ttaaaactgt	actacttgat	gtattatata	1740
ttttgaacca	tatgtattaa	accataaaca	gtataatgtt	gttataataa	aacaggcaat	1800
aaattttata	ataaaagctg	aaaaaaaaa	aaaaaaaaa	aaaa		1844

<210> 89

<211> 523

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(523)

<223> n = A,T,C or G

<400> 89

tttttttttt	tttttttagt	caatccacat	ttattgatca	cttattatgt	accaggcact	60
gggataaaga	tgactgtag	tcactcacag	taaggaagaa	aactagcaaa	taagacgatt	120
acaatatgat	gtagaaaatg	ctaagccaga	gatatagaaa	ggtcctattg	ggtccttctg	180
tcacctgtgc	tttccacatc	cctacccttc	acaggccttc	cctccagctt	cctgcccccg	240
ctccccactg	cagatcccct	gggattttgc	ctagagctaa	acgagganat	gggccccctg	300
gccctggcat	gacttgaacc	caaccacaga	ctgggaaagg	gagcctttcg	anagtggatc	360
actttgatna	gaaaacacat	agggaattga	agagaaantc	cccaaattggc	caccctgtgt	420
ggtgctcaag	aaaagtttgc	agaatggata	aatgaaggat	caagggaatt	aatanatgaa	480
taattgaatg	gtggctcaat	aagaatgact	ncnttgaatg	acc		523

<210> 90

<211> 604

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(604)

<223> n = A,T,C or G

<400> 90

ccagtgtggt	ggaatgcaaa	gattaccccg	gaagctttcg	agaagctggg	attccctgca	60
gcaaaggaaa	tagccaatat	gtgtcggttc	tatgaaatga	agccagaccg	agatgtcaat	120
ctcaccacc	aactaaatcc	caaagtcaaa	agcttcagcc	agtttatctc	agagaaccag	180
gggagccttc	aagggcatgt	agaaaatcag	ctgttcagat	aggcctctgc	accacacagc	240
ctctttcctc	tctgatcctt	ttcctcttta	cggcacaaca	ttcatgtttg	acagaacatg	300
ctggaatgca	attgtttgca	acaccgaagg	atttcctgcy	gtcgccctctt	cagtaggaag	360
cactgcattg	gtgataggac	acggtaattt	gattcacatt	taacttgcta	gttagtgata	420
aggggtggta	cacctgtttg	gtaaaatgag	aagcctcgga	aacttgggag	cttctctcct	480
accactaatg	gggagggcag	attattactg	ggatttctcc	tggggtgaat	taatttcaag	540
ccctaattgc	tgaaattccc	ctnggcaggc	tccagttttc	tcaactgcat	tgcaaaattc	600
cccc						604

<210> 91

<211> 858

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(858)

<223> n = A,T,C or G

<400> 91

tttttttttt	ttttttttta	tgattattat	tttttttatt	gatctttaca	tcctcagtgt	60
tggcagagtt	tctgatgctt	aataaacatt	tgttctgata	agataagtgg	aaaaaattgt	120
catttcctta	ttcaagccat	gcttttctgt	gatattctga	tcctagttaga	acatacagaa	180

ataaatgtct	aaaacagcac	ctcgattctc	gtctataaca	ggactaagtt	cactgtgatc	240
ttaaataagc	ttggctaaaa	tgggacatga	gtggaggtag	tcacacttca	gcgaagaaa	300
agaatctcct	gtataatctc	accaggagat	tcaacgaatt	ccaccacact	ggactagtgg	360
atcccccggg	ctgcaggaat	tcgatatcaa	gcttatcgat	accgtcgacc	tcgagggggg	420
gcccggtacc	caattcgccc	tatagtgagt	cgtattacgc	gcgctcactg	gccgtcgttt	480
tacaacgtcg	tgactgggaa	aacctggcg	ttaccaact	taatcgccct	gcagcacatc	540
cccctttcgc	cagctggcgt	aatagcgaan	agcccgcacc	gatcgccctt	ncaacagttg	600
cgcagcctga	atggcgaatg	ggacgcgccc	tgtagcggcg	cattaaagcg	cggcnggggtg	660
tggnggntcc	cccacgtgac	cgntacactt	ggcagcgccct	tacgcgggtc	nttcgctttc	720
ttcccttcct	ttctcgacac	gttcgcgggg	tttccccggn	agctnttaat	cgggggnctc	780
cctttanggg	tncnaattaa	nggnttacng	gaccttngan	cccaaaaact	ttgattaggg	840
ggaaggtccc	cgaagggg					858

<210> 92

<211> 585

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(585)

<223> n = A,T,C or G

<400> 92

gttgaatctc	ctggtgagat	tatacaggag	attctctttc	ttcgctgaag	tgtgactacc	60
tccactcatg	tcccatttta	gccaagctta	tttaagatca	cagtgaactt	agtcctgtta	120
tagacgagaa	tcgaggtgct	gttttagaca	tttatttctg	tatgttcaac	taggatcaga	180
atatcacaga	aaagcatggc	ttgaataagg	aaatgacaat	tttttccact	tatctgatca	240
gaacaaatgt	ttattaagca	tcagaaaactc	tgccaacact	gaggatgtaa	agatcaataa	300
aaaaaataat	aatcatnann	naaanannan	nngaagggcg	gccgccaccg	cgggtggagct	360
ccagcttttg	ttcccttttag	tgaggggttaa	ttgcgcgctt	ggcggttaatc	atggctcatag	420
ctgtttcctg	tgtgaaattg	ttatccggct	cacaattccn	cncaacatac	gagccgggaa	480
gcntnangtg	taaaagcctg	ggggtgccta	attgagttag	ctnactcaca	ttaattgngt	540
tgcgctccac	ttgcccgcctt	ttccantccg	ggaaacctgt	tcgnc		585

<210> 93

<211> 567

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(567)

<223> n = A,T,C or G

<400> 93

cggcagtggt	gctgtctgcg	tgtccacctt	ggaatctggc	tgaactggct	gggaggacca	60
agactgcggc	tggggtgggc	anggaagggg	accgggggct	gctgtgaagg	atcttggaac	120
ttccctgtac	ccaccttccc	cttgcttcat	gtttgtanag	gaaccttggtg	ccggccaagc	180
ccagtttccct	tgtgtgatac	actaatgtat	ttgctttttt	tgggaaatan	anaaaaaatca	240
attaaattgc	tantgtttct	ttgaannnnn	nnnnnnnnnn	nnnnnnnggg	gggngcggcc	300
ccncggngga	aacnccttct	ttgttccctt	ttaattgaaa	ggttaattng	cncncntggc	360
gttaancctt	gggccc aaac	tngttncctg	tgntgaaatt	gttnatcccc	tcccaaattc	420
ccccccnncc	ttccaaaccc	ggaaancctn	annntgttna	ancccggggg	gttgccctaan	480
ngnaattnaa	ccnaaccccc	ntttaaatng	nntttgcnct	ccacnngccc	cncctttccca	540

nttcggggaa aaccctntcc gtgccca

567

<210> 94
 <211> 620
 <212> DNA
 <213> Homo sapien

 <220>
 <221> misc_feature
 <222> (1)...(620)
 <223> n = A,T,C or G

<400> 94
 actagtcaaa aatgctaaaa taatttgga gaaaatattt ttttaagtagt gttatagttt 60
 catgtttatc ttttattatg ttttgtgaag ttgtgtcttt tcactaatta cctatactat 120
 gccaatattt ccttatatct atccataaca tttatactac atttgtaana naatatgcac 180
 gtgaaactta acactttata aggtaaaaat gaggtttcca anatttaata atctgatcaa 240
 gttcttggtta tttccaaata gaatggactt ggtctgttaa gggctaagga gaagaggaag 300
 ataagggttaa aagttgttaa tgaccaaaca ttctaaaaga aatgcaaaaa aaaagtttat 360
 tttcaagcct tcgaactatt taaggaaagc aaaatcattt cctaaatgca tatcatttgt 420
 gagaatttct cattaatatc ctgaatcatt catttcaacta aggcctcatgt tnactccgat 480
 atgtctctaa gaaagtacta tttcatgggc caaacctggt tgccatantt gggtaaaggc 540
 tttcccttaa gtgtgaaant atttaaaatg aaattttcct ctttttaaaa attctttana 600
 aggggttaagg gtgttgggga 620

<210> 95
 <211> 470
 <212> DNA
 <213> Homo sapien

 <220>
 <221> misc_feature
 <222> (1)...(470)
 <223> n = A,T,C or G

<400> 95
 ctgcaccttc tctgcacagc ggatgaaccc tgagcagctg aagaccagaa aagccactat 60
 nactttntgc ttaattcang agcttacang attcttcaaa gagtgngtcc agcatccttt 120
 gaaacatgag ttcttaccag cagaagcaga cctttacccc accacctcag cttcaacagc 180
 agcaggtgaa acaaccatc cagcctccac ctnaggaaat atttggtccc acaaccaagg 240
 agccatgcca ctcaaagggt ccacaacctg naaacacaaa nattocagag ccaggctgta 300
 ccaagggtccc tgagccaggg ctgtaccaan gtccctgagc cagggtgtac caangtccct 360
 gagccaggat gtaccaaggc ccctgancca ggttgtocaa ggtccctgag ccaggctaca 420
 ccaagggcct gngccaggca gcatcaangt ccctgaccaa ggcttatcaa 470

<210> 96
 <211> 660
 <212> DNA
 <213> Homo sapien

 <220>
 <221> misc_feature
 <222> (1)...(660)
 <223> n = A,T,C or G

<400> 96

tttttttttt	tttttttttt	ggaattaaaa	gcaatttaaat	gagggcagag	caggaaacat	60
gcattttctt	tcattogaat	cttcagatga	accctgagca	gccgaagacc	agaaaagcca	120
tgaagacttt	ctgcttaatt	caggggctta	caggattctt	cagagtgtgt	gtgaacaaaa	180
gctttatagt	acgtattttt	aggatacaaa	taagagagag	actatggctt	gggggtgagaa	240
tgtactgatt	acaaggtcta	cagacaatta	agacacagaa	acagatggga	agaggggtgnc	300
cagcatctgg	ngggttgctt	ctcaagggtc	tgtctgtgca	ccaaattact	tctgcttggn	360
cttctgctga	gctgggcctg	gagtgaccgt	tgaaggacat	ggctctggta	cctttgtgta	420
gcctgncaca	ggaacttttg	tgtatccttg	ctcaggaact	ttgatggcac	ctggctcagg	480
aaacttgatg	aagccttggt	caagggacct	tgatgcttgc	tggctcaggg	accttggnngn	540
ancctgggct	canggacctt	tgncncaacc	ttggcttcaa	gggacccttg	gnacatcctg	600
gcnnagggac	ccttgggnc	aaccctgggc	ttnagggacc	ccttggnntnc	nanccttggc	660

<210> 97

<211> 441

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(441)

<223> n = A,T,C or G

<400> 97

gggaccatac	anagtattcc	tctcttcaca	ccaggaccag	ccactgttgc	agcatgagtt	60
cccagcagca	gaagcagccc	tgcacccac	cccctcagct	tcagcagcag	caggtgaaac	120
agccttgcca	gcctccacct	caggaacctat	gcaccccaa	aaccaaggag	ccctgccacc	180
ccaaggtgcc	tgagccctgc	caccccaaag	tgcttgagcc	ctgccagccc	aaggttccag	240
agccatgcca	ccccaaagtg	cctgagccct	gcccttcaat	agtcactcca	gcaccagccc	300
agcagaanac	caagcagaag	taatgtgggtc	cacagccatg	cccttgagga	gccggccacc	360
agatgctgaa	tccccatatcc	cattctgtgt	atgagtccca	tttgccttgc	aattagcatt	420
ctgtctcccc	caaaaaaaaaa	a				441

<210> 98

<211> 600

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(600)

<223> n = A,T,C or G

<400> 98

gtattctctt	cttcacacca	ggaccagcca	ctgttgccagc	atgagttccc	agcagcagaa	60
gcagccctgc	atccaccccc	ctcagcttca	gcagcagcag	gtgaaacagc	cttgccagcc	120
tccacctcag	gaacctatgca	tccccaaaac	caaggagccc	tgccacccca	aggtgcctga	180
gccctgccac	cccaaagtgc	ctgagccctg	ccagcccaag	gttccagagc	catgccaccc	240
caaggtgcct	gagccctgcc	cttcaatagt	cactccagca	ccagcccagc	agaanaccaa	300
gcagaagtaa	tgtgggtccac	agccatgccc	ttgaggagcc	ggccaccana	tgctgaatcc	360
cctatcccat	tctgtgtatg	agtcccat	gccttgcaat	tagcattctg	tctcccccaa	420
aaaagaatgt	gctatgaagc	tttctttcct	acacactctg	agtctctgaa	tgaagctgaa	480
ggctcttaant	acaganctag	ttttcagctg	ctcagaattc	tctgaagaaa	agattttaaga	540
tgaaaggcaa	atgattccagc	tccttattac	cccattaaat	tcnctttcaa	ttccaaaaaa	600

<210> 99
 <211> 667
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(667)
 <223> n = A,T,C or G

<400> 99
 actagtgact gagttcctgg caaagaaatt tgacctggac cagttgataa ctcattgtttt 60
 accatttaaa aaaatcagtg aaggatttga gctgctcaat tcaggacaaa gcattcgaac 120
 ggtcctgacg ttttgagatc caaagtggca ggaggtctgt gttgtcatgg tgaactggag 180
 tttctcttgt gagagttccc tcatctgaaa tcatgtatct gtctcacaaa tacaagcata 240
 agtagaagat ttgttgaaga catagaaccc ttataaagaa ttattaacct ttataaacat 300
 ttaaagtctt gtgagcacct gggaattagt ataataacaa tgttnatatt tttgatttac 360
 attttghtaag gctataattg tatcttttaa gaaaacatac cttggatttc tatgttgaaa 420
 tggagatttt taagagtttt aaccagctgc tgcagatata ttactcaaaa cagatatagc 480
 gtataaagat atagtaaattg catctcctag agtaatatc acttaacaca ttggaaacta 540
 ttatttttta gatttgaata tnaatgttat tttttaaaca cttgttatga gttacttggg 600
 attacatttt gaaatcagtt cattccatga tgcannattac tgggattaga ttaagaaaga 660
 cggaaaa 667

<210> 100
 <211> 583
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(583)
 <223> n = A,T,C or G

<400> 100
 gttttgtttg taagatgac acagtcattgt tacactgac taaaggacat atatataacc 60
 ctttaaaaaa aaaatcactg cctcattctt atttcaagat gaatttctat acagactaga 120
 tgtttttctg aagatcaatt agacattttg aaaatgattt aaagtgtttt ctttaatgtt 180
 ctctgaaaac aagtttcttt tgtagtttta accaaaaaag tgcccttttt gtcactggat 240
 tctcctagca ttcattgattt ttttttcata caatgaaatt aaaattgcta aaatcatgga 300
 ctggctttct gggttgattt caggtaagat gtgttttaagg ccagagcttt tctcagtatt 360
 tgattttttt ccccaatatt tgatttttta aaaatatata catnggtgct gcatttatat 420
 ctgctgggtt aaaattctgt catatttcac ttctagcctt ttagttatgg caaatcatat 480
 ttacttttta cttaaagcat ttggtnattt ggantatctg gttctannct aaaaaaanta 540
 attctatnaa ttgaantttt ggtactcnnc catatttgga tcc 583

<210> 101
 <211> 592
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(592)
 <223> n = A,T,C or G

```

<400> 101
gtggagacgt acaaagagca gccgctcaag acacctggga agaaaaagaa aggcaagccc      60
gggaaacgca aggagcagga aaagaaaaaa cggcgaactc gctctgctg gttagactct      120
ggagtgcactg ggagtgggct agaaggggac cacctgtctg acacctccac aacgtcgctg      180
gagctcgatt cacggaggca ttgaaatddd cagcaganac cttccaagga catattgcag      240
gattctgtaa tagtgaacat atggaaagta ttagaaatat ttattgtctg taaatactgt      300
aaatgcattg gaataaaaact gtctccccc aagtctctatg aaactgcaca ttggtcattg      360
tgaatatttt tttttttgcc aaggctaata caattattat tatcacattt accataattt      420
atdddgtcca ttgatgtatt tattttgtaa atgtatcttg gtgctgctga attdctatat      480
ttttgtaca taatgcnttt anatatacct atcaagtttg ttgataaatg acncaatgaa      540
gtgncncnan ttgngggttg aatttaatga atgcctaatt ttattatccc aa              592

```

```

<210> 102
<211> 587
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(587)
<223> n = A,T,C or G

```

```

<400> 102
cgtcctaagc acttagacta catcagggaa gaacacagac cacatccctg tcctcatgcg      60
gcttatgttt tctggaagaa agtggagacc nagtccttgg ctttagggct ccccggtg      120
gggctgtgca ntccggtcag ggcgggaagg gaaatgcacc gctgcatgtg aacttacagc      180
ccaggcggat gcccttccc ttagcactac ctggcctcct gcacccctc gcctcatgtt      240
cctcccacct tcaaanaatg aanaacccca tgggccagc cccttgcctt ggggaaccaa      300
ggcagccttc caaaactcag gggctgaagc anactattag ggcaggggct gactttgggt      360
gacactgccc attccctctc agggcagctc angtcacccn ggnctcttga acccagcctg      420
ttcctttgaa aaagggcaaa actgaaaagg gcttttccta naaaaagaaa aaccagggaa      480
ctttgccagg gcttcnntnt taccaaaach ncttctcnng gatttttaat tccccattng      540
gcctccactt accnggggcn atgccccaaa attaanaatt tcccatc              587

```

```

<210> 103
<211> 496
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(496)
<223> n = A,T,C or G

```

```

<400> 103
anaggactgg ccctacntgc tctctctcgt cctacctatc aatgcccaac atggcagaac      60
ctgcanccct tggncactgc anatggaaac ctctcagtgt cttgacatca ccctaccnt      120
gcggtgggtc tccaccacaa ccactttgac tctgtgtgct ctgnanggtg gnttctcctg      180
actggcagga tggaccttan ccnacatata cctctgttcc ctctgctnag anaaagaatt      240
cccttaacat gatataatcc acccatgcaa ntngctactg gccagctac catttaccat      300
ttgcctacag aattttcattc agtctacact ttggcattct ctctggcgat agagtgtggc      360
tgggctgacc gcaaaagggt ccttacacac tggcccccac cctcaaccgt tgacncatca      420
gangcttgcc tcctccttct gattnncccc catgttggat atcaggggtg tcnagggatt      480
ggaaaagaaa caaaac

```

<210> 104
 <211> 575
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(575)
 <223> n = A,T,C or G

<400> 104
 gcacctgctc tcaatccnnc tctcaccatg atcctccgcc tgcanaaact cctctgccaa 60
 ctatggangt ggtttcnggg gtggctcttg ccaactggga agaagccgtg gtgtctctac 120
 ctgttcaact cngtttgtgt ctgggggatc aactnggggc tatggaagcg gctnaactgt 180
 tgttttggtg gaagggctgg taattggctt tgggaagtng cttatngaag ttggcctngg 240
 gaagttgcta ttgaaagtng ccntggaagt ngntttggtg gggggttttg ctggtggcct 300
 ttgttnaatt tgggtgcttt gtnaatggcg gcccctcnc ctgggcaatg aaaaaaatca 360
 ccnatgcngn aaacctcnac nnaacagcct gggttcctc cacctcgaaa aaagttgctc 420
 ccccccaaaa aaaggncaan cccctcaann tggaangttg aaaaaatcct cgaatgggga 480
 nccnnaaaac aaaaancccc ccntttcccn gnaanggggg aaataccncc ccccactta 540
 cnaaaaccct tntaaaaaac cccccgggaa aaaaa 575

<210> 105
 <211> 619
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(619)
 <223> n = A,T,C or G

<400> 105
 cactagtagg atagaaacac tgtgtcccga gagtaaggag agaagctact attgattaga 60
 gcctaaccga ggtaactgc aagaagaggc gggatacttt cagctttcca tgtaactgta 120
 tgcataaagc caatgtagtc cagttttctaa gatcatgttc caagctaact gaatcccact 180
 tcaatacaca ctcatgaact cctgatggaa caataacagg cccaagcctg tggtagtgatg 240
 tgcacacttg ctagactcan aaaaaatact actctcataa atgggtggga gtattttggt 300
 gacaacctac tttgcttggc tgagtgaagg aatgatattc atatattcat ttattccatg 360
 gacatttagt tagtgctttt tatataccag gcatgatgct gagtgacact cttgtgtata 420
 tttccaaatt tttgtacagt cgctgcacat atttgaaatc atatattaag acttccaaaa 480
 aatgaagtcc ctggtttttc atggcaactt gatcagtaaa ggattcnctc ctgtttggta 540
 cttaaaacat ctactatatn gttnanatga aattcctttt ccccnctcc cgaaaaaana 600
 aagtggtggg gaaaaaaa 619

<210> 106
 <211> 506
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(506)
 <223> n = A,T,C or G

```

<400> 106
cattggttct ttcatttgct ntggaagtgt nnatctctaa cagtggacaa agttcccngt      60
gccttaaact ctgtnacact tttgggaant gaaaanttng tantatgata ggttattctg      120
angtanagat gttctggata ccattanatn tgcccccngt gtcagaggct catatttgtg      180
tatgtaaatg gtatntcatt cgctactatn antcaattng aaatanggtc tttgggttat      240
gaatantnng cagencanct nanangctgt ctgtngtatt cattgtggtc atagcacctc      300
acancattgt aacctcnatc nagtgagaca nactagnaana ttcctagtga tggctcanga      360
ttccaaatgg nctcatntcn aatgtttaaa agttanttaa gtgtaagaaa tacagactgg      420
atgttccacc aactagtacc tgtaatgacn ggctgtcccc aacacatctc ctttttccat      480
gactgtggta nccccgcatcg gaaaaa                                         506

```

```

<210> 107
<211> 452
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(452)
<223> n = A,T,C or G

```

```

<400> 107
gttgagtctg tactaaacag taagatatct caatgaacca taaattcaac tttgtaaaaa      60
tcttttgaag catagataat attgttttgt aaatgtttct tttgttttgt aaatgtttct      120
tttaaagacc ctccatttct ataaaactct gcatgtagag gcttgtttac ctttctctct      180
ctaaggttta caataggagt ggtgatttga aaaatataaaa attatgagat tgggttttct      240
gtggcataaa ttgcatcact gtatcatttt ctttttttaac cggtaagant ttcagtttgt      300
tggaagtaaa ctgtganaac ccagtttccc gtccatctcc cttagggact acccatagaa      360
catgaaaagg tccccacnga agcaagaaga taagtctttc atggctgctg gttgcttaaa      420
ccacttttaa accaaaaaat tccccttgga aa                                         452

```

```

<210> 108
<211> 502
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(502)
<223> n = A,T,C or G

```

```

<400> 108
atcttcttcc cttaattagt tnttatttat ntattaaatt ttattgcatg tcctggcaaa      60
caaaaagaga ttgtagattg gcttctggct ccccaaaagc ccataacaga aagtaccaca      120
agaccncaac tgaagcttaa aaaatctatc acatgtataa tacctttnga agaacattaa      180
tanagcatat aaaactttta acatntgctt aatgttgtnc aattataaaa ntaatngaaa      240
aaaatgtccc tttaacatnc aatatcccac atagtgttat ttnaggggat taccnngnaa      300
naaaaaaagg gtagaagggg tttaatgaaa actctgcttn ccatttctgt ttanaaacgt      360
ctccagaaca aaaacttntc aantctttca gctaaccgca tttgagctna ggccactcaa      420
aaactccatt agnccactt tctaanggtc tctanagctt actaancctt ttgaccctt      480
accctggnat ctccctgccct ca                                         502

```

```

<210> 109
<211> 1308

```

<212> DNA

<213> Homo sapien

<400> 109

```

acccgaggtc tcgctaaaat catcatggat tcacttggcg ccgtcagcac tcgacttggg      60
tttgatcttt tcaaagagct gaagaaaaca aatgatggca acatcttctt tccccctgtg      120
ggcatcttga ctgcaattgg catggtcctc ctggggaccc gaggagccac cgcttcccag      180
ttggaggagg tgtttcactc tgaaaaagag acgaagagct caagaataaa ggctgaagaa      240
aaagaggtga ttgagaacac agaagcagta catcaacaat tccaaaagtt tttgactgaa      300
ataagcaaac tcactaatga ttatgaactg aacataacca acaggctgtt tggagaaaaa      360
acatacctct tccttcaaaa atacttagat tatgttgaaa aatattatca tgcattctctg      420
gaacctgttg attttgtaaa tgcagccgat gaaagtcgaa agaagattaa ttcctgggtt      480
gaaagcaaaa caaatgaaaa aatcaaggac ttgttcccag atggctctat tagtagctct      540
accaagctgg tgctggtgaa catgggttat tttaaagggc aatgggacag ggagtttaag      600
aaagaaaata ctaaggaaga gaaattttgg atgaataaga gcacaagtaa atctgtacag      660
atgatgacac agagccattc cttagcttc actttcctgg aggacttgca ggccaaaatt      720
ctagggattc catataaaaa caacgaccta agcatgtttg tgcttctgcc caacgacatc      780
gatggcctgg agaagataat agataaaaata agtcctgaga aattggtaga gtggactagt      840
ccagggcata tggaagaaaag aaaggtgaat ctgcacttgc cccggtttga ggtggaggac      900
agttacgac tagaggcggg cctggctgcc atggggatgg gcatgcctt cagtgcacac      960
aaagccgact actcgggaat gtcgtcaggc tccgggttgt acgcccagaa gttcctgcac      1020
agttcctttg tggcagtaac tgaggaaggc accgaggctg cagctgccac tggcataggc      1080
tttactgtca catccgcccc aggtcatgaa aatgttcact gcaatcatcc ctctctgttc      1140
ttcatcaggc acaatgaatc caacagcatc ctcttcttcg gcagattttc ttctccttaa      1200
gatgatcggt gccatggcat tgctgctttt agcaaaaaac aactaccagt gttactcata      1260
tgattatgaa aatcgtccat tcttttaa atgtggctcac ttgcattt      1308

```

<210> 110

<211> 391

<212> PRT

<213> Homo sapien

<400> 110

```

Met Asp Ser Leu Gly Ala Val Ser Thr Arg Leu Gly Phe Asp Leu Phe
 1              5              10              15
Lys Glu Leu Lys Lys Thr Asn Asp Gly Asn Ile Phe Phe Ser Pro Val
              20              25              30
Gly Ile Leu Thr Ala Ile Gly Met Val Leu Leu Gly Thr Arg Gly Ala
              35              40              45
Thr Ala Ser Gln Leu Glu Glu Val Phe His Ser Glu Lys Glu Thr Lys
              50              55              60
Ser Ser Arg Ile Lys Ala Glu Glu Lys Glu Val Ile Glu Asn Thr Glu
65              70              75              80
Ala Val His Gln Gln Phe Gln Lys Phe Leu Thr Glu Ile Ser Lys Leu
              85              90              95
Thr Asn Asp Tyr Glu Leu Asn Ile Thr Asn Arg Leu Phe Gly Glu Lys
              100              105              110
Thr Tyr Leu Phe Leu Gln Lys Tyr Leu Asp Tyr Val Glu Lys Tyr Tyr
              115              120              125
His Ala Ser Leu Glu Pro Val Asp Phe Val Asn Ala Ala Asp Glu Ser
              130              135              140
Arg Lys Lys Ile Asn Ser Trp Val Glu Ser Lys Thr Asn Glu Lys Ile
145              150              155              160
Lys Asp Leu Phe Pro Asp Gly Ser Ile Ser Ser Ser Thr Lys Leu Val
              165              170              175

```

Leu Val Asn Met Val Tyr Phe Lys Gly Gln Trp Asp Arg Glu Phe Lys
 180 185 190
 Lys Glu Asn Thr Lys Glu Glu Lys Phe Trp Met Asn Lys Ser Thr Ser
 195 200 205
 Lys Ser Val Gln Met Met Thr Gln Ser His Ser Phe Ser Phe Thr Phe
 210 215 220
 Leu Glu Asp Leu Gln Ala Lys Ile Leu Gly Ile Pro Tyr Lys Asn Asn
 225 230 235 240
 Asp Leu Ser Met Phe Val Leu Leu Pro Asn Asp Ile Asp Gly Leu Glu
 245 250 255
 Lys Ile Ile Asp Lys Ile Ser Pro Glu Lys Leu Val Glu Trp Thr Ser
 260 265 270
 Pro Gly His Met Glu Glu Arg Lys Val Asn Leu His Leu Pro Arg Phe
 275 280 285
 Glu Val Glu Asp Ser Tyr Asp Leu Glu Ala Val Leu Ala Ala Met Gly
 290 295 300
 Met Gly Asp Ala Phe Ser Glu His Lys Ala Asp Tyr Ser Gly Met Ser
 305 310 315 320
 Ser Gly Ser Gly Leu Tyr Ala Gln Lys Phe Leu His Ser Ser Phe Val
 325 330 335
 Ala Val Thr Glu Glu Gly Thr Glu Ala Ala Ala Thr Gly Ile Gly
 340 345 350
 Phe Thr Val Thr Ser Ala Pro Gly His Glu Asn Val His Cys Asn His
 355 360 365
 Pro Phe Leu Phe Phe Ile Arg His Asn Glu Ser Asn Ser Ile Leu Phe
 370 375 380
 Phe Gly Arg Phe Ser Ser Pro
 385 390

<210> 111

<211> 1419

<212> DNA

<213> Homo sapien

<400> 111

ggagaactat	aaattaagga	tcccagctac	ttaattgact	tatgcttcct	agttcgttgc	60
ccagccacca	cgtctctcc	aaaaaccga	ggtctcgcta	aaatcatcat	ggattcactt	120
ggcgccgtca	gcactcgact	tgggtttgat	cttttcaaag	agctgaagaa	aacaaatgat	180
ggcaacatct	tcttttcccc	tgtgggcac	ttgactgcaa	ttggcatggt	cctcctgggg	240
acccgaggag	ccaccgcttc	ccagttggag	gaggtgtttc	actctgaaaa	agagacgaag	300
agctcaagaa	taaaggctga	agaaaaagag	gtggtaagaa	taaaggctga	aggaaaagag	360
attgagaaca	cagaagcagt	acatcaacaa	ttccaaaagt	ttttgactga	aataagcaaa	420
ctcactaatg	attatgaact	gaacataacc	aacaggctgt	ttggagaaaa	aacatacctc	480
ttccttcaaa	aatacttaga	ttatgttgaa	aaatattatc	atgcatctct	ggaacctgtt	540
gattttgtaa	atgcagccga	tgaaagtcga	aagaagatta	attcctgggt	tgaaagcaaa	600
acaaatgaaa	aaatcaagga	cttgttccca	gatggctcta	ttagtagctc	taccaagctg	660
gtgctggtga	acatggttta	ttttaaggga	caatgggaca	gggagttaa	gaaagaaaat	720
actaaggaag	agaaattttg	gatgaataag	agcacaagta	aatctgtaca	gatgatgaca	780
cagagccatt	ccttttagctt	cactttcctg	gaggacttgc	aggccaaaat	tctagggatt	840
ccatataaaa	acaacgacct	aagcatgttt	gtgcttctgc	ccaacgacat	cgatggcctg	900
gagaagataa	tagataaaaat	aagtccctgag	aaattggtag	agtggactag	tccagggcac	960
atggaagaaa	gaaagggtgaa	tctgcacttg	ccccgggttg	aggtggagga	cagttacgat	1020
ctagaggcgg	tcctggctgc	catgggggatg	ggcgatgcct	tcagttagca	caaagccgac	1080
tactcgggaa	tgtcgtcagg	ctccgggttg	tacgcccaga	agttcctgca	cagttccttt	1140
gtggcagtaa	ctgaggaagg	caccgaggct	gcagctgcca	ctggcatagg	ctttactgtc	1200

```

acatccgccc caggatcatga aaatgttcac tgcaatcacc ccttcctggt cttcatcagg 1260
cacaatgaat ccaacagcat cctcttcttc ggcagatttt cttctcctta agatgatcgt 1320
tgccatggca ttgctgcttt tagcaaaaaa caactaccag tggttactcat atgattatga 1380
aaatcgatcca ttctttttaa tggtgggtca cttgcattt 1419

```

```

<210> 112
<211> 400
<212> PRT
<213> Homo sapien

```

```

<400> 112
Met Asp Ser Leu Gly Ala Val Ser Thr Arg Leu Gly Phe Asp Leu Phe
1      5      10      15
Lys Glu Leu Lys Lys Thr Asn Asp Gly Asn Ile Phe Phe Ser Pro Val
20     25     30
Gly Ile Leu Thr Ala Ile Gly Met Val Leu Leu Gly Thr Arg Gly Ala
35     40     45
Thr Ala Ser Gln Leu Glu Glu Val Phe His Ser Glu Lys Glu Thr Lys
50     55     60
Ser Ser Arg Ile Lys Ala Glu Glu Lys Glu Val Arg Ile Lys Ala
65     70     75     80
Glu Gly Lys Glu Ile Glu Asn Thr Glu Ala Val His Gln Gln Phe Gln
85     90     95
Lys Phe Leu Thr Glu Ile Ser Lys Leu Thr Asn Asp Tyr Glu Leu Asn
100    105    110
Ile Thr Asn Arg Leu Phe Gly Glu Lys Thr Tyr Leu Phe Leu Gln Lys
115    120    125
Tyr Leu Asp Tyr Val Glu Lys Tyr Tyr His Ala Ser Leu Glu Pro Val
130    135    140
Asp Phe Val Asn Ala Ala Asp Glu Ser Arg Lys Lys Ile Asn Ser Trp
145    150    155    160
Val Glu Ser Lys Thr Asn Glu Lys Ile Lys Asp Leu Phe Pro Asp Gly
165    170    175
Ser Ile Ser Ser Ser Thr Lys Leu Val Leu Val Asn Met Val Tyr Phe
180    185    190
Lys Gly Gln Trp Asp Arg Glu Phe Lys Lys Glu Asn Thr Lys Glu Glu
195    200    205
Lys Phe Trp Met Asn Lys Ser Thr Ser Lys Ser Val Gln Met Met Thr
210    215    220
Gln Ser His Ser Phe Ser Phe Thr Phe Leu Glu Asp Leu Gln Ala Lys
225    230    235    240
Ile Leu Gly Ile Pro Tyr Lys Asn Asn Asp Leu Ser Met Phe Val Leu
245    250    255
Leu Pro Asn Asp Ile Asp Gly Leu Glu Lys Ile Ile Asp Lys Ile Ser
260    265    270
Pro Glu Lys Leu Val Glu Trp Thr Ser Pro Gly His Met Glu Glu Arg
275    280    285
Lys Val Asn Leu His Leu Pro Arg Phe Glu Val Glu Asp Ser Tyr Asp
290    295    300
Leu Glu Ala Val Leu Ala Ala Met Gly Met Gly Asp Ala Phe Ser Glu
305    310    315    320
His Lys Ala Asp Tyr Ser Gly Met Ser Ser Gly Ser Gly Leu Tyr Ala
325    330    335
Gln Lys Phe Leu His Ser Ser Phe Val Ala Val Thr Glu Glu Gly Thr
340    345    350

```

Glu Ala Ala Ala Thr Gly Ile Gly Phe Thr Val Thr Ser Ala Pro
 355 360 365
 Gly His Glu Asn Val His Cys Asn His Pro Phe Leu Phe Phe Ile Arg
 370 375 380
 His Asn Glu Ser Asn Ser Ile Leu Phe Phe Gly Arg Phe Ser Ser Pro
 385 390 395 400

<210> 113
 <211> 957
 <212> DNA
 <213> Homo sapien

<400> 113
 ctcgaccttc tctgcacagc ggatgaaccc tgagcagctg aagaccagaa aagccactat 60
 gactttctgc ttaattcagg agcttacagg attcttcaaa gagtgtgtcc agcatccttt 120
 gaaacatgag ttcttaccag cagaagcaga cctttacccc accacctcag cttcaacagc 180
 agcaggtgaa acaaccagc cagcctccac ctcaggaaat atttgttccc acaaccaagg 240
 agccatgcca ctcaaagggt ccacaacctg gaaacacaaa gattccagag ccaggctgta 300
 ccaagggtccc tgagccaggc tgtaccaagg tccctgagcc aggttgtacc aagggtccctg 360
 agccaggatg taccaagggt cctgagccag gttgtaccaa ggtccctgag ccaggctaca 420
 ccaagggtccc tgagccaggc agcatcaagg tccctgacca aggttccatc aagtttccctg 480
 agccagggtgc catcaaaggt cctgagcaag gatacaccaa agttccctgtg ccagggtaca 540
 caaagggtacc agagccatgt ccttcaacgg tcaactccagg cccagctcag cagaagacca 600
 agcagaagta atttggtgca cagacaagcc cttgagaagc caaccaccag atgtctggaca 660
 ccctcttccc atctgtttct gtgtcttaat tgtctgtaga ccttgtaatc agtacattct 720
 caccccaagc catagtctct ctcttatttg tatcctaaaa atacggtact ataaagcttt 780
 tgttcacaca cactctgaag aatcctgtaa gccctgaat taagcagaaa gtcttcatgg 840
 cttttctgggt cttcggtctgc tcagggttca tctgaagatt cgaatgaaaa gaaatgcatg 900
 tttcctgctc tgccctcatt aaattgcttt taattccaaa aaaaaaaaaa aaaaaaa 957

<210> 114
 <211> 161
 <212> PRT
 <213> Homo sapien

<400> 114
 Met Ser Ser Tyr Gln Gln Lys Gln Thr Phe Thr Pro Pro Pro Gln Leu
 1 5 10 15
 Gln Gln Gln Gln Val Lys Gln Pro Ser Gln Pro Pro Pro Gln Glu Ile
 20 25 30
 Phe Val Pro Thr Thr Lys Glu Pro Cys His Ser Lys Val Pro Gln Pro
 35 40 45
 Gly Asn Thr Lys Ile Pro Glu Pro Gly Cys Thr Lys Val Pro Glu Pro
 50 55 60
 Gly Cys Thr Lys Val Pro Glu Pro Gly Cys Thr Lys Val Pro Glu Pro
 65 70 75 80
 Gly Cys Thr Lys Val Pro Glu Pro Gly Cys Thr Lys Val Pro Glu Pro
 85 90 95
 Gly Tyr Thr Lys Val Pro Glu Pro Gly Ser Ile Lys Val Pro Asp Gln
 100 105 110
 Gly Phe Ile Lys Phe Pro Glu Pro Gly Ala Ile Lys Val Pro Glu Gln
 115 120 125
 Gly Tyr Thr Lys Val Pro Val Pro Gly Tyr Thr Lys Val Pro Glu Pro
 130 135 140
 Cys Pro Ser Thr Val Thr Pro Gly Pro Ala Gln Gln Lys Thr Lys Gln

145
Lys

150

155

160

<210> 115
<211> 506
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(506)
<223> n = A,T,C or G

<400> 115
cattggtnct ttcatttgct ntggaagtgt nnatctctaa cagtggacaa agttcccngt 60
gccttaaaact ctgtnacact tttgggaant gaaaanttng tantatgata ggttattctg 120
angtanagat gttctggata ccattanatn tgccccngt gtcagaggct catatttgtg 180
tatgtaaatg gtatntcatt cgctactatn antcaattng aaatanggtc tttgggttat 240
gaatantnng cagcncanct nanangctgt ctgtngtatt cattgtggtc atagcacctc 300
acancattgt aacctcnatc nagtgagaca nactagnaan ttctagtga tggctcanga 360
ttccaaatgg nctcatntcn aatgtttaaa agttanttaa gtgtaagaaa tacagactgg 420
atgttcacc aactagtacc tgtaatgacn ggctgtccc aacacatctc ccttttccat 480
gactgtggta ncccgcatcg gaaaaa 506

<210> 116
<211> 3079
<212> DNA
<213> Homo sapien

<400> 116
ggatccccgg gtttcctaaa cccccacag agtcctgccc aggccaaaga gcaaggaaaa 60
ggtcaaaggg cagaaaaaat gctgagttag gaggagctat ggaaggataa acctggcctt 120
aaagaggtca aagtggttta tagggggcgc tgagggtctc ccacattctc tggcctaaac 180
cttgaggca gatctgccc gtgggtctg ggatagctgt gccttcctta acaaaaaaat 240
tgtgcacaaa aggatgaaac tctattttcc ctctagcaca taaccaagaa tataaggcta 300
cagattgcct tcccagagg gaaaacctg cagcaacctg ctgcctggaa aagtgtgaga 360
gcagatcact ggggaatcgt ttgcccccg ctgatggaca gcttcccaa gctccaaggg 420
cagggtctca gcatgtaccg tactgggatg gttgtcaata ctctgggtcc tgtaagagtc 480
ccaggacact gccatgcaa tgccccctca gttcctggca tcctttttgg gctgctcaca 540
gccccagcct ctatggtgaa gacatacttg cttagcagct caccaacttg ttgccaagag 600
atcagtgtct gaaggcaagg ttattttctaa ctgagcagag cctgccagga agaaagcgtt 660
tgcacccac accactgtgc aggtgtgacc ggtgagctca cagctgcccc ccaggcatgc 720
ccagccact taatcatcac agctcgacag ctctctcgcc cagcccagtt ctggaagga 780
taaaaagggg catcacggtt cctgggtaac agagccacct tctgcgtcct gctgagctct 840
gttctctcca gcacctccca accactagt gcctggttct cttgctccac caggaacaag 900
ccaccatgtc tcgccagtca agtgtgtctt cgggagcggg gggcagtcgt agcttcagca 960
ccgctctgc catcaccccg tctgtctccc gcaccagctt cacctccgtg tcccggtccg 1020
ggggtggcgg tgggtggggc ttccggcaggg tcagccttgc ggggtgcttg ggagtgggtg 1080
gctatggcag ccggagcctc tacaacctgg ggggtccaa gaggatatcc atcagcacta 1140
gtgggtggcag cttcaggaac cggtttggtg ctgggtgctgg aggcggctat ggctttggag 1200
gtgggtgccg tagtggattt ggtttcggcg gtggagctgg tgggtggctt gggctcgggtg 1260
gcggagctgg ctttggagggt ggcttcgggt gccctggctt tcctgtctgc cctcctggag 1320
gtatccaaga ggtcactgtc aaccagagtc tcctgactcc cctcaacctg caaatcgacc 1380
ccagcatcca gaggggtgagg accgaggagc gcgagcagat caagaccctc aacaataagt 1440

ttgcctcctt	catcgacaag	gtgcgggttc	tggagcagca	gaacaagggt	ctggaaacaa	1500
agtggaccct	gctgcaggag	cagggcacca	agactgtgag	gcagaacctg	gagccgttgt	1560
tcgagcagta	catcaacaac	ctcaggaggc	agctggacag	catcgtgggg	gaacggggcc	1620
gcctggactc	agagctgaga	aacatgcagg	acctgggtga	agacttcaag	aacaagtatg	1680
aggatgaaat	caacaagcgt	accactgctg	agaatgagtt	tgtgatgctg	aagaaggatg	1740
tagatgctgc	ctacatgaac	aagggtggagc	tggaggccaa	ggttgatgca	ctgatggatg	1800
agattaactt	catgaagatg	ttctttgatg	cggagctgtc	ccagatgcag	acgcatgtct	1860
ctgacacctc	agtggctctc	tccatggaca	acaaccgcaa	cctggacctg	gatagcatca	1920
tcgctgaggt	caaggcccag	tatgaggaga	ttgccaaaccg	cagccggaca	gaagccgagt	1980
cctggtatca	gaccaagtat	gaggagctgc	agcagacagc	tggccggcat	ggcgatgacc	2040
tccgcaacac	caagcatgag	atctctgaga	tgaaccggat	gatccagagg	ctgagagccg	2100
agattgacaa	tgtcaagaaa	cagtgcgcca	atctgcagaa	cgccattgctg	gatgccgagc	2160
agcgtgggga	gctggccctc	aaggatgcca	ggaacaagct	ggccgagctg	gaggaggccc	2220
tgcagaaggc	caagcaggac	atggcccggc	tgctgcgtga	gtaccaggag	ctcatgaaca	2280
ccaagctggc	cctggacgtg	gagatcgcca	cttaccgcaa	gctgctggag	ggcgaggaat	2340
gcagactcag	tggagaagga	gttggaccag	tcaacatctc	tgttgtcaca	agcagtgttt	2400
cctctggata	tggcagtggc	agtggctatg	gcggtggcct	cggtggaggt	cttggcggcg	2460
gcctcggtagg	aggtcttgcc	ggaggtagca	gtggaagcta	ctactccagc	agcagtgggg	2520
gtgtcggcct	aggtggtggg	ctcagtgtgg	ggggctctgg	cttcagtgca	agcagttagcc	2580
gagggctggg	ggtgggcttt	ggcagtggcg	ggggtagcag	ctccagcgtc	aaatttgtct	2640
ccaccacctc	ctcctcccgg	aagagcttca	agagctaaga	acctgctgca	agtcactgcc	2700
ttccaagtgc	agcaaccacg	cccatggaga	ttgcctcttc	taggcagttg	ctcaagccat	2760
gttttatcct	tttctggaga	gtagtctaga	ccaagccaat	tgcagaacca	cattcttttg	2820
ttcccaggag	agccccattc	ccagcccctg	gtctcccgtg	ccgcagttct	atattctgct	2880
tcaaatcagc	cttcaggttt	cccacagcat	ggcccctgct	gacacgagaa	cccaaagttt	2940
tcccaaatct	aatcatcaaa	aacagaatcc	ccacccaat	cccaaatttt	gttttggttc	3000
taactacctc	cagaatgtgt	tcaataaaat	gttttataat	ataagctggt	gtgcagaatt	3060
gttttttttt	tctacccaa					3079

<210> 117

<211> 6921

<212> DNA

<213> Homo sapien

<400> 117

gaattctgac	tgtccactca	aaacttctat	tccgatcaaa	gctatctgtg	actacagaca	60
aattgagata	accattttaca	aagacgatga	atgtgtttttg	gcgaataaact	ctcatcgtgc	120
taaattggaag	gtcattagtc	ctactgggaa	tgaggctatg	gtcccatctg	tgtgcttcac	180
cgttcctcca	ccaaacaaag	aagcgggtgga	ccttgccaaac	agaattgagc	aacagtatca	240
gaatgtcctg	actctttggc	atgagtctca	cataaacatg	aagagtgtag	tatcctggca	300
ttatctcatc	aatgaaattg	atagaattcg	agctagcaat	gtggcttcaa	taaagacaat	360
gctacctggt	gaacatcagc	aagttctaag	taatctacaa	tctcgttttg	aagattttct	420
ggaagatagc	caggaatccc	aagtcttttc	aggctcagat	ataacacaac	tggaaaagga	480
ggttaatgta	tgtaagcagt	attatcaaga	acttcttaaa	tctgcagaaa	gagaggagca	540
agaggaatca	gtttataatc	tctacatctc	tgaagttcga	aacattagac	ttcgggttaga	600
gaactgtgaa	gatcggtgta	ttagacagat	tcgaactccc	ctggaaagag	atgatttgca	660
tgaagtggtg	ttcagaatca	cagaacagga	gaaactaaag	aaagagctgg	aacgacttaa	720
agatgatttg	ggaacaatca	caaataagtg	tgaggagtgtt	ttcagtcaag	cagcagcctc	780
ttcatcagtc	cctaccctac	gatcagagct	taatgtggtc	cttcagaaca	tgaaccaagt	840
ctattctatg	tcttccactt	acatagataa	gttgaaaact	gttaacttgg	tgttaaaaaa	900
cactcaagct	gcagaagccc	tcgtaaaact	ctatgaaaact	aaactgtgtg	aagaagaagc	960
agttatagct	gacaagaata	atattgagaa	tctaataagt	actttaaaagc	aatggagatc	1020
tgaagtagat	gaaaagagac	aggtattcca	tgcccttagag	gatgagttgc	agaaagctaa	1080
agccatcagt	gatgaaatgt	ttaaaacgta	taaagaacgg	gaccttgatt	ttgactggca	1140
caaagaaaaa	gcagatcaat	tagttgaaag	gtggcaaaaat	gttcatgtgc	agattgacaa	1200

cagggttacgg	gacttagagg	gcattggcaa	atcactgaag	tactacagag	acacttacca	1260
tccttttagat	gattggatcc	agcagggttg	aactactcag	agaaagattc	aggaaaatca	1320
gcctgaaaat	agtaaaaccc	tagccacaca	gttgaatcaa	cagaagatgc	tggtgtccga	1380
aatagaaatg	aaacagagca	aaatggacga	gtgtcaaaaa	tatgcagaac	agtactcagc	1440
tacagtgaag	gactatgaat	tacaaacaat	gacctaccgg	gccatggtag	attcacaaca	1500
aaaatctcca	gtgaaacgcc	gaagaatgca	gagttcagca	gatctcatta	ttcaagagtt	1560
catggacctt	aggactcgat	atactgccct	ggtcactctc	atgacacaat	atattaaatt	1620
tgctggtgat	tcattgaaga	ggctggaaga	ggaggagatt	aaaagggtga	aggagacttc	1680
tgaacatggg	gcatattcag	atctgcttca	gcgtcagaag	gcaacagtgc	ttgagaatag	1740
caaacttaca	ggaaagataa	gtgagttgga	aagaatggta	gctgaactaa	agaaacaaaa	1800
gtcccagagta	gaggaagaac	ttccgaaggt	cagggagggt	gcagaaaatg	aattgagaaa	1860
gcagcagaga	aatgtagaag	atatctctct	gcagaagata	agggctgaaa	gtgaagccaa	1920
gcagtaccgc	agggaaacttg	aaaccattgt	gagagagaag	gaagccgctg	aaagagaact	1980
ggagcgggtg	aggcagctca	ccatagaggc	cgaggctaaa	agagctgccg	tggaagagaa	2040
cctcctgaat	tttcgcaatc	agttggagga	aaacaccttt	accagacgaa	cactggaaga	2100
tcctcttaaa	agaaaagatt	taagtctcaa	tgatttggag	caacaaaaaa	ataaattaat	2160
ggaagaatta	agaagaaaga	gagacaatga	ggaagaactc	ttgaagctga	taaagcagat	2220
ggaaaaagac	cttgcattht	agaaacaggt	agcagagaaa	cagttgaaag	aaaagcagaa	2280
aattgaattg	gaagcaagaa	gaaaaataac	tgaaattcag	tatacatgta	gagaaaatgc	2340
attgccagtg	tgtccgatca	cacaggctac	atcatgcagg	gcagtaacgg	gtctccagca	2400
agaacatgac	aagcagaaaag	cagaagaact	caaacagcag	gtagatgaac	taacagctgc	2460
caatagaaaag	gctgaacaag	acatgagaga	gctgacatat	gaacttaatg	ccctccagct	2520
tgaaaaaacg	tcactctgag	aaaaggctcg	tttgctaaaa	gataaactag	atgaaacaaa	2580
taatacactc	agatgcctta	agttggagct	ggaaaggaag	gatcaggcgg	agaaagggta	2640
ttctcaacaa	ctcagagagc	ttggtaggca	attgaatcaa	accacaggta	aagctgaaga	2700
agccatgcaa	gaagctagt	atctcaagaa	aataaagcgc	aattatcagt	tagaattaga	2760
atctcttaat	catgaaaaag	ggaaactaca	aagagaagta	gacagaatca	caagggcaca	2820
tgctgtagct	gagaagaata	ttcagcattt	aaattcacaa	attcattctt	ttcgagatga	2880
gaaagaatta	gaaagactac	aaatctgcca	gagaaaatca	gatcatctaa	aagaacaatt	2940
tgagaaaaag	catgagcagt	tgcttcaaaa	tatcaaagct	gaaaaagaaa	ataatgataa	3000
aatccaaaag	ctcaatgaag	aattggagaa	aagtaatgag	tgtgcagaga	tgctaaaaca	3060
aaaagtagag	gagcttacta	ggcagaataa	tgaaaccaa	ttaatgatgc	agagaattca	3120
ggcagaatca	gagaatatag	ttttagagaa	acaaactatc	cagcaaagat	gtgaagcact	3180
gaaaattcag	gcagatgggt	ttaaagatca	gctacgcagc	acaaatgaac	acttgcataa	3240
acagacaaaa	acagagcagg	atthttcaaag	aaaaattaaa	tgcttagaag	aagacctggc	3300
gaaaagtcaa	aatttggtta	gtgaatttaa	gcaaaagtgt	gaccaacaga	acattatcat	3360
ccagaatacc	aagaaagaag	ttagaaatct	gaatgcggaa	ctgaatgctt	ccaaagaaga	3420
gaagcgacgc	ggggagcaga	aagttcagct	acaacaagct	caggtgcaag	agttaaataa	3480
cagggtgaaa	aaagtacaag	acgaattaca	cttaagacc	atagaggagc	agatgaccca	3540
cagaaagatg	gttctgtttc	aggaagaatc	tggtaaattc	aaacaatcag	cagggaggtt	3600
tcggaagaag	atggaaaaat	taatggagtc	caaagtcac	actgaaaatg	atatttcagg	3660
cattaggctt	gactttgtgt	ctcttcaaca	agaaaactct	agagcccaag	aaaatgctaa	3720
gctttgtgaa	acaaacatta	aagaacttga	aagacagctt	caacagtatc	gtgaacaaat	3780
gcagcaaggg	cagcacatgg	aagcaaatca	ttaccaaata	tgctcagaaac	ttgaggatga	3840
gctgatagcc	cagaagcgtg	aggttgaaaa	cctgaagcaa	aaaatggacc	aacagatcaa	3900
agagcatgaa	catcaattag	ttttgctcca	gtgtgaaatt	caaaaaaaga	gcacagccaa	3960
agactgtacc	ttcaaaccag	atthttgagat	gacagtgaag	gagtgccagc	actctggaga	4020
gctgtcctct	agaaacactg	gacaccttca	cccaacacc	agatccctc	tgthtgagatg	4080
gactcaagaa	ccacagccat	tggaagagaa	gtggcagcat	cgggttggtg	aacagatacc	4140
caaagaagtc	caattccagc	caccaggggc	tccactcgag	aaagagaaaa	gccagcagtg	4200
ttactctgag	tacttttctc	agacaagcac	cgagttacag	ataacttttg	atgagacaaa	4260
cccattaca	agactgtctg	aaattgagaa	gataagagac	caagccctga	acaattctag	4320
accacctgtt	aggtatcaag	ataacgcag	tgaaatggaa	ctggtgaagg	ttttgacacc	4380
cttagagata	gctaagaaca	agcagtatga	tatgcataca	gaagtcacaa	cattaaaaca	4440
agaaaagaac	ccagttccca	gtgctgaaga	atggatgctt	gaaggggtgca	gagcatctgg	4500

tggactcaag	aaaggggatt	tccttaagaa	gggcttagaa	ccagagacct	tccagaactt	4560
tgatggtgat	catgcatgtt	cagtcaggga	tgatgaattt	aaattccaag	ggcttaggca	4620
cactgtgact	gccaggcagt	tgggtgaagc	taagcttctg	gacatgagaa	caattgagca	4680
gctgcgactc	ggtcttaaga	ctgttgaaga	agttcagaaa	actcttaaca	agtttctgac	4740
gaaagccacc	tcaattgcag	ggctttacct	agaatctaca	aaagaaaaga	tttcatttgc	4800
ctcagcggcc	gagagaatca	taatagacaa	aatgggtggc	ttggcatttt	tagaagctca	4860
ggctgcaaca	ggttttataa	ttgatcccat	ttcagggtcag	acatattctg	ttgaagatgc	4920
agttcttaaa	ggagttgttg	accccgaatt	cagaattagg	cttcttgagg	cagagaaggc	4980
agctgtggga	tattcttatt	cttctaagac	attgtcagtg	tttcaagcta	tggaaaatag	5040
aatgcttgac	agacaaaaag	gtaaacatat	cttggaagcc	cagattgcc	gtgggggtgt	5100
cattgaccct	gtgagaggca	ttcgtgttcc	tccagaaatt	gctctgcagc	aggggttgtt	5160
gaataatgcc	atcttacagt	ttttacatga	gccatccagc	aacacaagag	ttttccctaa	5220
tcccaataac	aagcaagctc	tgtattactc	agaattactg	cgaatgtgtg	tatttgatgt	5280
agagtcccaa	tgctttctgt	ttccatttgg	ggagaggaac	atttccaatc	tcaatgtcaa	5340
gaaaacacat	agaatttctg	tagtagatac	taaaacagga	tcagaattga	cogtgtatga	5400
ggctttccag	agaaacctga	ttgagaaaag	tatatatctt	gaactttcag	ggcagcaata	5460
tcagtgggaag	gaagctatgt	tttttgaatc	ctatgggcat	tcttctcata	tgctgactga	5520
tactaaaaca	ggattacact	tcaatattaa	tgaggctata	gagcagggaa	caattgacaa	5580
agccttggtc	aaaaagtatc	aggaaggcct	catcacactt	acagaacttg	ctgattcttt	5640
gctgagccgg	ttagtcccca	agaaagattt	gcacagtcc	gttgcagggt	attggctgac	5700
tgctagtggg	gaaaggatct	ctgtactaaa	agcctcccgt	agaaatttgg	ttgatcggt	5760
tactgccctc	cgatgccttg	aagcccaagt	cagtacaggg	ggcataattg	atcctcttac	5820
tggcaaaaag	taccgggtgg	ccgaagcttt	gcatagaggc	ctgggtgatg	aggggtttgc	5880
ccagcagctg	cgacagtgtg	aattagtaat	cacagggtat	ggccatccca	tcactaacia	5940
aatgatgtca	gtgggtggaag	ctgtgaatgc	aaatattata	aataaggaaa	tgggaatccg	6000
atgtttggaa	tttcagtact	tgacaggagg	gttgatagag	ccacaggttc	actctcgggt	6060
atcaatagaa	gaggctctcc	aagtaggtat	tatagatgtc	ctcattgcca	caaaactcaa	6120
agatcaaaaag	tcataatgtca	gaaatataat	atgccctcag	acaaaaagaa	agttgacata	6180
taaagaagcc	ttagaaaaag	ctgattttga	tttccacaca	ggacttaaac	tgttagaagt	6240
atctgagccc	ctgatgacag	gaatttctag	cctctactat	tcttccta	gggacatgtt	6300
taaaataactg	tgcaaggggt	gatgcaggct	ggttcatgcc	actttttcag	agttatgatga	6360
tatcggtctac	atatgcagtc	tgtgaattat	gtaacatact	ctatttcttg	agggctgcaa	6420
attgctaagt	gctcaaaaata	gagtaagttt	taaattgaaa	attacataag	atttaattgcc	6480
cttcaaatgg	tttcatttag	ccttgagaat	ggttttttga	aacttgcca	cactaaaatg	6540
tttttttttt	tttacgtaga	atgtgggata	aacttgatga	actccaagtt	cacagtgtca	6600
tttcttcaga	actccccttc	attgaatagt	gatcatttat	taaatgataa	attgcactcg	6660
ctgaaaagagc	acgtcatgaa	gcaccatgga	atcaaagaga	aagatataaa	ttcgttccca	6720
cagccttcaa	gctgcagtgt	tttagattgc	ttcaaaaaat	gaaaaagttt	tgcttttttc	6780
gatatagtga	ccttctttgc	atattaaaaat	gtttaccaca	atgtcccatt	tctagttaag	6840
tcttcgcact	tgaagctaa	cattatgaat	attatgtgtt	ggaggagggg	aaggattttc	6900
ttcattctgt	gtattttccg	g				6921

<210> 118

<211> 946

<212> DNA

<213> Homo sapien

<400> 118

cttctgactg	ggctcaggct	gacaggtaga	gctcaccatg	gcttcttgtg	tccttgtccc	60
ctccccatca	cagctgtggt	gcagtccacc	gtctccagtg	gctatggcgg	tgccagtggg	120
gtcggcagtg	gcttaggcct	gggtggagga	agcagctact	cctatggcag	tggtcttggc	180
gttggaggtg	gcttcagttc	cagcagtggc	agagccattg	gggtggcct	cagctctgtt	240
ggaggcggca	gttccaccat	caagtacacc	accacctcct	cctccagcag	gaagagctat	300
aagcactaaa	gtgcgtctgc	tagctctcgg	tcccacagtc	ctcaggcccc	tctctggctg	360
cagagccctc	tcctcagggt	gcctgtcctc	tcctggcctc	cagctctccc	tgctgtccca	420

ggtagagctg	gggatgaatg	cttagtgccc	tcacttcttc	tctctctctc	tataccatct	480
gagcaccat	tgctcaccat	cagatcaacc	tctgatttta	catcatgatg	taatcaccac	540
tggagcttca	ctgttactaa	attattaatt	tcttgccctc	agtgttctat	ctctgaggct	600
gagcattata	agaaaatgac	ctctgctcct	tttcattgca	gaaaattgcc	aggggcttat	660
ttcagaacaa	cttcactta	ctttccactg	gctctcaaac	tctctaactt	ataagtgttg	720
tgaaccccca	cccaggcagt	atccatgaaa	gcacaagtga	ctagtcctat	gatgtacaaa	780
gcctgtatct	ctgtgatgat	ttctgtgctc	ttcactgttt	gcaattgcta	aataaagcag	840
atttataata	catatattct	tttactttgc	cttgctttgg	ggccaaagt	ttgggcttaa	900
acttttttat	ctgataagt	aatagttggt	tttaaaagat	aatcta		946

<210> 119

<211> 8948

<212> DNA

<213> Homo sapien

<400> 119

tcaacagccc	ctgctccttg	ggcccccca	tgccatgccg	taatctctcc	cacccgacca	60
acaccaacac	ccagctccga	cgcagctcct	ctgcgccctt	gccgccctcc	gagccacagc	120
tttctctccg	ctcctgcccc	cggcccgctg	ccgtctccgc	gctcgcagcg	gcctcgggag	180
ggcccaggta	gcgagcagcg	acctcgcgag	ccttcgcac	tcccgcccg	ttccccggcc	240
gtccgcctat	ccttgcccc	ctccgctttc	tccgcgcgg	cccgcctcgc	ttatgcctcg	300
gcgctgagcc	gctctccga	ttgccgcgg	acatgagctg	caacggaggc	tcccaccgc	360
ggatcaacac	tctgggccc	atgatccg	ccgagctctg	cccggacctg	cgctacgagg	420
tgaccagcgg	cggcgggggc	accagcagga	tgtactatct	tccgcgcggc	gtgatcaccg	480
accagaactc	ggacggctac	tgtcaaaccg	gcacgatgtc	caggcaccag	aaccagaaca	540
ccatccagga	gctgctgcag	aactgctccg	actgcttgat	gcgagcagag	ctcatcgctc	600
agcctgaatt	gaagtatgga	gatggaatac	aactgactcg	gagtcgagaa	ttggatgagt	660
gttttgccca	ggccaatgac	caaataggaa	tcttcgacag	cttgatcaga	gagatgcggc	720
agatgggcca	gccctgtgat	gcttaccaga	aaaggcttct	tcagctccaa	gagcaaatgc	780
gagcccttta	taaagccatc	agtgtccctc	gagtcgcgag	ggccagctcc	aagggtggtg	840
gaggctacac	ttgtcagagt	ggctctggct	gggatgagtt	caccaaaccat	gtcaccagtg	900
aatgtttggg	gtggatgagg	cagcaaagg	cggagatgga	catggtggcc	tggggtgtgg	960
acctggcctc	agtggagcag	cacattaaca	gccaccgggg	catccacaac	tccatcggcg	1020
actatcgctg	gcagctggac	aaaatcaaag	ccgacctgcg	cgagaaatct	gcgatctacc	1080
agttggagga	ggagtatgaa	aacctgctga	aagcgtcctt	tgagaggatg	gatcacctgc	1140
gacagctgca	gaacatcatt	caggccacgt	ccaggagat	catgtggatc	aatgactgcg	1200
aggaggagga	gctgctgtac	gactggagcg	acaagaacac	caacatcgct	cagaaacagg	1260
aggccttctc	catacgcatg	agtcaactgg	aagttaaaga	aaaagagctc	aataagctga	1320
aacaagaaag	tgaccaactt	gtcctcaatc	agcatccagc	ttcagacaaa	attgaggcct	1380
atatggacac	tctgcagacg	cagtggagtt	ggattcttca	gatcaccaag	tgcatgtgat	1440
ttcatctgaa	agaaaatgct	gcctactttc	agttttttga	agaggcgcag	tctactgaag	1500
catacctgaa	ggggctccag	gactccatca	ggaagaagta	cccctgcgac	aagaacatgc	1560
ccctgcagca	cctgctggaa	cagatcaagg	agctggagaa	agaacgagag	aaaatccttg	1620
aatacaagcg	tcagggtgcag	aacttggtaa	acaagtctaa	gaagattgta	cagctgaagc	1680
ctcgtaaccc	agactacaga	agcaataaac	ccattattct	cagagctctc	tgtgactaca	1740
aacaagatca	gaaaatcgtg	cataaggggg	atgagtgtat	cctgaaggac	aacaacgagc	1800
gcagcaagtg	gtacgtgacg	ggcccgggag	gcgttgacat	gcttggtccc	tctgtggggc	1860
tgatcatccc	tcttcgaac	ccactggccg	tggacctctc	ttgcaagatt	gagcagtact	1920
acgaagccat	cttggtctctg	tggaaccagc	tctacatcaa	catgaagagc	ctggtgtcct	1980
ggcactactg	catgattgac	atagagaaga	tcaggggccat	gacaatcgcc	aagctgaaaa	2040
caatgcggca	ggaagattac	atgaagacga	tagccgacct	tgagttacat	taccaagagt	2100
tcatcagaaa	tagccaaggc	tcagagatgt	ttggagatga	tgacaagcgg	aaaatacagt	2160
ctcagttcac	cgatgcccag	aagcattacc	agacctggt	cattcagctc	cctggctatc	2220
cccagcacca	gacagtgacc	acaactgaaa	tcactcatca	tggaacctgc	caagatgtca	2280
accataataa	agtaattgaa	accaacagag	aaaatgacaa	gcaagaaaca	tggtatgctga	2340

tggagctgca	gaagattcgc	aggcagatag	agcactgcga	gggcaggatg	actctcaaaa	2400
acctccctct	agcagaccag	gggtcttctc	accacatcac	agtgaaaatt	aacgagctta	2460
agagtgtgca	gaatgattca	caagcaattg	ctgaggttct	caaccagctt	aaagatatgc	2520
ttgccaaactt	cagaggttct	gaaaagtact	gctatttaca	gaatgaagta	tttggactat	2580
ttcagaaaact	ggaaaaatc	aatggtgtta	cagatggcta	cttaaatagc	ttatgcacag	2640
taagggcact	gctccaggct	attctccaaa	cagaagacat	gttaaagggt	tatgaagcca	2700
ggctcactga	ggaggaaaact	gtctgcctgg	acctggataa	agtggaagct	taccgctgtg	2760
gactgaagaa	aataaaaaaat	gacttgaact	tgaagaagtc	gttggtggcc	actatgaaga	2820
cagaactaca	gaaagcccag	cagatccact	ctcagacttc	acagcagtat	ccactttatg	2880
atctggactt	gggcaagttc	ggtgaaaaag	tcacacagct	gacagaccgc	tggcaaagga	2940
tagataaaca	gatcgacttt	agattatggg	acctggagaa	acaaatcaag	caattgagga	3000
attatcgtga	taactatcag	gctttctgca	agtggctcta	tgatcgtaaa	cgccgccagg	3060
attccttaga	atccatgaaa	tttggagatt	ccaacacagt	catgcggttt	ttgaatgagc	3120
agaagaactt	gcacagtga	atatctggca	aacgagacaa	atcagaggaa	gtacaaaaaa	3180
ttgctgaact	ttgcgccaat	tcaattaagg	attatgagct	ccagctggcc	tcatacacct	3240
caggactgga	aactctgctg	aacataccta	tcaagaggac	catgattcag	tccccttctg	3300
gggtgattct	gcaagaggct	gcagatgttc	atgctcggtg	cattgaacta	cttacaagat	3360
ctggagacta	ttacaggttc	ttaagtga	tgctgaagag	tttggagat	ctgaagctga	3420
aaaataccaa	gatcgaagtt	ttggaagagg	agctcagact	ggcccagat	gccaactcgg	3480
aaaactgtaa	taagaacaaa	ttcctggatc	agaacctgca	gaaataccag	gcagagtgtt	3540
cccagttcaa	agcgaagctt	gcgagcctgg	aggagctgaa	gagacaggct	gagctggatg	3600
ggaagtcggc	taagcaaaat	ctagacaagt	gctacggcca	aataaaaagaa	ctcaatgaga	3660
agatcacccg	actgacttat	gagattgaag	atgaaaagag	aagaagaaaa	tctgtggaag	3720
acagatttga	ccaacagaag	aatgactatg	accaactgca	gaaagcaagg	caatgtgaaa	3780
aggagaacct	tggttggcag	aaattagagt	ctgagaaagc	catcaaggag	aaggagtacg	3840
agattgaaag	gttgagggtt	ctactgcagg	aagaaggcac	ccggaagaga	gaatatgaaa	3900
atgagctggc	aaaggtaaga	aaccactata	atgaggagat	gagtaattta	aggaacaagt	3960
atgaaacaga	gattaacatt	acgaagacca	ccatcaagga	gatattccatg	caaaaagagg	4020
atgattccaa	aatctcttaga	aaccagcttg	atagactttc	aagggaataat	cgagatctga	4080
aggatgaaat	tgtcaggctc	aatgacagca	tcttgaggcc	cactgagcag	cgaaggcgag	4140
ctgaagaaaa	cgcccttcag	caaaaggcct	gtggctctga	gataatgcag	aagaagcagc	4200
atctggagat	agaactgaag	caggctcatgc	agcagcgctc	tgaggacaat	gcccggcaca	4260
agcagtccct	ggaggaggct	gccaaagacca	ttcaggacaa	aaataaggag	atcgagagac	4320
tcaaagctga	gtttcaggag	gaggccaagc	gccgctggga	atatgaaaat	gaactgagta	4380
aggtaagaaa	caattatgat	gaggagatca	ttagcttaaa	aaatcagttt	gagaccgaga	4440
tcaacatcac	caagaccacc	atccaccagc	tcaccatgca	gaaggaagag	gataccagtg	4500
gctaccgggc	tcagatagac	aatctcacc	gagaaaacag	gagcttatct	gaagaaataa	4560
agaggctgaa	gaacactcta	accagacca	cagagaatct	caggagggtg	gaagaagaca	4620
tccaacagca	aaaggccact	ggctctgagg	tgtctcagag	gaaacagcag	ctggagggtt	4680
agctgagaca	agtcactcag	atgcgaacag	aggagagcgt	aagatataag	caatctcttg	4740
atgatgctgc	caaaaccatc	caggataaaa	acaaggagat	agaaaggtta	aaacaactga	4800
tcgacaaaaga	aacaaatgac	cggaatgccc	tggaaagatga	aaacgcgaga	ttacaaaagg	4860
tccagtatga	cctgcagaaa	gcaaacagta	gtgcgacgga	gacaataaac	aaactgaagg	4920
ttcaggagca	agaactgaca	cgctgagga	tcgactatga	aagggtttcc	caggagagga	4980
ctgtgaagga	ccaggatatc	acgcggttcc	agaactctct	gaaagagctg	cagctgcaga	5040
agcagaagggt	ggaagaggag	ctgaatcgcc	tgaagaggac	cgctgcagaa	gactcctgca	5100
agagggaagaa	gctggaggaa	gagctggaag	gcatgaggag	gtcgctgaag	gagcaagcca	5160
tcaaaatcac	caacctgacc	cagcagctgg	agcaggcatc	cattgttaag	aagaggagt	5220
aggatgacct	ccggcagcag	agggacgtgc	tggatggcca	cctgagggaa	aagcagagga	5280
cccaggaaga	gctgaggagg	ctctcttctg	aggctgaggc	cctgaggcgg	cagttactcc	5340
aggaacagga	aagtgtcaaa	caagctcact	tgaggaaatga	gcatttccag	aaggcgatag	5400
aagataaaag	cagaagctta	aatgaaagca	aaatagaaat	tgagaggctg	cagtctctca	5460
cagagaacct	gaccaaggag	cacttgatgt	tagaagaaga	actgcggaac	ctgaggctgg	5520
agtacgatga	cctgaggaga	ggacgaagcg	aagcggacag	tgataaaaaat	gcaaccatct	5580
tggaaactaag	gagccagctg	cagatcagca	acaaccggac	cctggaactg	caggggctga	5640

ttaatgattt	acagagagag	agggaaaatt	tgagacagga	aattgagaaa	ttccaaaagc	5700
aggctttaga	ggcatcta	aggattcagg	aatcaaagaa	tcagtgtact	caggtggtac	5760
aggaaagaga	gagccttctg	gtgaaaatca	aagtcctgga	gcaagacaag	gcaaggctgc	5820
agaggctgga	ggatgagctg	aatcgtgcaa	aatcaactct	agaggcagaa	accagggtga	5880
aacagcgcct	ggagtgtgag	aaacagcaaa	ttcagaatga	cctgaatcag	tggaaagactc	5940
aatattcccc	caaggaggag	gctattagga	agatagaatc	ggaaagagaa	aagagtgaga	6000
gagagaagaa	cagtcttagg	agtgagatcg	aaagactcca	agcagagatc	aagagaattg	6060
aagagaggtg	caggcgtaag	ctggaggatt	ctaccaggga	gacacagtca	cagttagaaa	6120
cagaacgctc	ccgatatcag	agggagattg	ataaactcag	acagcgccca	tatgggtccc	6180
atcgagagac	ccagactgag	tgtgagtggg	ccgttgacac	ctccaagctg	gtgtttgatg	6240
ggctgaggaa	gaaggtgaca	gcaatgcagc	tctatgagt	tcagctgac	gacaaaacaa	6300
ccttgagcaa	actattgaag	gggaagaagt	cagtgggaag	agttgttct	gaaatccagc	6360
cattccttcg	gggtgcagga	tctatcgctg	gagcatctgc	ttctcctaag	gaaaaatact	6420
ctttggtaga	ggccaagaga	aagaaattaa	tcagcccaga	atccacagtc	atgcttctg	6480
aggcccaggc	agctacaggt	ggtataattg	atccccatcg	gaatgagaag	ctgactgtcg	6540
acagtgccat	agctcgggac	ctcattgact	tcgatgaccg	tcagcagata	tatgcagcag	6600
aaaaagctat	cactggtttt	gatgatccat	tttcaggcaa	gacagtatct	gtttcagaag	6660
ccatcaagaa	aaatttgatt	gatagagaaa	ccggaatgcg	cctgctggaa	gcccagattg	6720
cttcaggggg	tgtagtagac	cctgtgaaca	gtgtcttttt	gccaaaagat	gtcgccttgg	6780
cccgggggct	gattgataga	gatttgtatc	gatccctgaa	tgatccccga	gatagtcaga	6840
aaaactttgt	ggatccagtc	accaaaaaga	aggtcagtta	cgtgcagctg	aaggaacggt	6900
gcagaatcga	accacatact	ggtctgctct	tgctttcagt	acagaagaga	agcatgtcct	6960
tccaaggaat	cagacaacct	gtgaccgtca	ctgagctagt	agattctggt	atattgagac	7020
cgtccactgt	caatgaactg	gaatctggtc	agatttctta	tgacgaggtt	ggtgagagaa	7080
ttaaggtact	cctccagggt	tcaagctgca	tagcaggcat	atacaatgag	accacaaaac	7140
agaagcttgg	cattttagag	gccatgaaaa	ttggcttagt	ccgacctggt	actgctctgg	7200
agttgtctgga	agcccaagca	gctactggct	ttatagtggg	tcctgttagc	aacttgaggt	7260
taccagtggg	ggaagcctac	aagagaggtc	tggtgggcat	tgagttcaaa	gagaagctcc	7320
tgtctgcaga	acgagctgtc	actgggtata	atgatcctga	aacaggaaac	atcatctctt	7380
tgttccaagc	catgaataag	gaactcatcg	aaaagggccca	cgttattcgc	ttattagaag	7440
cacagatcgc	aaccggggggg	atcattgacc	caaaggagag	ccatcgttta	ccagttgaca	7500
tagcatataa	gaggggctat	ttcaatgagg	aactcagtga	gattctctca	gatccaagt	7560
atgataccaa	aggatttttt	gaccccaaca	ctgaagaaaa	tcttacctat	ctgcaactaa	7620
aagaaagatg	cattaaggat	gaggaaacag	ggctctgtct	tctgcctctg	aaagaaaaga	7680
agaaacaggt	gcagacatca	caaaagaata	ccctcaggaa	gcgtagagt	gtcatagt	7740
accagaaac	caataaagaa	atgtctgttc	aggaggccta	caagaagggc	ctaattgatt	7800
atgaaacctt	caaagaactg	tgtgagcagg	aatgtgaatg	ggaagaaata	accatcacgg	7860
gatcagatgg	ctccaccagg	gtggtcctgg	tagatagaaa	gacaggcagt	cagtatgata	7920
ttcaagatgc	tattgacaag	ggccttgttg	acagggaagt	ctttgatcag	taccgatccg	7980
gcagcctcag	cctcactcaa	tttgctgaca	tgatctcctt	gaaaaatggt	gtcggcacca	8040
gcagcagcat	gggcagtggt	gtcagcagtg	atgttttttag	cagctcccga	catgaatcag	8100
taagtaagat	ttccaccata	tccagcgtca	ggaatttaac	cataaggagc	agctcttttt	8160
cagacaccct	ggaagaatcg	agccccattg	cagccatctt	tgacacagaa	aacctggaga	8220
aaatctccat	tacagaaggt	atagagcggg	gcatcgttga	cagcatcacg	ggtcagaggc	8280
ttctggaggc	tcaggcctgc	acagggtggc	tcatccaccc	aaccacgggc	cagaagctgt	8340
cacttcagga	cgcagtctcc	cagggtgtga	ttgaccaaga	catggccacc	agcgtgaagc	8400
ctgctcagaa	agccttcata	ggcttcgagg	gtgtgaagg	aaagaagaag	atgtcagcag	8460
cagaggcagt	gaaagaaaaa	tggctcccgt	atgaggctgg	ccagcgcttc	ctggagtcc	8520
agtaacctac	gggaggtctt	gttgacccgg	aagtgcagtg	gaggataagc	accgaagaag	8580
ccatccggaa	gggggttcata	gatggccg	ccgcacagag	gctgcaagac	accagcagct	8640
atgccaaaat	cctgacctgc	cccaaaaacca	aattaaaaat	atcctataag	gatgccataa	8700
atcgctccat	ggtagaagat	atcactgggc	tgcgccctct	ggaagccgcc	tccgtgtcgt	8760
ccaagggtct	accagccct	tacaacatgt	cttcggctcc	gggggtcccgc	tccggctccc	8820
gctcgggata	tcgctccgga	tctcgctccg	gggtcccgcag	tgggtcccgcg	agaggaagct	8880
ttgacgccac	agggaattct	tcctactctt	attcctactc	athtagcagt	agttctattg	8940

ggcactag

8948

<210> 120
 <211> 587
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(587)
 <223> n = A,T,C or G

<400> 120
 cgctctaagc acttagacta catcagggaa gaacacagac cacatccctg tctcatgcg 60
 gcttatgttt tctggaagaa agtggagacc nagtccttgg ctttagggct ccccggtg 120
 gggctgtgca ntccggtcag ggcgggaagg gaaatgcacc gctgcatgtg aacttacagc 180
 ccaggcggat gccccttccc ttagcactac ctggcctcct gcatccctc gcctcatgtt 240
 cctccacact tcaaanaatg aanaacccca tgggccagc cccttgccct ggggaaccaa 300
 ggcagccttc caaaactcag gggctgaagc anactattag ggcaggggct gactttgggt 360
 gacactgccc attccctctc agggcagctc angtcaccn ggnctcttga acccagcctg 420
 ttcttttgaa aaagggcaaa actgaaaagg gcttttcta naaaaagaaa aaccagggaa 480
 ctttgccagg gcttcnntnt taccaaaacn ncttctcng gatttttaat tccccattng 540
 gcctccactt accnggggcn atgccccaaa attaanaatt tcccatc 587

<210> 121
 <211> 619
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(619)
 <223> n = A,T,C or G

<400> 121
 cactagtagg atagaaacac tgtgtcccga gagtaaggag agaagctact attgattaga 60
 gcctaaccga ggttaactgc aagaagaggc gggatacttt cagctttcca tgtaactgta 120
 tgcataaagc caatgtagtc cagtttctaa gatcatgttc caagctaact gaatcccact 180
 tcaatacaca ctcatgaact cctgatggaa caataacagg cccaagcctg tggatgatg 240
 tgcacacttg ctagactcan aaaaaatact actctcataa atgggtggga gtattttggt 300
 gacaacctac tttgcttggc tgagtgaagg aatgatattc atatattcat ttattccatg 360
 gacatttagt tagtgctttt tatataccag gcatgatgct gagtgacact cttgtgtata 420
 tttccaaatt tttgtacagt cgctgcacat atttgaaatc atatattaag acttccaaaa 480
 aatgaagtcc ctggtttttc atggcaactt gatcagtaaa ggattcncct ctgtttggta 540
 cttaaaacat ctactatatn gttnanatga aattcctttt cccncctcc cgaaaaaana 600
 aagtgggtggg gaaaaaaaaa 619

<210> 122
 <211> 1475
 <212> DNA
 <213> Homo sapien

<400> 122
 tccacctgtc cccgcagcgc cggtctcgcc cctcctgccg cagccaccga gccgcctct 60
 agcgccccga cctcgccacc atgagagccc tgctggcgcg cctgcttctc tgcgtcctgg 120

tcgtgagcga	ctccaaaggc	agcaatgaac	ttcatcaagt	tccatogaac	tgtgactgtc	180
taaatggagg	aacatgtgtg	tccaacaagt	acttctccaa	cattcactgg	tgcaactgcc	240
caaagaaatt	cggagggcag	cactgtgaaa	tagataagtc	aaaaacctgc	tatgagggga	300
atggtcactt	ttaccgagga	aaggccagca	ctgacaccat	gggccggccc	tgccctgccct	360
ggaactctgc	cactgtccct	cagcaaactg	accatgcccc	cagatctgat	gctcttcagc	420
tgggcctggg	gaaacataat	tactgcagga	accagacaa	cggaggcgga	ccctgggtgt	480
atgtgcaggt	gggcctaaag	ccgcttgctc	aagagtgcac	ggtgcatgac	tgcgagatg	540
gaaaaaagcc	ctcctctcct	ccagaagaat	taaaatttca	gtgtggccaa	aagactctga	600
ggccccgctt	taagattatt	gggggagaat	tcaccacat	cgagaaccag	ccctggtttg	660
cggccatcta	caggaggcac	cgggggggct	ctgtcaccta	cgtgtgtgga	ggcagcctca	720
tcagcccttg	ctgggtgatc	agcgccacac	actgcttcat	tgattacca	aagaaggagg	780
actacatcgt	ctacctgggt	cgtcaaggc	ttaactccaa	cacgcaaggg	gagatgaagt	840
ttgaggtgga	aaacctcatc	ctacacaagg	actacagcgc	tgacacgctt	gctcaccaca	900
acgacattgc	cttgctgaag	atccgttcca	aggaggcgag	gtgtgcgcag	ccatcccggga	960
ctatacagac	catctgcctg	ccctcgatgt	ataacgatcc	ccagtttggc	acaagctgtg	1020
agatcactgg	ctttggaaaa	gagaattcta	ccgactatct	ctatccggag	cagctgaaga	1080
tgactgttgt	gaagctgatt	tcccaccggg	agtgtcagca	gccccactac	tacggctctg	1140
aagtcaccac	caaaatgctg	tgtgctgctg	accacagtg	gaaaacagat	tccctgccagg	1200
gagactcagg	gggacccttc	gtctgttccc	tccaaggccg	catgactttg	actggaattg	1260
tgagctgggg	ccgtggatgt	gccctgaagg	acaagccagg	cgtctacacg	agagtctcac	1320
acttcttacc	ctggatccgc	agtcacacca	aggaagagaa	tggcctggcc	ctctgagggg	1380
ccccagggag	gaaacgggca	ccaccgcctt	tcttgctggt	tgtcattttt	gcagtagagt	1440
catctccatc	agctgtaaga	agagactggg	aagat			1475

<210> 123

<211> 2294

<212> DNA

<213> Homo sapien

<400> 123

cagcgccggc	tcgccccttc	ctgccgcagc	caccgagccg	ccgtctagcg	ccccgacctc	60
gccaccatga	gagccctgct	ggcgcgccctg	cttctctgcg	tcctggctcg	gagcgactcc	120
aaaggcagca	atgaacttca	tcaagttcca	tcgaactgtg	actgtctaaa	tgagggaaca	180
tgtgtgtcca	acaagtactt	ctccaacatt	cactgggtgca	actgccccaa	gaaattcgga	240
gggcagcact	gtgaaataga	taagtcaaaa	acctgctatg	aggggaatgg	tcacttttac	300
cgaggaaagg	ccagcactga	caccatgggc	cggccctgcc	tgccctggaa	ctctgccact	360
gtccttcagc	aaacgtacca	tgcccacaga	tctgatgtct	ttcagctggg	cctggggaaa	420
cataattact	gcaggaaccc	agacaaccgg	aggcgacctt	ggtgctatgt	gcaggtgggc	480
ctaaagccgc	ttgtccaaga	gtgcatgggt	catgactgcg	cagatggaaa	aaagccctcc	540
tctctccag	agaattataa	atttcagtgt	ggccaaaaga	ctctgaggcc	ccgctttaag	600
attattgggg	gagaattcac	caccatcgag	aaccagccct	ggtttgccgc	catctacagg	660
aggcaccggg	ggggctctgt	cacctacgtg	tgtggaggca	gcctcatcag	cccttgctgg	720
gtgatcagcg	ccacacactg	cttcattgat	tacccaaaga	aggaggacta	catcgtctac	780
ctgggtcgct	caaggcttaa	ctccaacacg	caaggggaga	tgaagtttga	ggtggaaaac	840
ctaactctac	acaaggacta	cagcgctgac	acgcttgctc	accacaacga	cattgccttg	900
ctgaagatcc	gttccaaggga	gggcaggtgt	gcgcagccat	cccggactat	acagaccatc	960
tgccctgccct	cgatgtataa	cgatccccag	tttggcacia	gctgtgagat	cactggcttt	1020
ggaaaagaga	attctaccga	ctatctctat	ccggagcagc	tgaaaatgac	tggtgtgaag	1080
ctgatttccc	accgggagtg	tcagcagccc	cactactacg	gctctgaagt	caccacaaaa	1140
atgctgtgtg	ctgctgaccc	acagtggaaa	acagattcct	gccagggaga	ctcaggggga	1200
ccctctgtct	gttccctcca	aggccgcagt	actttgactg	gaattgtgag	ctggggccgt	1260
ggatgtgccc	tgaaggacaa	gccaggcgct	tacacgagag	tctcacactt	cttaccctgg	1320
atccgcagtc	acaccaaggga	agagaatggc	ctggccctct	gaggggtccc	agggaggaaa	1380
cgggcaccac	ccgctttctt	gctgggttgc	atcttgagct	agagtcattc	ccatcagctg	1440
taagaagagc	tgggaatata	ggctctgcac	agatggattt	gcctgtgcca	ccaccagggc	1500

gaacgacaat	agctttaccc	tcaggcatag	gcctgggtgc	tggttgccca	gacccctctg	1560
gccaggatgg	aggggtgggc	ctgactcaac	atgttactga	ccagcaactt	gtctttttct	1620
ggactgaagc	ctgcaggagt	taaaaagggc	agggcatctc	ctgtgcatgg	gctcgaaggg	1680
agagccagct	ccccgaccg	gtgggcattt	gtgaggccca	tggttgagaa	atgaataatt	1740
tcccaattag	gaagtgtaag	cagctgaggt	ctcttgaggg	agcttagcca	atgtgggagc	1800
agcggtttgg	ggagcagaga	cactaacgac	ttcagggcag	ggctctgata	ttccatgaat	1860
gtatcaggaa	atatatatgt	gtgtgtatgt	ttgcacactt	gtgtgtgggc	tgtgagtgtg	1920
agtgtgagta	agagctgggt	tctgattgtt	aagtctaaat	atttccttaa	actgtgtgga	1980
ctgtgatgcc	acacagagtg	gtctttcttg	agaggttata	ggtcactcct	ggggcctctt	2040
gggtcccca	cgtgacagtg	cctgggaatg	tattattctg	cagcatgacc	tgtgaccagc	2100
actgtctcag	tttcactttc	acatagatgt	ccctttcttg	gccagttatc	ccttcctttt	2160
agcctagttc	atccaatcct	cactgggtgg	ggtgaggacc	actcctgtac	actgaatatt	2220
tatatttcac	tatttttatt	tatatttttg	taatttttaa	taaaagtgat	caataaaatg	2280
tgatttttct	gatg					2294

<210> 124

<211> 956

<212> DNA

<213> Homo sapien

<400> 124

gatgagttcc	gcaccaagtt	tgagacagac	caggccctgc	gcctgagtgt	ggaggccgac	60
atcaatggcc	tgcgagggt	gctggatgag	ctgaccctgg	ccagagccga	cctggagatg	120
cagattgaga	acctcaagga	ggagctggcc	tacctgaaga	agaaccacga	ggaggagatg	180
aacgccctgc	gaggccaggt	gggtggtgag	atcaatgtgg	agatggacgc	tgcccagggc	240
gtggacctga	gccgcacct	caacgagatg	cgtgaccagt	atgagaagat	ggcagagaag	300
aaccgcaagg	atgccgagga	ttggttcttc	agcaagacag	aggaactgaa	ccgcgagggtg	360
gccaccaaca	gtgagctggt	gcagagtggc	aagagtgaga	tctcggagct	ccggcgccacc	420
atgcaggcct	tggagataga	gctgcagtcc	cagctcagca	tgaaagcatc	cctggagggc	480
aacctggcgg	agacagagaa	ccgctactgc	gtgcagctgt	cccagatcca	ggggctgatt	540
ggcagcgtgg	aggagcagct	ggcccagctt	cgtgcgaga	tggagcagca	gaaccaggaa	600
tacaaaatcc	tgctggatgt	gaagacgcgg	ctggagcagg	agattgccac	ctaccgccgc	660
ctgctggagg	gagaggatgc	ccacctgact	cagtacaaga	aagaaccggg	gaccacccgt	720
caggtgcgta	ccattgtgga	agaggtccag	gatggcaagg	tcatctcttc	ccgcgagcag	780
gtccaccaga	ccaccgctg	aggactcagc	taccccgcc	ggccaccag	gaggcagggg	840
cgcagccgcc	ccatctgccc	cacagtctcc	ggcctctcca	gcctcagccc	cctgcttcag	900
tcccttcccc	atgcttcctt	gcctgatgac	aataaaagct	tgttgactca	gctatg	956

<210> 125

<211> 486

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(486)

<223> n = A,T,C or G

<400> 125

aaattatata	tagtgnttca	gctcccattg	tggtgttcat	agtctttctag	gaacagataa	60
acttaagtat	tcaattcact	cttggcattt	tttctttaat	ataggctttt	tagcctattt	120
ttggaaaact	gcttttcttc	tgagaacctt	attctgaatg	tcatcaactt	taccaaacct	180
tctaagtcca	gagctaaact	agtactgttt	aagttactat	tgactgaatt	ttctttcattt	240
tctgttttagc	cagtgttacc	aaggtaagct	ggggaatgaa	gtataccaac	ttctttcaga	300
gcatttttagg	acattatggc	agcttttagaa	ggctgtcttg	tttctagcca	aggagagacc	360

agcgcagggt	ttggatacta	gagaaagtca	tttgcttgta	ctattgccat	tttagaaagc	420
tctgatgtga	attcaaattt	tacctctgtt	acttaaagcc	aacaatttta	aggcagtagt	480
tttact						486

<210> 126

<211> 3552

<212> DNA

<213> Homo sapien

<400> 126

cggcaggcag	gtctcgtctc	ggcaccctcc	cggcgcccgc	gttctcctgg	ccctgcccgg	60
catcccgatg	gccgcgcgtg	ggccccggcg	ctccgtgcgc	ggagccgtct	gcctgcctct	120
gctgctgacc	ctcgtgatct	tcagtcgtgc	tggtgaagcc	tgcaaaaagg	tgatacttaa	180
tgtaccttct	aaactagagg	cagacaaaat	aattggcaga	gttaatttgg	aagagtgcct	240
caggctctgca	gacctcatcc	ggtcaagtga	tcttgatttc	agagttctaa	atgatgggtc	300
agtgtacaca	gccagggctg	ttgcgctgtc	tgataagaaa	agatcattta	ccatatggct	360
ttctgacaaa	aggaaacaga	cacagaaaga	ggttactgtg	ctgctagaac	atcagaagaa	420
ggtatcgaag	acaagacaca	ctagagaaac	tgttctcagg	cgtgccaaag	ggagatgggc	480
acctattcct	tgctctatgc	aagagaattc	cttgggccct	ttccatttgt	ttcttcaaca	540
agttgaatct	gatgcagcac	agaactatac	tgtcttctac	tcaataagtg	gacgtggagt	600
tgataaagaa	ccttttaaatt	tgttttatat	agaaagagac	actggaaatc	tattttgcac	660
tcggcctgtg	gatcgtgaag	aatatgatgt	ttttgatttg	attgcttatg	cgtcaactgc	720
agatggatat	tcagcagatc	tgccccctcc	actacccatc	agggtagagg	atgaaaatga	780
caaccaccct	gttttcacag	aagcaattta	taattttgaa	gttttggaag	gtagtagacc	840
tggtactaca	gtgggggtgg	tttgtgccac	agacagagat	gaaccggaca	caatgcatac	900
gcgcctgaaa	tacagcattt	tgacgcagac	accaaggtca	cctgggctct	tttctgtgca	960
tcccagcaca	ggcgtaatca	ccacagtctc	tcattatttg	gacagagagg	ttgtagacaa	1020
gtactcattg	ataatgaaag	tacaagacat	ggatggccag	ttttttggat	tgataggcac	1080
atcaacttgt	atcataacag	taacagattc	aaatgataat	gcaccactt	tcagacaaaa	1140
tgccttatgaa	gcatttgttag	aggaaaatgc	attcaatgtg	gaaatcttac	gaatacctat	1200
agaagataag	gatttaatta	acactgccaa	ttggagagtc	aattttacca	ttttaaaggg	1260
aaatgaaaaat	ggacatttca	aaatcagcac	agacaaagaa	actaatgaag	gtgttctttc	1320
tgttgtaaaag	ccactgaatt	atgaagaaaa	ccgtcaagtg	aacctggaaa	ttggagtaaa	1380
caatgaagcg	ccatttgcta	gagatattcc	cagagtgcac	gccttgaaca	gagccttggt	1440
tacagttcat	ctgaggggatc	tggtatgagg	gcctgaatgc	actcctgcag	cccaatatgt	1500
gcggattaaa	gaaaacttag	cagtgggggtc	aaagatcaac	ggctataaag	catatgaccc	1560
cgaaaataga	aatggcaatg	gtttaaggta	caaaaaattg	catgatccta	aagggttggt	1620
caccattgat	gaaatttcag	ggtcaatcat	aacttccaaa	atcctggata	gggaggttga	1680
aactcccaaa	aatgagttgt	ataatattac	agtcctggca	atagacaaaag	atgatagatc	1740
atgtactgga	acacttgctg	tgaacattga	agatgtaaat	gataatccac	cagaaatact	1800
tcaagaatat	gtagtcatct	gcaaaccaaa	aatgggggtat	accgacattt	tagctgttga	1860
tcctgatgaa	cctgtccatg	gagctccatt	ttatttcagt	ttgcccataa	cttctccaga	1920
aatcagtaga	ctgtggagcc	tcaccaaagt	taatgatata	gctgcccgtc	tttcatatca	1980
gaaaaatgct	ggattttcaag	aatataccat	tcctattact	gtaaaagaca	gggccggcca	2040
agctgcaaca	aaattattga	gagttaatct	gtgtgaatgt	actcatccaa	ctcagtgtcg	2100
tgcgacttca	aggagtacag	gagtaatact	tggaataatg	gcaatccttg	caatattact	2160
gggtatagca	ctgctctttt	ctgtattgct	aacttttagta	tgtggagttt	ttggtgcaac	2220
taaaggggaaa	cgttttcctg	aagatttagc	acagcaaaac	ttaattatat	caaacacaga	2280
agcacctgga	gacgatagag	tgtgctctgc	caatggattt	atgacccaaa	ctaccaacaa	2340
ctctagccaa	ggttttttgtg	gtactatggg	atcaggaatg	aaaaatggag	ggcaggaaac	2400
cattgaaatg	atgaaaggag	gaaaccagac	cttggaatcc	tgccgggggg	ctgggcatca	2460
tcataccctg	gactcctgca	ggggaggaga	cacggagggtg	gacaactgca	gatacactta	2520
ctcggagtgg	cacagtttta	ctcaaccccg	tctcgggtgaa	aaattgcatc	gatgtaatca	2580
gaatgaagac	cgcatgccat	cccaagatta	tgtcctcact	tataactatg	agggaagagg	2640
atctccagct	ggttctgtgg	gctgctgcag	tgaaaagcag	gaagaagatg	gccttgactt	2700

tttaaataat	ttggaaccca	aattttattac	attagcagaa	gcatgcacaa	agagataatg	2760
tcacagtgt	acaattaggt	ctttgtcaga	cattctggag	gtttccaaaa	ataatattgt	2820
aaagttcaat	ttcaacatgt	atgtatatga	tgattttttt	ctcaattttg	aattatgcta	2880
ctcaccaatt	tatatTTTTA	aagcaagttg	ttgcttatct	tttccaaaaa	gtgaaaaatg	2940
ttaaaacaga	caactggtaa	atctcaaact	ccagcactgg	aattaagggtc	tctaaagcat	3000
ctgctctttt	ttttttttac	agatatTTTA	gtaataaata	tgctggataa	atattagtcc	3060
aacaatagct	aagttatgct	aatatcacat	tattatgtat	tcactttaag	tgatagtTTA	3120
aaaaataaac	aagaaatatt	gagtatcact	atgtgaagaa	agttttggaa	aagaaacaat	3180
gaagactgaa	ttaaattaaa	aatgttgcag	ctcataaaga	attggactca	cccctactgc	3240
actaccaa	tcatttgact	ttggaggcaa	aatgtgttga	agtgccctat	gaagtagcaa	3300
ttttctatag	gaatatagtt	ggaaataaat	gtgtgtgtgt	atattattat	taatcaatgc	3360
aatattttaa	tgaaatgaga	acaaagagga	aaatggtaaa	aacttgaaat	gaggctgggg	3420
tatagtttgt	cctacaatag	aaaaaagaga	gagcttcccta	ggcctgggct	cttaaattgct	3480
gcattataac	tgagtctatg	aggaaatagt	tcctgtccaa	tttgtgtaat	ttgtttaaaa	3540
ttgtaataa	at					3552

<210> 127

<211> 754

<212> DNA

<213> Homo sapien

<400> 127

tttttttttt	ttgtcattgt	tcattgattt	taatgagaaa	gctaagagag	gaaataagta	60
gcctttcaaa	ggtcacacag	aagtaagtga	cagatccagg	attcatatcc	aagcattctg	120
gctctagtgt	ccatgcttct	caaccattat	gacccaatat	tcaaccaa	caatactgaa	180
ggacacgtga	aatgtatccg	gtatttttact	attacaaaca	aaaatccaat	gaacattctt	240
gaagacatac	acaaaaataa	tggttacaat	agaagttact	ggaattgaaa	ttttggttca	300
acctatatta	aaatgtaagg	cttttgatat	agctaataga	tttttgaaat	gatcagtctt	360
aacgttttga	ggggagcaca	ctcctgcatg	gggaaaagat	tcactgtgaa	gcacagagca	420
cctttatgg	tggatcatct	tgtcattaaa	gttcaggcgt	tatctatcct	gtaagtggca	480
gaatcaagac	tgcaatatcg	cctgcttttc	tttttaactc	atgttttccc	ttgactacac	540
tggtcctcaa	agtaaaaccc	ctgtgtcagt	gtactattca	tggaatactc	tgcaattata	600
accaccttct	aatactttta	ataccaatc	aaaattttatt	atacatatgt	atcatagata	660
ctcatctgta	aagctgtgct	tcaaaatagt	gatctcttcc	caacattaca	atatatatta	720
atgatgtcga	acctgcccg	gcggccgctc	gaag			754

<210> 128

<211> 374

<212> DNA

<213> Homo sapien

<400> 128

aggttttgat	taaaaaggca	aatgattttta	ttgttcgata	atctttttaa	aaaataagag	60
gaaggagtaa	aattaaagat	gaaagatgat	ttttatttcc	ttgtgacctc	tatatcccc	120
ttcccctgcc	cttggttaagt	aactcttgat	ggagaaagga	ttaaagactc	ttattttaacc	180
aaaaaacaga	gccagcta	catttccaaa	ggtagtatc	tcctgctga	cctcttcttt	240
ggttttaattg	aataaaacta	tatgttcata	tatgtattaa	aacaactcag	aataacatct	300
tttcttctct	agttaaggca	ttataagggc	tatactatca	tccataataa	ccaaggcaat	360
aacttaaaaa	gctg					374

<210> 129

<211> 546

<212> DNA

<213> Homo sapien

<400> 129

agtgtgatgg	atatctgcag	aattcgggct	aagcgtgggc	gcggcccgag	gtctggaact	60
tcccagcacy	tgaaaaggag	cctcctgagc	tgactcggct	aaagcccccac	tttcgctcct	120
cctcattttct	gcctactgat	ttccttggag	cattcatctg	aatattaccg	tttgctgtgt	180
aacctgggtac	atacatagca	tgactccctg	gaatagagtg	ggctgggggtg	cttatgctgg	240
gagagtgatt	gacatgcact	ttcaagctat	atctaccatt	tgacagaaaag	gagaaaaaat	300
acctcgagta	aattccatca	ttttttataa	catcagcacc	tgctccatca	tcaaggagtc	360
tcagcgtaac	aggatctcca	gtctctggct	caactgtggc	agtgacagtg	gcattaagaa	420
tgggataaaa	tcctgttttc	acattggcat	aaatcatcac	aggatgagga	aaatggaggc	480
tgtctctttc	cacaaaggct	tccacagtgg	ctgggggcac	agacctgccc	gggcggccgc	540
tcgaaa						546

<210> 130

<211> 5156

<212> DNA

<213> Homo sapien

<400> 130

accaaccgag	gcgcggggca	gcgacccctg	cagcggagac	agagactgag	cggcccgcca	60
ccgccatgcc	tgcgctctgg	ctgggctgct	gcctctgctt	gtcgctcctc	ctgcccgcag	120
cccggggccac	ctccaggagg	gaagtctgtg	attgcaatgg	gaagtccagg	cagtgtatct	180
ttgatcggga	acttcacaga	caaactggta	atggattccg	ctgcctcaac	tgcaatgaca	240
aaactgatgg	cattcactgc	gagaagtgca	agaatggctt	ttaccggcac	agagaaaggg	300
accgctgttt	gccttgcaat	tgtaactcca	aaggttctct	tagtgctcga	tgtgacaact	360
ccggacgggtg	cagctgtaaa	ccagggtgtga	caggagccag	atgcgaccga	tgtctgccag	420
gcttccacat	gtcacggat	gcgggggtgca	cccaagacca	gagactgcta	gactccaagt	480
gtgactgtga	cccagctggc	atcgcagggc	cctgtgacgc	gggcccgtgt	gtctgcaagc	540
cagctgtcac	tggagaacgc	tgtgataggt	gtcgatcagg	ttactataat	ctggatgggg	600
ggaacctga	gggctgtacc	cagtgtttct	gctatgggca	ttcagccagc	tgccgcagct	660
ctgcagaata	cagtgtccat	aagatcacct	ctacctttca	tcaagatgtt	gatggctgga	720
aggctgtcca	acgaaatggg	tctcctgcaa	agctccaatg	gtcacagcgc	catcaagatg	780
tgttttagctc	agcccaacga	ctagaccctg	tctattttgt	ggctcctgcc	aaatttcttg	840
ggaatcaaca	ggtgagctat	ggtcaaagcc	tgtcctttga	ctaccgtgtg	gacagaggag	900
gcagacaccc	atctgcccac	gatgtgattc	tgggaagggtg	tgggtctacg	atcacagctc	960
ccttgatgcc	acttggcaag	acactgcctt	gtgggctcac	caagacttac	acattcaggt	1020
taaatgagca	tccaagcaat	aattggagcc	cccagctgag	ttactttgag	tatcgaaggt	1080
tactgcggaa	tctcacagcc	ctccgcaccc	gagctacata	tggagaatac	agtactgggt	1140
acattgacaa	tgtgacctg	atttcagccc	gccctgtctc	tggagcccca	gcacctgggg	1200
ttgaacagtg	tatatgtcct	gttgggtaca	aggggcaatt	ctgccaggat	tgtgcttctg	1260
gtacaagag	agattcagcg	agactggggc	cttttggcac	ctgtattcct	tgttaactgtc	1320
aagggggagg	ggcctgtgat	ccagacacag	gagattgtta	ttcaggggat	gagaatcctg	1380
acattgagtg	tgctgactgc	ccaattgggt	tctacaacga	tccgcacgac	ccccgcagct	1440
gcaagccatg	tccctgtcat	aacgggttca	gctgctcagt	gatgccggag	acggaggagg	1500
tgggtgtgcaa	taactgccct	cccgggggtca	ccggtgccc	ctgtgagctc	tgtgctgatg	1560
gctacttttg	ggaccccttt	ggtgaacatg	gccagtgag	gccttgctag	cctgtcaat	1620
gcaacaacaa	tgtggacccc	agtgcctctg	ggaattgtga	ccggctgaca	ggcaggtgtt	1680
tgaagtgtat	ccacaacaca	gccggcatct	actgcgacca	gtgcaaagca	ggctacttcg	1740
gggacccatt	ggctcccaac	ccagcagaca	agtgtcgagc	ttgcaactgt	aaccccatgg	1800
gctcagagcc	tgtaggatgt	cgaagtgatg	gcacctgtgt	ttgcaagcca	ggattttggtg	1860
gccccaaactg	tgagcatgga	gcattcagct	gtccagcttg	ctataatcaa	gtgaagattc	1920
agatggatca	gtttatgcag	cagcttcaga	gaatggaggc	cctgatttca	aaggctcagg	1980
gtgggtgatgg	agtagtacct	gatacagagc	tgggaaggcag	gatgcagcag	gctgagcagg	2040
cccttcagga	cattctgaga	gatgcccgaga	tttcagaagg	tgctagcaga	tcccttgggtc	2100
tccagttggc	caaggtgagg	agccaagaga	acagctacca	gagccgcctg	gatgacctca	2160
agatgactgt	ggaaagagtt	cgggctctgg	gaagtcagta	ccagaaccga	gttcggggata	2220

ctcacaggct	catcactcag	atgcagctga	gcctggcaga	aagtgaagct	tccttgggaa	2280
acactaacat	tcctgcctca	gaccactacg	tggggccaaa	tggctttaaa	agtctggctc	2340
aggaggccac	aagattagca	gaaagccacg	ttgagtcagc	cagtaacatg	gagcaactga	2400
caagggaaac	tgaggactat	tccaaacaag	ccctctcact	ggtgcgcaag	gccttgcattg	2460
aaggagtcgg	aagcgggaagc	ggtagcccg	acggtgctgt	ggtgcaagg	cttgtggaaa	2520
aattggagaa	aaccaagtcc	ctggcccagc	agttgacaag	ggaggccact	caagcggaaa	2580
ttgaagcaga	taggtcttat	cagcacagtc	tccgcctcct	ggattcagtg	tctcggtctc	2640
agggagtcag	tgatcagtc	tttcagggtg	aagaagcaaa	gaggatcaaa	caaaaagcgg	2700
attcactctc	aagcctggta	accaggcata	tggatgagtt	caagcgtaca	cagaagaatc	2760
tgggaaactg	gaaagaagaa	gcacagcagc	tcttacagaa	tggaaaaagt	gggagagaga	2820
aatcagatca	gctgctttcc	cgtgccaatc	ttgctaaaag	cagagcacia	gaagcactga	2880
gtatgggcaa	tgccactttt	tatgaagttg	agagcatcct	taaaaacctc	agagagtttg	2940
acctgcagg	ggacaacaga	aaagcagaag	ctgaagaagc	catgaagaga	ctctcctaca	3000
tcagccagaa	ggttttcagat	gccagtgcac	agaccagca	agcagaaaga	gccttgggga	3060
gcgctgctgc	tgatgcacag	agggcaagaa	atggggcccg	ggaggccctg	gaaatctcca	3120
gtgagattga	acaggagatt	gggagtcctg	acttggaagc	caatgtgaca	gcagatggag	3180
ccttggccat	ggaaaaggga	ctggcctctc	tgaagagtga	gatgaggga	gtggaaggag	3240
agctggaaa	gaaggagctg	gagtttgaca	cgaatatgga	tgcagtacag	atggtgatta	3300
cagaagccca	gaaggttgat	accagagcca	agaacgctgg	ggttacaatc	caagacacac	3360
tcaacacatt	agacggcctc	ctgcatctga	tggaccagcc	tctcagtgtg	gatgaagagg	3420
ggctggtctt	actggagcag	aagctttccc	gagccaagac	ccagatcaac	agccaactgc	3480
ggcccatgat	gtcagagctg	gaagagagg	cacgtcagca	gaggggccac	ctccatttgc	3540
tggagacaag	catagatggg	attctggctg	atgtgaagaa	cttgagaaac	attagggaca	3600
acctgcccc	aggctgctac	aatacccagg	ctcttgagca	acagtgaagc	tgccataaat	3660
atttctcaac	tgaggttctt	gggatacaga	tctcagggtc	cgggagccat	gtcatgtgag	3720
tgggtgggat	ggggacattt	gaacatgttt	aatgggtatg	ctcagggtcaa	ctgacctgac	3780
cccattcctg	atcccattgg	cagggtgggtg	tcttattgca	ccatactcct	tgcttctctg	3840
tgctgggcaa	tgaggcagat	agcactgggt	gtgagaatga	tcaaggatct	ggaccccaaa	3900
gaatagactg	gatggaaaga	caaactgcac	aggcagatgt	ttgcctcata	atagtcgtaa	3960
gtggagtctt	ggaatttgga	caagtgtgtg	tgggatatag	tcaacttatt	ctttgagtaa	4020
tgtgactaaa	ggaaaaaact	ttgactttgc	ccaggcatga	aattcttcct	aatgtcagaa	4080
cagagtgcac	cccagtcaca	ctgtggccag	taaaatacta	ttgcctcata	ttgtcctctg	4140
caagcttctt	gctgatcaga	gttcctccta	cttacaaccc	agggtgtgaa	catgttctcc	4200
attttcaagc	tggagaaggt	gagcagtggt	ggagtggagg	cctgtaaggc	aggccatttc	4260
agagctatgg	tgcttgctgg	tgccctgccac	cttcaagttc	tggacctggg	catgacatcc	4320
tttcttttaa	tgatgccatg	gcaacttaga	gattgcattt	ttattaaagc	atttcctacc	4380
agcaaagcaa	atgttgggaa	agtattttact	ttttcggttt	caaagtgata	gaaaagtgtg	4440
gcttgggcat	tgaaagagg	aaaattctct	agattttatta	gtcctaattc	aatcctactt	4500
ttagaacacc	aaaaatgatg	cgcactcaatg	tatttttatct	tattttctca	atctcctctc	4560
tctttcctcc	accataata	agagaatgtt	cctactcaca	cttcagctgg	gtcacatcca	4620
tcctccatt	catccttcca	tccatctttc	catccattac	ctccatccat	ccttccaaca	4680
tatatattatt	gagtacctac	tgtgtgccag	gggctgggtg	gacagtgggtg	acatagtctc	4740
tgccctcata	gagttgattg	tctagtggag	aagacaagca	tttttaaaaa	ataaatttaa	4800
acttacaac	tttgtttgtc	acaagtgggtg	tttattgcaa	taaccgcttg	gtttgcaacc	4860
tctttgctca	acagaacata	tgttgcaaga	ccctcccatg	ggggcacttg	agttttggca	4920
aggctgacag	agctctgggt	tgtgcacatt	tctttgcatt	ccagctgtca	ctctgtgcct	4980
ttctacaact	gattgcaaca	gactgttgag	ttatgataac	accagtggga	attgctggag	5040
gaaccagagg	cacttccacc	ttggctggga	agactatgg	gctgccttgc	ttctgtattt	5100
ccttggattt	tcctgaaagt	gtttttaaat	aaagaacaat	tgtagaaaaa	aaaaaa	5156

<210> 131

<211> 671

<212> DNA

<213> Homo sapien

<400> 131
 aggtctggag ggccacagc cggatgtggg acaccgggaa aaagtgggtca tagcacacat 60
 ttttgcaccc cggttgcagt gtgttgacaga cgaagtcctc ttgctcgtca cccacactt 120
 cctgggcagc caycacgagg atcatgactc ggaaaataaa gatgactgtg atccacacct 180
 tcccgatgct ggtggagtgt ttgttgacac ccccgatgaa agtgtgcagc gtcccccaat 240
 ccattgcgct ggtttatccc tgagtcctgt ttccaacgac tgccagtgtt tcagacccaa 300
 agaatgaggg caagatccct ctgcgagggt ttcagacctc cttctcctac cccactggag 360
 tgcctagaag ccaatgggtg cacagtgtat atacgaatgt caatctttgc tcggtcagtgt 420
 aggatgtcgc ctggaatatt caaattgaat tacagatgaa tgaagagggc gtacaagtta 480
 gaatttttct ttcgccatac agaaattgtt tagccagatc ttctgtactt cttttccttc 540
 cctgaccctt cctgctcccc aggaaggagg gtcagccccg tttgcaaac acaggatgcc 600
 cgtgacaccg gagacaggtc ttcttcaccg acaggaagtgt ccttctggtg cctgcacgtt 660
 ttaactgcta t 671

<210> 132
 <211> 590
 <212> DNA
 <213> Homo sapien

<400> 132
 ctgaatggaa aagcttatgg ctctgtgatg atattagtga ccagcggaga tgataagctt 60
 cttggcaatt gcttaccac tgtgctcagc agtggttcaa caattcactc cattgccctg 120
 ggttcacatc cagccccaaa tctggaggaa ttatcacgtc ttacaggagg tttaaagttc 180
 tttgttccag atatatcaaa ctccaatagc atgattgatg ctttcagtag aatttcctct 240
 ggaactggag acattttcca gcaacatatt cagcttgaaa gtacagggtga aaatgtcaaa 300
 cctcaccatc aattgaaaaa cacagtgtact gtggataata ctgtgggcaa cgacactatg 360
 tttctagtta cgtggcaggc cagtggctct cctgagatta tattatttga tcctgatgga 420
 cgaaaatact acacaaaataa ttttatcacc aatctaactt ttcggacagc tagtctttgg 480
 attccaggaa cagctaagcc tgggcactgg acttacaccc tgaacaatac ccatcattct 540
 ctgcaagccc tgaaagtgtg agtgacctct cgcgcctcca actcagacct 590

<210> 133
 <211> 581
 <212> DNA
 <213> Homo sapien

<400> 133
 aggtcctgtc cggggggcact gagaactccc tctggaattc ttgggggggtg ttgggggagag 60
 actgtggggc tggagataaa acttgtctcc tctaccacca ccctgtacct tagcctgcac 120
 ctgtcctcat ctctgcaaag ttcagcttcc tccccagggt ctctgtgcac tctgtcttgg 180
 atgctctggg gagctcatgg gtggaggagt ctccaccaga gggaggctca ggggactggt 240
 tggggccagg atgaatattt gagggataaa aatttgtgtta gagccaaaga attggtagta 300
 ggggggagaac agagaggagc tgggctatgg gaaatgattt gaataatgga gctgggaata 360
 tggctggata tctggtacta aaaaagggtc tttaagaacc tacttcctaa tctcttcccc 420
 aatccaaacc atagctgtct gtccagtgtc ctcttctctc ctccagctct gccccaggct 480
 cctcctagac tctgtccctg ggctagggca ggggaggagg gagagcaggg ttggggggaga 540
 ggctgaggag agtgtgacat gtgggggagag gaccagacct c 581

<210> 134
 <211> 4797
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature

<222> (1) ... (4797)

<223> n = A, T, C or G

<400> 134

cctgggacca	aagtgcctgcc	cagagctgag	ggtcctggag	ccacatgaga	aggctttctcc	60
ctgtgtacct	gtgcagcaca	gggtaggggtg	agtccactca	gctgtctagg	agaggaccca	120
ggagcagcag	agacncgcca	agcctttact	cataccatat	tctgatcctt	ttccagcaaa	180
ttgtggctac	taatttgccc	cctgaagatc	aagatggctc	tggggatgac	tctgacaact	240
tctccggctc	aggtgcaggt	gaggttgtca	tgggggcccc	ccccaccca	gacggcaaca	300
ggatcatgcct	gggggcagtg	gtcaggcagt	ctcctgtgtt	tactgagcat	gtactgagtg	360
caccctgcct	gccctgtctc	caccagctg	gctccaaagg	gcaatgctga	ggagaggaat	420
ggggtcgtga	gctgctgtta	aggagagctc	atgcttggag	gtgaggtgaa	ggctgtgagc	480
tccagaaggc	cccagggcgc	nctgctgcac	gcaggctcat	attcactagg	aatagcttta	540
ctcactaaga	aacctctgga	acccccctca	gaaggttatt	tgactcctga	gcctctattt	600
tctcatctgc	aaaatgggaa	taataacctg	acctgataag	cttgtggagc	tgtaaggcag	660
cacagagcca	gctgggggtg	agctcttcca	tccaagctcc	cttccttact	tcccccttcc	720
tgtggggact	gggggagaga	agtccttgag	ctggagggtg	tcagggaagc	ttcacagagg	780
aggtggctct	tgagtggacc	tcaggaagag	gggtgagaga	gctaaggaa	gaggctgagg	840
tcacccctgg	ggaggtgacc	tagcggaggc	ctgagagctg	caaggtagga	tatctgttgt	900
tggaagtgtc	gtttgttgga	agtggggggc	tttttttcag	ggagggtggg	gccagagaag	960
tgtgtgccct	gggataagta	ggataaccac	agtagttatg	cccctaaggg	atgccacccc	1020
caccctgtg	gtcacagaaa	agctttccca	gggtggcctag	gcacctgtct	cgtggctcca	1080
gagacaggct	gcacctgaca	cacacaatgg	aaggacagct	ctccttgtcc	attttccaag	1140
gagcttagcc	tcagctgcct	tgtccaggta	ctagcctccc	tcatagcctg	agcttggcca	1200
gcccagggtg	tctggagcct	ccccgcaccc	acccaacaca	ctctgcttct	ggctctcccc	1260
acccccacc	tccccaacac	actctgcttc	tggctctgca	gggtgctttgc	aagatatcac	1320
cttgtcacag	cagacccccct	ccacttggaa	ggacacgcag	ctcctgacgg	ctattccccc	1380
gtctccagaa	cccaccggcc	tggaggctac	agctgcctcc	acctccaccc	tgccggctgg	1440
agagggggcc	aaggagggag	aggctgtagt	cctgccagaa	gtggagcctg	gcctcaccgc	1500
ccgggagcag	gaggccaccc	ccgcacccag	ggagaccaca	cagctcccga	ccactcatca	1560
ggcctcaacg	accacagcca	ccacggccca	ggagcccgc	acctcccacc	cccacaggga	1620
catgcagcct	ggccaccatg	agacctcaac	ccctgcagga	cccagccaag	ctgaccttca	1680
cactccccac	acagaggatg	gaggtccttc	tgccaccgag	agggctgctg	aggatggagc	1740
ctccagtcag	ctccagcag	cagagggctc	tggggagcag	gtgagtggcc	tctgcattcc	1800
ttgggaaatt	gagtgggttg	gtcctaattg	ctggcaactg	gcaggcccta	cacctgtgcc	1860
ctgcgcgac	tcgtattcct	caccaggaag	acagggcaca	ggggccgcct	tccccctacc	1920
ccagggcctc	gcagagcagg	acagactaac	tatgagatca	gagcagaagc	acctttaaa	1980
atcacccaag	agagggctcc	caaactcaca	atccaaaact	gcagccctcg	tcgaagagtg	2040
aacgtttata	cagtcatttt	atattatagct	tcgtggattt	acgcttacac	taaatagtct	2100
gctattcata	caaaatgtgt	gctttgtatc	actttttgtg	atatccatgc	catgggtccag	2160
ccagggtccg	gagttgatgt	ggcaagaagg	cctggctttc	ggggccctgtg	cgatccctgg	2220
ttgggtgcat	ctgagtgggt	gggtggcaag	atcaggggag	caggagctgc	ttctgggtct	2280
gtagtggagc	tggttgctgc	tgctggcggt	gacctggcca	acccaatctg	cccctgcct	2340
cccacaggac	ttcacctttg	aaacctcggt	ggagaatacg	gctgtagtgg	ccgtggagcc	2400
tgaccgccgg	aaccagtccc	cagtggatca	ggggggccacg	ggggcctcac	agggcctcct	2460
ggacaggaaa	gaggtgctgg	gaggtgagtt	ttcttttcagg	ggggtagttt	gggggtgaatt	2520
gctgctgtgg	ggtcaggggtg	gggctgacca	cagccaaggc	cactgctttg	ggaggggtctg	2580
cacgagagcc	caaggagccg	ctgagctgag	ctggccccgt	ctacctgccc	taggggtcat	2640
tgccggaggc	ctcgtggggc	tcactctttg	tgtgtgcctg	gtgggtttca	tgctgtaccg	2700
catgaagaag	aaggacgaag	gcagctactc	cttggaggag	ccgaaacaag	ccaacggcgg	2760
ggcctaccag	aagcccacca	aacaggagga	attctatgcc	tgacgcggga	gccatgcgcc	2820
ccctccgccc	tgccactcac	taggccccca	cttgccctct	ccttgaagaa	ctgcaggccc	2880
tggcctcccc	tgccaccagg	ccacctcccc	agcattccag	cccctctggg	cgctcctgcc	2940
cacggagtcg	tgggtgtgct	gggagctcca	ctctgcttct	ctgacttctg	cctggagact	3000
tagggcacca	gggggtttctc	gcataggacc	tttccaccac	agccagcacc	tggcatcgca	3060

ccattctgac	tcggtttctc	caaactgaag	cagcctctcc	ccaggtccag	ctctggaggg	3120
gagggggatc	cgactgcttt	ggacctaaat	ggcctcatgt	ggctggaaga	tectgcgggt	3180
ggggcttggg	gctcacacac	ctgtagcact	tactggtagg	accaagcatc	ttgggggggt	3240
ggccgctgag	tggcagggga	caggagtcac	tttgtttcgt	ggggagggtct	aatctagata	3300
tgcacttggt	tttgcacatg	tttcctctag	ttctttgttc	atagcccagt	agaccttggt	3360
acttctgagg	taagttaagt	aagttgattc	ggtatcccc	catcttgctt	ccctaatacta	3420
tggtcgggag	acagcatcag	ggttaagaag	actttttttt	tttttttttaa	actaggagaa	3480
ccaaatctgg	aagccaaaat	gtaggcttag	tttgtgtgtt	gtctcttgag	tttgtcgtct	3540
atgtgtgcaa	caggggatgg	actatctgtc	tgggtggcccc	gttctgggtg	tctgttgga	3600
ggctggccag	tccaggctgc	cgtggggccg	ccgcctcttt	caagcagtcg	tgccctgtgtc	3660
catgcgctca	gggccatgct	gaggcctggg	ccgctgccac	gttggaagaag	cccggtgtgag	3720
aagtgaatgc	tgggactcag	ccttcagaca	gagaggactg	tagggagggc	ggcaggggccc	3780
tggagatcct	cctgcaggct	cacgcccgtc	ctcctgtggc	gccgtctcca	ggggctgctt	3840
cctcctggaa	attgacgagg	ggtgtcttgg	gcagagctgg	ctctgagcgc	ctccatccaa	3900
ggccagggtc	tccgttagct	cctgtggccc	caccctgggc	cctgggctgg	aatcaggaat	3960
atthttccaaa	gagtgatagt	cttttgcttt	tggcaaaact	ctacttaatc	caatgggttt	4020
ttccctgtac	agtagattht	ccaaatgtaa	taaactthta	tataaagtag	tctgtgaatg	4080
ccactgcctt	cgcttcttgc	ctctgtgctg	tgtgtgacgt	gaccggactt	ttctgcaaac	4140
accaacatgt	tgggaaactt	ggctcgaatc	tctgtgcctt	cgcttttccc	atggggaggg	4200
attctgggtc	cagggctcct	ctgtgtatth	gctthttttg	tttggtgaa	attctcctgg	4260
aggctggtag	gttcagccaa	ggtthttata	ggctgatgtc	aattthctgt	ttgccaagct	4320
ccaagcccat	cttctaaatg	gcaaaggaag	gtggatggcc	ccagcacagc	ttgacctgag	4380
gctgtggtca	cagcggagggt	gtggagccga	ggcctacccc	ncagacacct	tggacatcct	4440
cctcccaccc	ggctgcagag	gccaganncc	agcccagggt	cctgcactta	cttgcttatt	4500
tgacaacgth	tcagcgactc	cgthggccac	tccgagagtg	ggccagtctg	tggatcagag	4560
atgcaccacc	aagccaaggg	aacctgtgtc	cggatattcga	tactgcgact	ttctgcctgg	4620
agtgtatgac	tgcacagggg	tcgggggtgg	ggaaaggggt	cggctgacca	tgctcatctg	4680
ctggctcggtg	ggacggtncc	caagccagag	gtgggttcat	ttgtgtaacg	acaataaacg	4740
gtacttgtca	tttcgggcaa	cggctgctgt	ggtggtggtt	gagtctcttc	ttggcct	4797

<210> 135

<211> 2856

<212> DNA

<213> Homo sapien

<400> 135

tagtcgcggg	tccccgagtg	agcacgccag	ggagcaggag	accaaacgac	gggggtcgga	60
gtcagagtcg	cagtgggagt	ccccggaccg	gagcacgagc	ctgagcggga	gagcgccgct	120
cgacgccccg	tcgccacccg	cgtaaccggc	gcagccagag	ccaccagcgc	agcgctgcca	180
tggagccag	cagcaagaag	ctgacgggtc	gcctcatgct	ggctgtggga	ggagcagtgc	240
ttggctccct	gcagtttggc	tacaacactg	gagtcatcaa	tgccccccag	aaggtgatcg	300
aggagtthta	caaccagaca	tgggtccacc	gctatgggga	gagcatcctg	cccaccacgc	360
tcaccacgct	ctggctccctc	tcagtggcca	tctthttctgt	tgggggcatg	attggctcct	420
tctctgtggg	cctthttcgtt	aaccgcttht	gccggcggaa	ttcaatgctg	atgatgaacc	480
tgttgccctt	cgtgtccgcc	gtgctcatgg	gcttctcgaa	actgggcaag	tcctthtgaga	540
tgtgatcctt	gggcgccttc	atcatcggtg	tgtactgcgg	cctgaccaca	ggcttcgtgc	600
ccatgtatgt	gggtgaagtg	tcaccacacg	cctthctgtg	ggccctgggc	accctgcacc	660
agctgggcat	cgtcgtcggc	atcctcatcg	cccagggtgt	cggcctggac	tcctcatggt	720
gcaacaagga	cctgtggccc	ctgctgctga	gcatcatctt	catcccggcc	ctgctgcagt	780
gcatcgtgct	gccctthctgc	cccagagatc	cccgtthcct	gctcatcaac	cgcaacgagg	840
agaaccgggc	caagagtgtg	ctaaagaagc	tgcgcgggac	agctgacgtg	acccatgacc	900
tgcaggagat	gaagggaagag	agtcggcaga	tgatgcggga	gaagaaggtc	accatcctgg	960
agctgttccg	ctcccccgcc	taccgccagc	ccatcctcat	cgtgtgggtg	ctgcagctgt	1020
cccagcagct	gtctggcatc	aacgtgtctt	tctattactc	cacgagcatc	ttcgagaagg	1080
cgggggtgca	gcagcctgtg	tatgccacca	ttggctccgg	tatcgtcaac	acggccttca	1140

```

ctgtcgtgtc gctgtttgtg gtggagcgag caggccggcg gacctgcac ctcataggcc 1200
tcgctggcat ggcgggttgt gccatactca tgaccatcgc gctagcactg ctggagcagc 1260
tacctggat gtcctatctg agcatcgtgg ccactcttgg ctttgtggcc ttctttgaag 1320
tgggtcctgg ccccatccca tggttcatcg tggctgaact cttcagccag ggtccacgtc 1380
cagctgccat tgccgttgca ggcttctcca actggacctc aaatttcatt gtgggcatgt 1440
gcttccagta tgtggagcaa ctgtgtggtc cctacgtctt catcatcttc actgtgctcc 1500
tggttctgtt cttcatcttc acctacttca aagttcctga gactaaaggc cggaccttcg 1560
atgagatcgc ttccggcttc cggcaggggg gagccagcca aagtgataag acacccgagg 1620
agctgttcca tccccgggg gctgattccc aagtgtgagt cgccccagat caccagcccc 1680
gcctgtcccc agcagcccta aggatctctc aggagcacag gcagctggat gagacttcca 1740
aacctgacag atgtcagccg agccgggcct ggggtcctt tctccagcca gcaatgatgt 1800
ccagaagaat attcaggact taacggctcc aggattttaa caaaagcaag actgttgctc 1860
aaatctattc agacaagcaa caggttttat aattttttta ttactgattt tgttattttt 1920
atatcagcct gagtctcctg tgcccacatc ccaggcttca cctgaatgg ttccatgcct 1980
gaggggtggag actaagccct gtcgagacac ttgccttctt caccagcta atctgtaggg 2040
ctggacctat gtcctaagga cacactaatc gaactatgaa ctacaaagct tctatcccag 2100
gaggtggcta tggccacccg ttctgctggc ctggatctcc ccactctagg ggtcaggctc 2160
cattaggatt tgcccccttc catctcttcc taccacaacca ctcaaattaa tctttcttta 2220
cctgagacca gttgggagca ctggagtgcg gggaggagag gggaagggcc agtctgggct 2280
gccgggttct agtctccttt gcactgaggg ccacactatt accatgagaa gagggcctgt 2340
gggagcctgc aaactcactg ctcaagaaga catggagact cctgcctgt tgtgtataga 2400
tgcaagatat ttatatatat ttttggttgt caatattaaa tacagacact aagttatagt 2460
atatctggac aagccaactt gtaaatacac cacctcactc ctgttactta cctaaacaga 2520
tataaatggc tggtttttag aaacatgggt ttgaaatgct tgtggattga gggtaggagg 2580
tttggatggg agtgagacag aagtaagtgg ggttgcaacc actgcaacgg cttagacttc 2640
gactcaggat ccagtccttc acacgtacct ctcatcagtg tccctcttgc caaaaatctg 2700
tttgatccct gttaccaga gaatatatac attctttatc ttgacattca aggcatttct 2760
atcacatatt tgatagttgg tgttcaaaaa aacactagtt ttgtgccagc cgtgatgctc 2820
aggcttga aa tcgcattatt ttgaatgtga agggaa 2856

```

<210> 136

<211> 356

<212> DNA

<213> Homo sapien

<400> 136

```

ggtaggagcca aatgaagaaa atgaagatga aagagacaga cacctcagtt tttctggatc 60
aggcattgat gatgatgaag attttatctc cagcaccatt tcaaccacac cacgggcttt 120
tgaccacaca aaacagaacc aggactggac tcagtggaac ccaagccatt caaatccgga 180
agtgtacttt cagacaacca caaggatgac tgatgtagac agaaatggca ccactgctta 240
tgaaggaaac tggaaccag aagcacaccc tccccctatt caccatgagc atcatgagga 300
agaagagacc ccacattcta caagcacaat ccaggcaact cctagtagta caacgg 356

```

<210> 137

<211> 356

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)... (356)

<223> n = A,T,C or G

<400> 137

```

gcaggtggag aagacatttt attgttcttg gggctctctg aggccattg gtggggctgg 60

```

gtcactggct	gcccccgga	cagggcgctg	ctccatggct	ctgcttgtgg	tagtctgtgg	120
ctatgtctcc	cagcaaggac	agaaaactcag	aaaaatcaat	cttcttatcc	tcattcttgt	180
cctttttctc	aaagacatcg	gcgaggtaat	ttgtgccctt	tttacctcgg	cccgcgacca	240
cgctaaggcc	aaanttcag	acanayggcc	gggcgggtnc	nataggggan	cccaacttgg	300
ggacccaaac	tctggcgcg	aaacacangg	gcataagctt	gnttcctgtg	gggaaa	356

<210> 138

<211> 353

<212> DNA

<213> Homo sapien

<400> 138

aggtccagtc	ctccacttgg	cctgatgaga	gtggggagtg	gcaagggacg	tttctcctgc	60
aatagacact	tagatttctc	tcttgtggga	agaaaccacc	tgtccatcca	ctgactcttc	120
tacattgatg	tggaaattgc	tgctgctacc	accacctcct	gaagaggctt	ccctgatgcc	180
aatgccagcc	atcttggcat	cctggccctc	gagcaggctg	cgtaagtag	cgatctcctg	240
ctccagccgt	gtctttatgt	caagcagcat	cttgactctc	tggttctgag	cctccatctc	300
gcacgagagc	tcactcagac	ctcgscgsg	mssmcgctam	gccgaattcc	agc	353

<210> 139

<211> 371

<212> DNA

<213> Homo sapien

<400> 139

agcgtggctg	cggccgaggt	ccatccgaag	caagattgca	gatggcagtg	tgaagagaga	60
agacatattc	tacacttcaa	agctttgggtg	caattcccat	cgaccagagt	tggtcgcgacc	120
agccttggaa	aggtcactga	aaaatcttca	attggattat	gttgacctct	accttattca	180
ttttccagtg	tctgtaaagc	caggtgagga	agtgatccca	aaagatgaaa	atggaaaaat	240
actatttgac	acagtggatc	tctgtgccac	gtgggaggcc	gtggagaagt	gtaaagatgc	300
aggattggac	ctgcccgggc	ggccgctcga	aagccgaatt	ccagcacact	ggcggccggt	360
actagtggat	c					371

<210> 140

<211> 370

<212> DNA

<213> Homo sapien

<400> 140

tagcgtggtc	gcggccgagg	tccatctccc	tttgggaact	agggggctgc	tggtgggaaa	60
tgggagccag	ggcagatgtt	gcattccttt	gtgtccctgt	aaatgtggga	ctacaagaag	120
aggagctgcc	tgagtggtag	tttctcttcc	tggtaatcct	ctggcccagc	ctcatggcag	180
aatagaggta	tttttaggct	atttttgtaa	tatggcttct	gggtcaaaatc	cctgtgtagc	240
tgaattccca	agccctgcat	tgtacagccc	cccactcccc	tcaccaccta	ataaagggaat	300
agttaacact	caaaaaaaaa	aaaaaacctg	ccggggcggc	cgctcgaaaag	ccgaattcca	360
gcacactggc						370

<210> 141

<211> 371

<212> DNA

<213> Homo sapien

<400> 141

tagcgtggtc	gcggccgagg	tcctctgtgc	tgctgtcac	agcccgatgg	taccagcgca	60
gggtgtaggc	agtgcaggag	ccctcatcca	gtggcaggga	acaggggtca	tcactatccc	120

aaggagcttc	agggtcctgg	tactcctcca	cagaatactc	ggagtattca	gagtactcat	180
catcctcagg	gggtacccgc	tcttcctcct	ctgcatgaga	gacgcggagc	acaggcacag	240
catggagctg	ggagccggca	gtgtctgcag	cataactagg	gaggggtcgt	gatccagatg	300
cgatgaactg	gccctggcag	gcacagtgt	gactcatctc	ttggcgacct	gcccgggcgg	360
ccgctcgaag	c					371

<210> 142

<211> 343

<212> DNA

<213> Homo sapien

<400> 142

gcgtttttgag	gccaatgggtg	taaaaggaaa	tatcttcaca	taaaaactag	atggaagcat	60
tgtcagaaac	ctctttgtga	tgtttgcttt	caactcacag	agttgaacat	tccttttcat	120
agagcagttt	tgaaacactc	ttttgtagaa	tttgcaagcg	gatgattgga	tcgctatgag	180
gtcttcattg	gaaacgggat	acctttacat	aaaaactaga	cagtagcatt	ctcagaaatt	240
tctttgggat	gtgggcattc	aaccacaga	ggagaacttc	atttgataga	gcagttttga	300
aacacccttt	ttgtagaatc	tacaggtgga	catttagagt	gct		343

<210> 143

<211> 354

<212> DNA

<213> Homo sapien

<400> 143

aggctctgatg	gcagaaaaac	tcagactgtc	tgcaacttta	cagatgggtgc	attggttcag	60
catcaggagt	gggatgggaa	ggaaagcaca	ataacaagaa	aattgaaaga	tgggaaatta	120
gtgggtggagt	gtgtcatgaa	caatgtcacc	tgtactcgga	tctatgaaaa	agtagaataa	180
aaattccatc	atcacttttg	acaggagtta	attaagagaa	tgaccaagct	cagttcaatg	240
agcaaacttc	catactgttt	ctttcttttt	tttttcatta	ctgtgttcaa	ttatctttat	300
cataaacatt	ttacatgcag	ctatttcaaa	gtgtgttgga	ttaattagga	tcac	354

<210> 144

<211> 353

<212> DNA

<213> Homo sapien

<400> 144

ggtcaaggac	ctggggggacc	cccaggtcca	gcagccacat	gattctgcag	cagacagggg	60
cctagagcac	atctggatct	cagccccacc	cctggcaacc	tgcttgctta	gagaactccc	120
aagatgacag	actaagtagg	attctgccat	ttagaataat	tctggtatcc	tgggcgttgc	180
gttaagttgc	ttacttttca	ttctgtctta	cgatagtctt	cagaggtggg	aacagatgaa	240
gaaaccatgc	cccagagaag	gttaagtgc	ttctctttta	tggagccagt	gttccaacct	300
aggtttgcct	gataccagac	ctgtggcccc	acctcccatg	caggtctctg	tgg	353

<210> 145

<211> 371

<212> DNA

<213> Homo sapien

<400> 145

caggtctgtc	ataaactggg	ctggagtttc	tgacgactcc	ttgttcacca	aatgcaccat	60
ttcctgagac	ttgctggcct	ctccgttgag	tccacttggc	tttctgtcct	ccacagctcc	120
attgccactg	ttgatcacta	gctttttctt	ctgccacac	cttcttcgac	tgttgactgc	180
aatgcaaact	gcaagaatca	aagccaaggc	caagagggat	gccaagatga	tcagccattc	240

```
tggaatttgg ggtgtcctta taggaccaga ggttgtgttt gctccacett cttgactccc 300
atgtgagacc tcggccgcga ccacgctaag ccgaattcca gcacactggc ggcccgttac 360
tagtgatcc g 371
```

```
<210> 146
<211> 355
<212> DNA
<213> Homo sapien
```

```
<400> 146
ggtcctccgt cctcttccca gaggtgtcgg ggcttggccc cagcctccat cttcgtctct 60
caggatggcg agtagcagcg gtcceaaggc tgaattcatt gtcggaggga aatataaaact 120
ggtacggaag atcgggtctg gtccttcgg ggacatctat ttggcgatca acatcaccaa 180
cggcgaggaa gtggcagtga agctagaatc tcagaaggcc aggcattccc agttgctgta 240
cgagagcaag ctctataaga ttcttcaagg tggggttggc atccccaca tacggtggta 300
tggtcaggaa aaagactaca atgtactagt catggatctt ctgggacctc gcctc 355
```

```
<210> 147
<211> 355
<212> DNA
<213> Homo sapien
```

```
<400> 147
ggtctgttac aaaatgaaga cagacaacac aacatttact ctgtggagat atcctactca 60
tactatgcac gtgctgtgat tttgaacata actcgtccca aaaacttgct acgatcatcc 120
tgacttttta ggttggctga tccatcaatc ttgcactcaa ctgttacttc ttcccagtg 180
ttgttaggag caaagctgac ctgaacagca accaatggct gtagataccc aacatgcagt 240
tttttcccat aatatgggaa atattttaag tctatcattc cattatgagg ataaactgct 300
acatttggtc tatcttcatt ctttgaaaca caatctatcc ttggcactcc ttcag 355
```

```
<210> 148
<211> 369
<212> DNA
<213> Homo sapien
```

```
<400> 148
aggtctctct cccctctctc ctctcctgcc agccaagtga agacatgctt acttcccctt 60
caccttcctt catgatgtgg gaagagtgtc gcaaccacgc cctagccaac accgcatgag 120
agggagtgtg ccgagggtct ctgagaaggc ttctctcaca tctagaaaga agcgcttaag 180
atgtggcagc cctctctctt caagtggctc ttgtctctgt gccctgggag ttctcaaatt 240
gctgcagcag cctccatcca gcctgaggat gacatcaata cacagaggaa gaagagtcag 300
gaaaagatga gagaagttac agactctcct gggcgacccc gagagcttac cattcctcag 360
acttcttca 369
```

```
<210> 149
<211> 620
<212> DNA
<213> Homo sapien
```

```
<220>
<221> misc_feature
<222> (1) ... (620)
<223> n = A,T,C or G
```

```
<400> 149
```

actagtcaaa	aatgctaaaa	taatttgga	gaaaatattt	tttaagtagt	gttatagttt	60
catgtttatc	ttttattatg	ttttgtgaag	ttgtgtcttt	tcactaatta	cctatactat	120
gccaatat	ccttatact	atccataaca	tttatactac	atttgtaana	naatatgcac	180
gtgaaactta	acactttata	aggtaaaaat	gaggtttcca	anatttaata	atctgatcaa	240
gttcttggtta	tttccaaata	gaatggactt	ggctgtgtaa	gggctaagga	gaagaggaag	300
ataaggttaa	aagttgttaa	tgaccaaaca	ttctaaaaga	aatgcaaaaa	aaaagtttat	360
tttcaagcct	tcgaactatt	taaggaaagc	aaaatcattt	cctaaatgca	tatcatttgt	420
gagaattttct	cattaatatc	ctgaatcatt	catttcacta	aggctcatgt	tnactccgat	480
atgtctctaa	gaaagtacta	tttcatggtc	caaacctggg	tgccatantt	gggtaaaggc	540
tttcccttaa	gtgtgaaant	atttaaaatg	aaattttcct	ctttttaaaa	attctttana	600
agggttaagg	gtgttgggga					620

<210> 150

<211> 371

<212> DNA

<213> Homo sapien

<400> 150

ggtcgatca	aaacctgcta	cctccccaag	actttactag	tgccgataaa	ctttctcaaa	60
gagcaaccag	tatcacttcc	ctgtttataa	aacctctaac	catctctttg	ttctttgaac	120
atgctgaaaa	ccacctgggc	tgcatgtatg	ccgaatttg	yaattctttt	ctctcaaatg	180
aaaatttaaat	tttagggatt	catttctata	ttttcacata	tgtagtatta	ttatttcctt	240
atatgtgtaa	ggtgaaattt	atggatattg	agtgtgcaag	aaaatatatt	tttaaagctt	300
tcattttttcc	cccagtgaat	gatttagaat	tttttatgta	aatatacaga	atgttttttc	360
ttacttttat	a					371

<210> 151

<211> 4655

<212> DNA

<213> Homo sapien

<400> 151

gggacttgag	ttctgttata	ttcttaagta	gattcatatt	gtaaggggtct	cggggtgggg	60
gggttggtgaa	aatcctggag	ccagaagaaa	ggacagcagc	attgatcaat	cttacagcta	120
acatgttgta	cctggaaaac	aatgcccaga	ctcaatttag	tgagccacag	tacacgaacc	180
tggggctcct	gaacagcatg	gaccagcaga	ttcagaacgg	ctcctcgtcc	accagtccct	240
ataaacacaga	ccacgcgcag	aacagcgtca	cggcgccctc	gccctacgca	cagcccagct	300
ccaccttcga	tgctctctct	ccatcacccg	ccatcccctc	caacaccgac	taccaggcc	360
cgcacagttt	cgacgtgtcc	ttccagcagt	cgagcacccg	caagtcggcc	acctggacgt	420
attccactga	actgaagaaa	ctctactgcc	aaattgcaaa	gacatgcccc	atccagatca	480
aggatgatgac	cccacctcct	cagggagctg	ttatccgcgc	catgcctgtc	tacaaaaaag	540
ctgagcacgt	cacggagggtg	gtgaagcggg	gccccaaacca	tgagctgagc	cgtgaattca	600
acgagggaca	gattgccccct	yctagtcatt	tgattcgagt	agaggggaac	agccatgccc	660
agtatgtaga	agatcccctc	acaggaagac	agagtgtgct	ggtagccttat	gagccacccc	720
agggttggtcac	tgaatttcacg	acagtcttgt	acaatttcat	gtgtaacagc	agttgtgttg	780
gagggatgaa	cgccgctcca	attttaatca	ttgttactct	ggaaaccaga	gatgggcaag	840
tcctggggccg	acgctgcttt	gaggcccggg	tctgtgcttg	cccaggaaga	gacaggaagg	900
cggatgaaga	tagcatcaga	aagcagcaag	tttcggacag	tacaaagaac	ggatgatggt	960
cgaagcgccc	gtttcgtcag	aacacacatg	gtatccagat	gacatccatc	aagaaacgaa	1020
gatccccaga	tgatgaactg	gtatacttac	cagtgaaggg	ccgtgagact	tatgaaatgc	1080
tggatgaagat	caaagagtcc	ctggaactca	tgagtagcct	tcttcagcac	acaattgaaa	1140
cgtacaggca	acagcaacag	cagcagcacc	agcacttact	tcagaaacag	acctcaatac	1200
agtctccatc	ttcatatggt	aacagctccc	cacctctgaa	caaaatgaac	agcatgaaca	1260
agctgccttc	tgtgagccag	cttatcaacc	ctcagcagcg	caacgccttc	actcctacaa	1320
ccattcctga	tggcatggga	gccaacattc	ccatgatggg	caccacatg	ccaatggctg	1380

gagacatgaa	tggactcagc	cccacccagg	cactccctcc	cccactctcc	atgccatcca	1440
cctcccactg	cacacccccca	cctccgtatc	ccacagattg	cagcattgtc	agtttcttag	1500
cgaggttggg	ctgttcatca	tgtctggact	atttcacgac	ccaggggctg	accaccatct	1560
atcagattga	gcattactcc	atggatgac	tggcaagtct	gaaaatccct	gagcaatttc	1620
gacatgcgat	ctggaagggc	atcctggacc	accggcagct	ccacgaattc	tcctcccctt	1680
ctcatctcct	gcggaaccca	agcagtgcct	ctacagtcag	tgtgggctcc	agtgaacccc	1740
ggggtgagcg	tgttattgat	gctgtgcgat	tcacccctccg	ccagaccatc	tccttcccac	1800
cccagatga	gtggaatgac	ttcaactttg	acatggatgc	tcgccgcaat	aagcaacagc	1860
gcatcaaaga	ggagggggag	tgagcctcac	catgtgagct	cttctctatc	ctctcctaac	1920
tgccagcccc	ctaaaagcac	tcctgcttaa	tcttcaaagc	cttctcccta	gctcctcccc	1980
ttcctcttgt	ctgatttctt	aggggaagga	gaagtaagag	gcttacttct	taccctaacc	2040
atctgacctg	gcattctaatt	ctgattctgg	ctttaagcct	tcaaaactat	agcttgcaga	2100
actgtagctt	gccatggcta	ggtagaagtg	agcaaaaaag	agttgggtgt	ctccttaagc	2160
tgcagagatt	tctcattgac	ttttataaag	catgttcacc	cttatagtct	aagactatat	2220
atataaatgt	ataaatatac	agtatagatt	tttgggtggg	gggcattgag	tattgtttaa	2280
aatgtaatat	aaatgaaaga	aaattgagtt	gcacttattg	accatttttt	aatttacttg	2340
ttttggatgg	cttgtctata	ctccttccct	taaggggtat	catgtatggg	gataggtatc	2400
tagagcttaa	tgctacatgt	gagtgaacat	gatgtacaga	ttctttcagt	tccttggatt	2460
ctaaatacat	gccacatcaa	acctttgagt	agatccatct	ccattgctta	ttatgtaggt	2520
aagactgtag	atatgtattc	ttttctcagt	gttgggtatat	tttatattac	tgacatttct	2580
tctagtgatg	atgggttcacg	ttgggggtgat	ttaatccagt	tataagaaga	agttcatgtc	2640
caaacgtcct	ctttagtttt	tggttgggaa	tgaggaaaat	tcttaaaagg	cccatagcag	2700
ccagttcaaa	aacacccgac	gtcatgtatt	tgagcatatc	agtaaccccc	ttaaatttaa	2760
taccagatac	cttatcttac	aatattgatt	gggaaaacat	ttgctgccat	tacagaggta	2820
ttaaaactaa	atttcactac	tagattgact	aactcaaata	cacatttgct	actgttgtaa	2880
gaattctgat	tgatttgatt	gggatgaatg	ccatctatct	agttctaaca	gtgaagtttt	2940
actgtctatt	aatattcagg	gtaaatagga	atcattcaga	aatgttgagt	ctgtactaaa	3000
cagtaagata	tctcaatgaa	ccataaattc	aactttgtaa	aaatcttttg	aagcatagat	3060
aatattgttt	ggtaaatggt	tcctttgttt	ggtaaatggt	tcytttaaag	accctcctat	3120
tctataaaac	tctgcatgta	gaggcttggt	tacctttctc	tctctaagg	ttacaatagg	3180
agtgggtgat	tgaaaaatat	aaaattatga	gattggtttt	cctgtggcat	aaattgcatc	3240
actgtatcat	tttctttttt	aaccggtaag	agtttcagtt	tgttggaaag	taactgtgag	3300
aaccagttt	cccgccatc	tcctttagg	actaccata	gacatgaaag	gtccccacag	3360
agcaagagat	aagtctttca	tggctgctgt	tgcttaaac	acttaaacga	agagttccct	3420
tgaactttg	ggaaaacatg	ttaatgacaa	tattccagat	ctttcagaaa	tataacacat	3480
ttttttgcat	gcatgcaaat	gagctctgaa	atcttcccat	gcattctggg	caagggctgt	3540
cattgcacat	aagcttccat	tttaatttta	aagtgcacaa	gggccagcgt	ggctctaaaa	3600
ggtaatgtgt	ggattgcctc	tgaaaagtgt	gtatatattt	tgtgtgaaat	tgcatacttt	3660
gtattttgat	tatttttttt	ttcttcttgg	gatagtggga	tttccagaac	cacacttgaa	3720
accttttttt	atcgtttttg	tattttcatg	aaaataccat	ttagtaagaa	taccacatca	3780
aataagaaat	aatgctacaa	ttttaagagg	ggaggggaag	gaaagttttt	ttttttatta	3840
tttttttaaa	atttttgtatg	ttaaagagaa	tgagtccttg	atttcaaagt	tttggtgtac	3900
ttaaatggta	ataagcactg	taaacttctg	caacaagcat	gcagctttgc	aaacccatta	3960
aggggaagaa	tgaaagctgt	tccttgggtcc	tagtaagaag	acaaactgct	tccttacttt	4020
tgctgagggg	ttgaataaac	ctaggacttc	cgagctatgt	cagtactatt	caggtaaacac	4080
tagggccttg	gaaatccctg	tactgtgtct	catggatttg	gcactagcca	aagcgaggca	4140
ccccttactg	gcttacctcc	tcatggcagc	ctactctcct	tgagtgtatg	agtagccagg	4200
gtaaggggta	aaaggatagt	aagcatagaa	accactagaa	agtgggctta	atggagtctt	4260
tgtggcctca	gctcaatgca	gttagctgaa	gaattgaaaa	gtttttgttt	ggagacgttt	4320
ataaacagaa	atggaaagca	gagttttcat	taaatccttt	tacctttttt	ttttcttggt	4380
aatcccttaa	aataacagta	tgtgggatat	tgaatgttaa	agggatattt	ttttctatta	4440
tttttataat	tgtacaaaat	taagcaaatg	ttaaaagt	tatatgcttt	attaatgttt	4500
tcaaaaggta	ttatacatgt	gatacatttt	ttaagcttca	gttgcttgct	ttctgggtact	4560
ttctgttatg	ggcttttggg	gagccagaag	ccaatctaca	atctcttttt	gtttgccagg	4620
acatgcaata	aaattttaaaa	aataaataaa	aacta			4655

<210> 152
 <211> 586
 <212> PRT
 <213> Homo sapien

<400> 152

Met	Leu	Tyr	Leu	Glu	Asn	Asn	Ala	Gln	Thr	Gln	Phe	Ser	Glu	Pro	Gln
1				5					10					15	
Tyr	Thr	Asn	Leu	Gly	Leu	Leu	Asn	Ser	Met	Asp	Gln	Gln	Ile	Gln	Asn
			20					25					30		
Gly	Ser	Ser	Ser	Thr	Ser	Pro	Tyr	Asn	Thr	Asp	His	Ala	Gln	Asn	Ser
			35					40				45			
Val	Thr	Ala	Pro	Ser	Pro	Tyr	Ala	Gln	Pro	Ser	Ser	Thr	Phe	Asp	Ala
			50			55					60				
Leu	Ser	Pro	Ser	Pro	Ala	Ile	Pro	Ser	Asn	Thr	Asp	Tyr	Pro	Gly	Pro
65					70					75					80
His	Ser	Phe	Asp	Val	Ser	Phe	Gln	Gln	Ser	Ser	Thr	Ala	Lys	Ser	Ala
				85					90					95	
Thr	Trp	Thr	Tyr	Ser	Thr	Glu	Leu	Lys	Lys	Leu	Tyr	Cys	Gln	Ile	Ala
			100					105					110		
Lys	Thr	Cys	Pro	Ile	Gln	Ile	Lys	Val	Met	Thr	Pro	Pro	Pro	Gln	Gly
			115				120					125			
Ala	Val	Ile	Arg	Ala	Met	Pro	Val	Tyr	Lys	Lys	Ala	Glu	His	Val	Thr
			130			135					140				
Glu	Val	Val	Lys	Arg	Cys	Pro	Asn	His	Glu	Leu	Ser	Arg	Glu	Phe	Asn
145					150					155					160
Glu	Gly	Gln	Ile	Ala	Pro	Ser	Ser	His	Leu	Ile	Arg	Val	Glu	Gly	Asn
				165					170					175	
Ser	His	Ala	Gln	Tyr	Val	Glu	Asp	Pro	Ile	Thr	Gly	Arg	Gln	Ser	Val
			180					185					190		
Leu	Val	Pro	Tyr	Glu	Pro	Pro	Gln	Val	Gly	Thr	Glu	Phe	Thr	Thr	Val
			195				200					205			
Leu	Tyr	Asn	Phe	Met	Cys	Asn	Ser	Ser	Cys	Val	Gly	Gly	Met	Asn	Arg
						215					220				
Arg	Pro	Ile	Leu	Ile	Ile	Val	Thr	Leu	Glu	Thr	Arg	Asp	Gly	Gln	Val
225					230					235					240
Leu	Gly	Arg	Arg	Cys	Phe	Glu	Ala	Arg	Ile	Cys	Ala	Cys	Pro	Gly	Arg
				245					250					255	
Asp	Arg	Lys	Ala	Asp	Glu	Asp	Ser	Ile	Arg	Lys	Gln	Gln	Val	Ser	Asp
			260					265					270		
Ser	Thr	Lys	Asn	Gly	Asp	Gly	Thr	Lys	Arg	Pro	Phe	Arg	Gln	Asn	Thr
			275				280					285			
His	Gly	Ile	Gln	Met	Thr	Ser	Ile	Lys	Lys	Arg	Arg	Ser	Pro	Asp	Asp
			290			295					300				
Glu	Leu	Val	Tyr	Leu	Pro	Val	Arg	Gly	Arg	Glu	Thr	Tyr	Glu	Met	Leu
305					310					315					320
Val	Lys	Ile	Lys	Glu	Ser	Leu	Glu	Leu	Met	Gln	Tyr	Leu	Leu	Gln	His
				325					330					335	
Thr	Ile	Glu	Thr	Tyr	Arg	Gln	Gln	Gln	Gln	Gln	Gln	His	Gln	His	Leu
			340					345					350		
Leu	Gln	Lys	Gln	Thr	Ser	Ile	Gln	Ser	Pro	Ser	Ser	Tyr	Gly	Asn	Ser
			355				360					365			
Ser	Pro	Pro	Leu	Asn	Lys	Met	Asn	Ser	Met	Asn	Lys	Leu	Pro	Ser	Val
			370			375					380				

Ser Gln Leu Ile Asn Pro Gln Gln Arg Asn Ala Leu Thr Pro Thr Thr
 385 390 395 400
 Ile Pro Asp Gly Met Gly Ala Asn Ile Pro Met Met Gly Thr His Met
 405 410 415
 Pro Met Ala Gly Asp Met Asn Gly Leu Ser Pro Thr Gln Ala Leu Pro
 420 425 430
 Pro Pro Leu Ser Met Pro Ser Thr Ser His Cys Thr Pro Pro Pro
 435 440 445
 Tyr Pro Thr Asp Cys Ser Ile Val Ser Phe Leu Ala Arg Leu Gly Cys
 450 455 460
 Ser Ser Cys Leu Asp Tyr Phe Thr Thr Gln Gly Leu Thr Thr Ile Tyr
 465 470 475 480
 Gln Ile Glu His Tyr Ser Met Asp Asp Leu Ala Ser Leu Lys Ile Pro
 485 490 495
 Glu Gln Phe Arg His Ala Ile Trp Lys Gly Ile Leu Asp His Arg Gln
 500 505 510
 Leu His Glu Phe Ser Ser Pro Ser His Leu Leu Arg Thr Pro Ser Ser
 515 520 525
 Ala Ser Thr Val Ser Val Gly Ser Ser Glu Thr Arg Gly Glu Arg Val
 530 535 540
 Ile Asp Ala Val Arg Phe Thr Leu Arg Gln Thr Ile Ser Phe Pro Pro
 545 550 555 560
 Arg Asp Glu Trp Asn Asp Phe Asn Phe Asp Met Asp Ala Arg Arg Asn
 565 570 575
 Lys Gln Gln Arg Ile Lys Glu Glu Gly Glu
 580 585

<210> 153

<211> 2007

<212> DNA

<213> Homo sapien

<400> 153

gaattcgctcg ctgctccagg gaaagttctg ttactccact gactctctct tttcctgata 60
 acatggccag caagaaagta attacagtgt ttggagcaac aggagctcaa ggtggctctg 120
 tggccagggc aatttttgag agcaaaaaat ttgcagtgag agcagtgacc agggatgtga 180
 cttgacaaaa tgccctggag ctccagcgcc ttggagctga ggtggtcaaa ggtgacctga 240
 atgataaagc atcgggtggac agtgccttaa aaggtgtcta tggggccttc ttggtgacca 300
 acttctggga ccctctcaac caagataagg aagtgtgtcg ggggaagctg gtggcagact 360
 ccgccaagca cctgggtctg aagcacgtgg tgtacagcgg cctggagaac gtcaagcgac 420
 tgacggatgg caagctggag gtgccgcact ttgacagcaa gggcgagggtg gaggagtact 480
 tctggtccat tggcatcccc atgaccagtg tccgcgtggc ggctacttt gaaaactttc 540
 tcgcggcgtg gcggcccggtg aaagcctctg atggagatta ctacaccttg gctgtaccga 600
 tgggagatgt accaatggat ggtatctctg ttgctgatat tggagcagcc gtctctagca 660
 tttttaattc tccagaggaa tttttaggca aggcgtggg gctcagtgca gaagcactaa 720
 caatacagca atatgctgat gttttgtcca aggccttggg gaaagaagtc cgagatgcaa 780
 agattacccc ggaagctttc gagaagctgg gattccctgc agcaaaggaa atagccaata 840
 tgtgtcgttt ctatgaaatg aagccagacc gagatgtcaa tctcaccac caactaaatc 900
 ccaaagtcaa aagcttcagc cagtttatct cagagaacca gggagccttc aagggcatgt 960
 agaaaaatcag ctgttcagat aggcctctgc accacacagc ctctttcctc tctgatecctt 1020
 ttctcttta cggcacaaca ttcatgttga cagaacatgc tggaatgcaa ttgtttgcaa 1080
 caccgaagga tttcctgcgg tcgcctcttc agtaggaagc actgcattgg tgataggaca 1140
 cggtaatttg attcacattt aacttgctag ttagtgataa ggggtgtaca actgtttggt 1200
 aaaatgagaa gcctcggaac ttggagcttc tctcctacca ctaatgggag ggcagattat 1260
 actgggattt ctctgggtg agtaatttca agccctaagt ctgaaattcc cctaggcagc 1320

tccagttttc	tcaactgcat	tgcaaaatcc	ccagtgaact	tttaagtact	tttaacttaa	1380
aaaaatgaac	atctttgtag	agaattttct	ggggaacatg	gtgttcaatg	aacaagcaca	1440
agcattggaa	atgctaaaat	tcagttttgc	ctcaagattg	gaagtttatt	ttctgactca	1500
ttcatgaagt	catctattga	gccaccattc	aattattcat	ctattaattc	cttgatcctt	1560
catttatcca	ttctgcaaac	ttttcttgag	caccagcacg	ggtggccatt	tgtggacttc	1620
tcttcattcc	tatgtgtttt	cttatcaaa	tgatccactc	tcgaaaggct	cctttccagt	1680
ctgtggttgg	gttcaagtca	tgccagggcc	agggggccca	tctcctcggt	tagctctagg	1740
caaaatccag	gggatctgca	gtggggagcg	ggggcaggaa	gctggaggga	aggcctgtga	1800
agggtaggga	tgtggaaaga	caaggtgaca	gaaggaccca	ataggacctt	tctatatctc	1860
tggcttagca	ttttctacat	catattgtaa	tcgtcttatt	tgctagtttt	cttccttact	1920
gtgagtgact	aacagtcctc	tttatccag	tgcttggtac	ataataagtg	atcaataaat	1980
gttgattgac	taaaaaaaaa	aaaaaaa				2007

<210> 154

<211> 2148

<212> DNA

<213> Homo sapien

<400> 154

gaattcgtcg	ctgctccagg	gaaagttctg	ttactccact	gactctctct	tttctgata	60
acatggccag	caagaaagta	attacagtgt	ttggagcaac	aggagctcaa	ggtggctctg	120
tggccagggc	aattttggag	agcaaaaaat	ttgcagtggg	agcagtgacc	agggatgtga	180
cttgacaaa	tgccctggag	ctccagcgcc	ttggagctga	ggtggtcaaa	ggtgacctga	240
atgataaagc	atcgggtggg	agtgccttaa	aaggggaagc	tgggtggcaga	ctccgccaag	300
cacctgggtc	tgaagcagct	ggtgtacagc	ggcctggaga	acgtcaagcg	actgacggat	360
ggcaagctgg	aggtgcccga	ctttgacagc	aagggcgagg	tggaggagta	cttctgggtcc	420
attggcatcc	ccatgaccag	tgtccgcgtg	gcggcctact	ttgaaaactt	tctcgcggcg	480
tggcgcccg	tgaagccctc	tgatggagat	tactacacct	tggctgtacc	gatgggagat	540
gtaccaatgg	atggtatctc	tgttgctgat	attggagcag	ccgtctctag	catttttaat	600
tctccagagg	aatttttagg	caaggccgtg	gggctcagtg	cagaagcact	aacaatacag	660
caatatgctg	atgttttgtc	caaggctttg	gggaaagaag	tccgagatgc	aaagactatc	720
tgtgctatag	atgaccagaa	aacagtggaa	gaaggtttca	tggaaagcgt	gggcttgagt	780
tggctcctga	gggaacatga	ccatgtatag	acagaggagg	catcaagaag	gctggcctgg	840
ctaattctgg	aataaacacg	acaaaccaga	ggcagtagcg	gaaggaggca	aattctggct	900
ctgcctctat	ccttgattac	cccggaagct	ttcgagaagc	tgggattccc	tgacgaaaag	960
gaaatagcca	atatgtgtcg	tttctatgaa	atgaagccag	accgagatgt	caatctcacc	1020
caccaactaa	atcccaaagt	caaaagcttc	agccatttta	tctcagagaa	ccaggggagcc	1080
ttcaagggca	tgtagaaaat	cagctgttca	gataggcctc	tgaccacac	agcctctttc	1140
ctctctgac	cttttctctc	ttacggcaca	acattcatgt	tgacagaaca	tgctggaatg	1200
caattgtttg	caacaccgaa	ggatttctct	cggctgcctc	ttcagtagga	agcactgcat	1260
tggtagatag	acacggtaat	ttgattcaca	tttaacttgc	tagttagtga	taaggggtgg	1320
acaactgttt	ggtaaaatga	gaagcctcgg	aacttgagc	ttctctccta	ccactaatgg	1380
gagggcagat	tatactggga	tttctcctgg	gtgagtaatt	tcaagcccta	atgctgaaat	1440
tcccctaggc	agctccagtt	ttctcaactg	cattgcaaaa	ttcccagtga	actttttaagt	1500
actttttaact	taaaaaaatg	aacatctttg	tagagaattt	tctggggaac	atggtgttca	1560
atgaacaagc	acaagcattg	gaaatgctaa	aattcagttt	tgcctcaaga	ttggaagttt	1620
attttctgac	tcattcatga	agtcattctat	tgagccacca	ttcaattatt	catctattaa	1680
ttccttgatc	cttcatttat	ccattctgca	aacttttctt	gagcaccagc	acgggtggcc	1740
atgtgtggac	ttctcttcat	tcctatgtgt	tttcttatca	aagtgatcca	ctctcgaaag	1800
gctcctttcc	agtctgtggg	tgggttcaag	tcatgccagg	gccagggggc	ccatctcctc	1860
gttttagctct	aggcaaaatc	caggggatct	gcagtgggga	gcgggggcag	gaagctggag	1920
ggaaggcctg	tgaagggtag	ggatgtggaa	agacaagggt	acagaaggac	ccaataggac	1980
ctttctatat	ctctggctta	gcattttcta	catcatattg	taatcgtctt	atgtgctagt	2040
tttcttctct	actgtgagtg	actaacagtc	atcttttatcc	cagtgcctgg	tacataataa	2100
gtgatcaata	aatgttgatt	gactaaatga	aaaaaaaaaa	aaaaaaaaa		2148

<210> 155
 <211> 153
 <212> PRT
 <213> Homo sapien

<400> 155
 Met Thr Ser Val Arg Val Ala Ala Tyr Phe Glu Asn Phe Leu Ala Ala
 1 5 10 15
 Trp Arg Pro Val Lys Ala Ser Asp Gly Asp Tyr Tyr Thr Leu Ala Val
 20 25 30
 Pro Met Gly Asp Val Pro Met Asp Gly Ile Ser Val Ala Asp Ile Gly
 35 40 45
 Ala Ala Val Ser Ser Ile Phe Asn Ser Pro Glu Glu Phe Leu Gly Lys
 50 55 60
 Ala Val Gly Leu Ser Ala Glu Ala Leu Thr Ile Gln Gln Tyr Ala Asp
 65 70 75 80
 Val Leu Ser Lys Ala Leu Gly Lys Glu Val Arg Asp Ala Lys Ile Thr
 85 90 95
 Pro Glu Ala Phe Glu Lys Leu Gly Phe Pro Ala Ala Lys Glu Ile Ala
 100 105 110
 Asn Met Cys Arg Phe Tyr Glu Met Lys Pro Asp Arg Asp Val Asn Leu
 115 120 125
 Thr His Gln Leu Asn Pro Lys Val Lys Ser Phe Ser Gln Phe Ile Ser
 130 135 140
 Glu Asn Gln Gly Ala Phe Lys Gly Met
 145 150

<210> 156
 <211> 128
 <212> PRT
 <213> Homo sapien

<400> 156
 Met Thr Ser Val Arg Val Ala Ala Tyr Phe Glu Asn Phe Leu Ala Ala
 1 5 10 15
 Trp Arg Pro Val Lys Ala Ser Asp Gly Asp Tyr Tyr Thr Leu Ala Val
 20 25 30
 Pro Met Gly Asp Val Pro Met Asp Gly Ile Ser Val Ala Asp Ile Gly
 35 40 45
 Ala Ala Val Ser Ser Ile Phe Asn Ser Pro Glu Glu Phe Leu Gly Lys
 50 55 60
 Ala Val Gly Leu Ser Ala Glu Ala Leu Thr Ile Gln Gln Tyr Ala Asp
 65 70 75 80
 Val Leu Ser Lys Ala Leu Gly Lys Glu Val Arg Asp Ala Lys Thr Ile
 85 90 95
 Cys Ala Ile Asp Asp Gln Lys Thr Val Glu Glu Gly Phe Met Glu Asp
 100 105 110
 Val Gly Leu Ser Trp Ser Leu Arg Glu His Asp His Val Ala Gly Ala
 115 120 125

<210> 157
 <211> 424
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(424)
 <223> n = A,T,C or G

<400> 157
 ctgcagccccg ggggatccac tagtccagtg tgggtggaatt cattggtcctt tacaagactt 60
 ggatacatta cagcagacat ggaaatataa ttttaaaaaa tttctctcca acctccttca 120
 aattcagtca ccactgttat attaccttct ccaggaaccc tccagtgggg aaggctgcga 180
 tattagattt ccttgtatgc aaagtttttg ttgaaagctg tgctcagagg aggtgagagg 240
 agaggaagga gaaaactgca tcataacttt acagaattga atctagagtc ttccccgaaa 300
 agcccagaaa cttctctgcn gnatctggct tgtccatctg gtctaagggtg gctgcttctt 360
 cccagccat cgagtcagtt tgtgcccag aataatacac gacctgctat ttcccatgac 420
 tgct 424

<210> 158
 <211> 2099
 <212> DNA
 <213> Homo sapien

<400> 158
 ccgcggttaa aaggcgagc aggtgggagc cggggccttc acccgaaacc cgacgagagc 60
 ccgacagccg gcggcgccc agcccagct gcctgcccag ccggagcgaa gggcgccgcc 120
 ccgcgagag ccgcgcccag ggccgcccgc cgcagagcag ttaaaacgtg caggcaccag 180
 aaggcacttc ctgctcggtga agaagacctg tctccggtgt cacgggcac cgtgtttttg 240
 caaacggggc tgacctccct tcctggggag caggaagggt caggaagga aaagaagtac 300
 agaagatctg gctaaacaat ttctgtatgg cgaaagaaaa attctaactt gtacgccctc 360
 ttcatgcatc ttttaattcaa tttgaatatt ccaggcgaca tcctcactga ccgagcaaa 420
 attgacattc gtatcatcac tgtgcacatc tggcttctag gcaactccagt ggggtaggag 480
 aaggaggtct gaaacctctg cagagggatc ttgccctcat tctttgggtc tgaaacactg 540
 gcagtcggtg gaaacaggac tcagggataa accagcgcaa tggattgggg gacgctgcac 600
 actttcatcg ggggtgtcaa caaacactcc accagcatcg ggaaggtgtg gatcacagtc 660
 atctttattt tccgagtcac gatcctctg gtggctgccc aggaagtgtg ggggtgacgag 720
 caagaggact tcgtctgcaa cacactgcaa ccgggatgca aaaatgtgtg ctatgaccac 780
 tttttcccgc tgtcccatc ccggtgtgtg gccctccagc tgatcttctg ctccacccca 840
 gcgctgctgg tggccatgca tgtggcctac tacaggcagc aaaccactcg caagttcagg 900
 cgaggagaga agaggaatga tttcaaagac atagaggaca ttaaaaagca gaaggttcgg 960
 atagaggggt cgctgtgggt gacgtacacc agcagcatct ttttccgaat catctttgaa 1020
 gcagccttta tgtatgtgtt ttacttccct tacaatgggt accacctgcc ctgggtgttg 1080
 aaatgtggga ttgacctctg ccccaacctt gttgactgct ttatttctag gccaacagag 1140
 aagaccgtgt ttaccatttt tatgatttct gcgtctgtga tttgcatgct gcttaacgtg 1200
 gcagagttgt gctacctgct gctgaaagtg tgttttagga gatcaaagag agcacagacg 1260
 caaaaaaatc accccaatca tgccctaaag gagagtaagc agaatgaaat gaatgagctg 1320
 atttcagata gtggtcaaaa tgcaatcaca ggttcccaag ctaaactttt caaggtaaaa 1380
 tgtagctgcg tcataaggag acttctgtct tctccagaag gcaataccaa cctgaaagtt 1440
 ccttctgtag cctgaagagt ttgtaaatga ctttcataat aaatagacac ttgagttaac 1500
 tttttgtagg atacttgctc cattcataca caacgtaatc aaatatgtgg tccatctctg 1560
 aaaacaagag actgcttgac aaaggagcat tgcagtcact ttgacaggtt ctttttaagt 1620
 ggactctctg acaaagtggg tactttctga aaatttatat aactgttggt gataaggaac 1680
 atttatccag gaattgatac gtttatttag aaaagatatt tttataggct tggatgtttt 1740
 tagttctgac tttgaattta tataaagtat ttttataatg actggtcttc cttacctgga 1800
 aaaacatgcg atgttagttt tagaattaca ccacaagtat ctaaatttgg aacttataaa 1860
 gggctctatc tgtaaatatt gttttgcatt gtctgttggc aaatttgtga actgtcatga 1920
 tacgcttaag gtggaaagtg ttcattgcac aatatatttt tactgctttc tgaatgtaga 1980

cggaacagtg tggaagcaga aggctttttt aactcatccg tttgccaatc attgcaaaca 2040
actgaaatgt ggatgtgatt gcctcaataa agctcgtccc cattgcttaa aaaaaaaaaa 2099

<210> 159
<211> 291
<212> PRT
<213> Homo sapien

<400> 159
Met Asp Trp Gly Thr Leu His Thr Phe Ile Gly Gly Val Asn Lys His
1 5 10 15
Ser Thr Ser Ile Gly Lys Val Trp Ile Thr Val Ile Phe Ile Phe Arg
20 25 30
Val Met Ile Leu Val Val Ala Ala Gln Glu Val Trp Gly Asp Glu Gln
35 40 45
Glu Asp Phe Val Cys Asn Thr Leu Gln Pro Gly Cys Lys Asn Val Cys
50 55 60
Tyr Asp His Phe Phe Pro Val Ser His Ile Arg Leu Trp Ala Leu Gln
65 70 75 80
Leu Ile Phe Val Ser Thr Pro Ala Leu Leu Val Ala Met His Val Ala
85 90 95
Tyr Tyr Arg His Glu Thr Thr Arg Lys Phe Arg Arg Gly Glu Lys Arg
100 105 110
Asn Asp Phe Lys Asp Ile Glu Asp Ile Lys Lys Gln Lys Val Arg Ile
115 120 125
Glu Gly Ser Leu Trp Trp Thr Tyr Thr Ser Ser Ile Phe Phe Arg Ile
130 135 140
Ile Phe Glu Ala Ala Phe Met Tyr Val Phe Tyr Phe Leu Tyr Asn Gly
145 150 155 160
Tyr His Leu Pro Trp Val Leu Lys Cys Gly Ile Asp Pro Cys Pro Asn
165 170 175
Leu Val Asp Cys Phe Ile Ser Arg Pro Thr Glu Lys Thr Val Phe Thr
180 185 190
Ile Phe Met Ile Ser Ala Ser Val Ile Cys Met Leu Leu Asn Val Ala
195 200 205
Glu Leu Cys Tyr Leu Leu Leu Lys Val Cys Phe Arg Arg Ser Lys Arg
210 215 220
Ala Gln Thr Gln Lys Asn His Pro Asn His Ala Leu Lys Glu Ser Lys
225 230 235 240
Gln Asn Glu Met Asn Glu Leu Ile Ser Asp Ser Gly Gln Asn Ala Ile
245 250 255
Thr Gly Ser Gln Ala Lys His Phe Lys Val Lys Cys Ser Cys Val Ile
260 265 270
Arg Arg Leu Leu Ser Ser Pro Glu Gly Asn Thr Asn Leu Lys Val Pro
275 280 285
Ser Val Ala
290

<210> 160
<211> 3951
<212> DNA
<213> Homo sapien

<400> 160
tctgcatcca tattgaaaac ctgacacaat gtatgcagca ggctcagtgt gagtgaactg 60

gaggcttctc	tacaacatga	cccaaaggag	cattgcaggt	cctatttgca	acctgaagtt	120
tgtgactctc	ctggttgcc	taagttcaga	actcccattc	ctgggagctg	gagtacagct	180
tcaagacaat	gggtataatg	gattgctcat	tgcaattaat	cctcaggtag	ctgagaatca	240
gaacctcatc	tcaaacatta	aggaaatgat	aactgaagct	tcattttacc	tatttaatgc	300
taccaagaga	agagtatttt	tcagaaatat	aaagatttta	atacctgcca	catggaaagc	360
taataataac	agcaaaataa	aacaagaatc	atatgaaaag	gcaaagtgtc	tagtgactga	420
ctggtatggg	gcacatggag	atgatccata	caccctacaa	tacagagggg	gtggaaaaga	480
gggaaaatac	attcattttc	cacctaat	cctactgaat	gataacttaa	cagctggcta	540
cggatcacga	ggcagagtgt	ttgtccatga	atgggcccac	ctccgttggg	gtgtgttcga	600
tgagtataac	aatgacaaac	ctttctacat	aatggggcaa	aatcaaatta	aagtgacaag	660
gtgttcacat	gacatcacag	gcatttttgt	gtgtgaaaaa	ggccttgcc	cccaagaaaa	720
ctgtattatt	agtaagcttt	ttaaagaagg	atgcaccttt	atctacaata	gcacccaaaa	780
tgcaactgca	tcaataatgt	tcatgcaaa	tttatcttct	gtggttgaat	tttghtaatgc	840
aagtacccac	aaccaagaag	caccaaacct	acagaaccag	atgtgcagcc	tcagaagtgc	900
atgggatgta	atcacagact	ctgctgactt	tcaccacagc	tttcccatga	acgggactga	960
gcttccacct	cctccacat	tctcgcttgt	agaggctggg	gacaaagtgg	tctgtttagt	1020
gctggatgtg	tccagcaaga	tggcagaggc	tgacagactc	cttcaactac	aacaagccgc	1080
agaattttat	ttgatgcaga	ttgttgaaat	tcataccttc	gtgggcattg	ccagtttcga	1140
cagcaaagga	gagatcacag	cccagctaca	cgaatttaac	agcaatgatg	atcgaaagtt	1200
gctggtttca	tatctgcca	ccactgtatc	agctaaaaca	gacatcagca	tttgttcagg	1260
gcttaagaaa	ggatttgagg	tggttgaaaa	actgaattga	aaagcttatg	gctctgtgat	1320
gatattagtg	accagcggag	atgataagct	tcttggcaat	tgcttacc	ctgtgctcag	1380
cagtggttca	acaattcact	ccattgccct	gggttcatct	gcagcccaa	atctgaggga	1440
attatcacgt	cttacaggag	gtttaaagtt	ctttgttcca	gatatatcaa	actccaatag	1500
catgattgat	gctttcagta	gaatttcctc	tggaaactga	gacattttcc	agcaacatat	1560
tcagcttgaa	agtacagggtg	aaaatgtcaa	acctcaccat	caattgaaaa	acacagtgac	1620
tgtggataat	actgtgggca	acgacactat	gtttctagtt	acgtggcagg	ccagtggtcc	1680
tcttgagatt	atattatttg	atcctgatgg	acgaaaatac	tacacaaata	attttatcac	1740
caatctaact	tttoggacag	ctagtctttg	gattccagga	acagctaagc	ctgggcaactg	1800
gacttacacc	ctgaacaata	cccatcattc	tctgcaagcc	ctgaaagtga	cagtgcctc	1860
tgcgcctcc	aactcagctg	tgcccccagc	cactgtggaa	gcctttgtgg	aaagagacag	1920
cctccatttt	cctcatcctg	tgatgattta	tgccaatgtg	aaacagggat	tttatcccat	1980
tcttaatgcc	actgtcactg	ccacagttga	gccagagact	ggagatcctg	ttacgctgag	2040
actccttgat	gatggagcag	gtgctgatgt	tataaaaaat	gatggaattt	actcgaggta	2100
ttttttctcc	tttgcgtcaa	atggtagata	tagcttgaaa	gtgcatgtca	atcactctcc	2160
cagcataagc	acccagccc	actctattcc	agggagtc	gctatgtatg	taccaggtta	2220
cacagcaaac	ggtaatat	agatgaatgc	tccaaggaaa	tcagtaggca	gaaatgagga	2280
ggagcgaaa	tggggcttta	gccgagtcag	ctcaggaggc	tccttttcag	tgctgggagt	2340
tccagctggc	ccccacctg	atgtgtttcc	accatgcaaa	attattgacc	tggaaagctgt	2400
aaaagtagaa	gagggaattga	ccctatcttg	gacagcacct	ggagaagact	ttgatcaggg	2460
ccaggctaca	agctatgaaa	taagaatgag	taaaagtcta	cagaatatcc	aagatgactt	2520
taacaatgct	attttagtaa	atacatcaaa	gcgaaatcct	cagcaagctg	gcatcagggg	2580
gatattttacg	ttctcacc	aaatttccac	gaatggacct	gaacatcagc	caaatggaga	2640
aacacatgaa	agccacagaa	tttatgttgc	aatacgagca	atggatagga	actccttaca	2700
gtctgctgta	tctaaccattg	cccaggcgc	tctgtttatt	cccccaatt	ctgatcctgt	2760
acctgccaga	gattatctta	tattgaaagg	agttttaaca	gcaatgggtt	tgataggaat	2820
catttgccct	attatagttg	tgacacatca	tactttaagc	aggaaaaaga	gagcagacaa	2880
gaaagagaat	ggaacaaaat	tattataaat	aaatatccaa	agtgctctcc	ttcttagata	2940
taagaccat	ggccttcgac	tacaaaaaca	tactaaca	gtcaaattaa	catcaaaact	3000
gtattaaaaat	gcattgagtt	ttgttacaat	acagataaga	tttttacatg	gtagatcaac	3060
aaattctttt	tgggggtaga	ttagaaaacc	cttacacttt	ggctatgaac	aaataataaa	3120
aattattctt	taaagtaatg	tctttaagg	caaagggaag	ggtaaagtcg	gaccagtgtc	3180
aaggaaagtt	tgttttattg	aggtggaaaa	atagcccaa	gcagagaaaa	ggagggtagg	3240
tctgcattat	aactgtctgt	gtgaagcaat	catttagtta	ctttgattaa	ttttctttt	3300
ctccttatct	gtgcagaaca	ggttgcttgt	ttacaactga	agatcatgct	atatttcata	3360

```

tatgaagccc ctaatgcaaa gctctttacc tcttgctatt ttgttatata tattacagat 3420
gaaatctcac tgctaatgct cagagatctt ttttcaactgt aagaggtaac ctttaacaat 3480
atgggtatta cctttgtctc ttcataccgg ttttatgaca aaggctctatt gaatttattt 3540
gtttgtaagt ttctactccc atcaaagcag ctttttaagt tattgccttg gttattatgg 3600
atgatatgta tagcccttat aatgccttaa ctaaggaaga aaagatgtta ttctgagttt 3660
gttttaatac atatatgaac atatatgttt attcaattaa accaaagaag aggtcagcag 3720
ggagatacta acctttggaa atgattagct ggctctgttt tttggttaaa taagagtctt 3780
taatcctttc tccatcaaga gttacttacc aagggcaggg gaagggggat atagagggtcc 3840
caaggaaata aaaatcatct ttcactttta attttactcc ttctctttat ttttttaaaa 3900
gattatcgaa caataaaatc atttgccttt ttaattaaaa acataaaaaa a 3951

```

<210> 161

<211> 943

<212> PRT

<213> Homo sapien

<400> 161

```

Met Thr Gln Arg Ser Ile Ala Gly Pro Ile Cys Asn Leu Lys Phe Val
1      5      10      15
Thr Leu Leu Val Ala Leu Ser Ser Glu Leu Pro Phe Leu Gly Ala Gly
20     25     30
Val Gln Leu Gln Asp Asn Gly Tyr Asn Gly Leu Leu Ile Ala Ile Asn
35     40     45
Pro Gln Val Pro Glu Asn Gln Asn Leu Ile Ser Asn Ile Lys Glu Met
50     55     60
Ile Thr Glu Ala Ser Phe Tyr Leu Phe Asn Ala Thr Lys Arg Arg Val
65     70     75     80
Phe Phe Arg Asn Ile Lys Ile Leu Ile Pro Ala Thr Trp Lys Ala Asn
85     90     95
Asn Asn Ser Lys Ile Lys Gln Glu Ser Tyr Glu Lys Ala Asn Val Ile
100    105    110
Val Thr Asp Trp Tyr Gly Ala His Gly Asp Asp Pro Tyr Thr Leu Gln
115    120    125
Tyr Arg Gly Cys Gly Lys Glu Gly Lys Tyr Ile His Phe Thr Pro Asn
130    135    140
Phe Leu Leu Asn Asp Asn Leu Thr Ala Gly Tyr Gly Ser Arg Gly Arg
145    150    155    160
Val Phe Val His Glu Trp Ala His Leu Arg Trp Gly Val Phe Asp Glu
165    170    175
Tyr Asn Asn Asp Lys Pro Phe Tyr Ile Asn Gly Gln Asn Gln Ile Lys
180    185    190
Val Thr Arg Cys Ser Ser Asp Ile Thr Gly Ile Phe Val Cys Glu Lys
195    200    205
Gly Pro Cys Pro Gln Glu Asn Cys Ile Ile Ser Lys Leu Phe Lys Glu
210    215    220
Gly Cys Thr Phe Ile Tyr Asn Ser Thr Gln Asn Ala Thr Ala Ser Ile
225    230    235    240
Met Phe Met Gln Ser Leu Ser Ser Val Val Glu Phe Cys Asn Ala Ser
245    250    255
Thr His Asn Gln Glu Ala Pro Asn Leu Gln Asn Gln Met Cys Ser Leu
260    265    270
Arg Ser Ala Trp Asp Val Ile Thr Asp Ser Ala Asp Phe His His Ser
275    280    285
Phe Pro Met Asn Gly Thr Glu Leu Pro Pro Pro Pro Thr Phe Ser Leu
290    295    300

```

Val	Glu	Ala	Gly	Asp	Lys	Val	Val	Cys	Leu	Val	Leu	Asp	Val	Ser	Ser	305	310	315	320
Lys	Met	Ala	Glu	Ala	Asp	Arg	Leu	Leu	Gln	Leu	Gln	Gln	Ala	Ala	Glu	325	330	335	
Phe	Tyr	Leu	Met	Gln	Ile	Val	Glu	Ile	His	Thr	Phe	Val	Gly	Ile	Ala	340	345	350	
Ser	Phe	Asp	Ser	Lys	Gly	Glu	Ile	Arg	Ala	Gln	Leu	His	Gln	Ile	Asn	355	360	365	
Ser	Asn	Asp	Asp	Arg	Lys	Leu	Val	Ser	Tyr	Leu	Pro	Thr	Thr	Val		370	375	380	
Ser	Ala	Lys	Thr	Asp	Ile	Ser	Ile	Cys	Ser	Gly	Leu	Lys	Lys	Gly	Phe	385	390	395	400
Glu	Val	Val	Glu	Lys	Leu	Asn	Gly	Lys	Ala	Tyr	Gly	Ser	Val	Met	Ile	405	410	415	
Leu	Val	Thr	Ser	Gly	Asp	Asp	Lys	Leu	Gly	Asn	Cys	Leu	Pro	Thr		420	425	430	
Val	Leu	Ser	Ser	Gly	Ser	Thr	Ile	His	Ser	Ile	Ala	Leu	Gly	Ser	Ser	435	440	445	
Ala	Ala	Pro	Asn	Leu	Glu	Glu	Leu	Ser	Arg	Leu	Thr	Gly	Gly	Leu	Lys	450	455	460	
Phe	Phe	Val	Pro	Asp	Ile	Ser	Asn	Ser	Asn	Ser	Met	Ile	Asp	Ala	Phe	465	470	475	480
Ser	Arg	Ile	Ser	Ser	Gly	Thr	Gly	Asp	Ile	Phe	Gln	Gln	His	Ile	Gln	485	490	495	
Leu	Glu	Ser	Thr	Gly	Glu	Asn	Val	Lys	Pro	His	His	Gln	Leu	Lys	Asn	500	505	510	
Thr	Val	Thr	Val	Asp	Asn	Thr	Val	Gly	Asn	Asp	Thr	Met	Phe	Leu	Val	515	520	525	
Thr	Trp	Gln	Ala	Ser	Gly	Pro	Pro	Glu	Ile	Ile	Leu	Phe	Asp	Pro	Asp	530	535	540	
Gly	Arg	Lys	Tyr	Tyr	Thr	Asn	Asn	Phe	Ile	Thr	Asn	Leu	Thr	Phe	Arg	545	550	555	560
Thr	Ala	Ser	Leu	Trp	Ile	Pro	Gly	Thr	Ala	Lys	Pro	Gly	His	Trp	Thr	565	570	575	
Tyr	Thr	Leu	Asn	Asn	Thr	His	His	Ser	Leu	Gln	Ala	Leu	Lys	Val	Thr	580	585	590	
Val	Thr	Ser	Arg	Ala	Ser	Asn	Ser	Ala	Val	Pro	Pro	Ala	Thr	Val	Glu	595	600	605	
Ala	Phe	Val	Glu	Arg	Asp	Ser	Leu	His	Phe	Pro	His	Pro	Val	Met	Ile	610	615	620	
Tyr	Ala	Asn	Val	Lys	Gln	Gly	Phe	Tyr	Pro	Ile	Leu	Asn	Ala	Thr	Val	625	630	635	640
Thr	Ala	Thr	Val	Glu	Pro	Glu	Thr	Gly	Asp	Pro	Val	Thr	Leu	Arg	Leu	645	650	655	
Leu	Asp	Asp	Gly	Ala	Gly	Ala	Asp	Val	Ile	Lys	Asn	Asp	Gly	Ile	Tyr	660	665	670	
Ser	Arg	Tyr	Phe	Phe	Ser	Phe	Ala	Ala	Asn	Gly	Arg	Tyr	Ser	Leu	Lys	675	680	685	
Val	His	Val	Asn	His	Ser	Pro	Ser	Ile	Ser	Thr	Pro	Ala	His	Ser	Ile	690	695	700	
Pro	Gly	Ser	His	Ala	Met	Tyr	Val	Pro	Gly	Tyr	Thr	Ala	Asn	Gly	Asn	705	710	715	720
Ile	Gln	Met	Asn	Ala	Pro	Arg	Lys	Ser	Val	Gly	Arg	Asn	Glu	Glu	Glu	725	730	735	
Arg	Lys	Trp	Gly	Phe	Ser	Arg	Val	Ser	Ser	Gly	Gly	Ser	Phe	Ser	Val				

```
<210> 162
<211> 498
<212> DNA
<213> Homo sapien
```

<400> 162						
tggagaacca	cgtggacagc	accatgaaca	tgttgggcgg	gggaggcagt	gctggccgga	60
agccctcaa	gtcgggtatg	aaggagctgg	ccgtgttccg	ggagaaggtc	actgagcagc	120
accggcagat	gggcaagggt	ggcaagcatc	accttggcct	ggaggagccc	aagaagctgc	180
gaccaccccc	tgccaggact	ccctgccaac	aggaactgga	ccagggtcctg	gagcggatct	240
ccaccatgcy	ccttcgggat	gagcggggcc	ctctggagca	cctctactcc	ctgcacatcc	300
caaactgtga	caagcatggc	ctgtacaacc	tcaaacagtg	gcaagatgtc	tctgaacggg	360
cagcgtgggg	agtgctggtg	tgtgaacccc	aacaccggga	agctgatcca	gggagccccc	420
accatccggg	gggaccccg	gtgtcatctc	ttctacaatg	agcagcagga	ggctcgcggg	480
gtgcacaccc	cagcggat					498

```
<210> 163
<211> 1128
<212> DNA
<213> Homo sapien
```

<400> 163						
gccacctggc	cctcctgata	gacgacacac	gcacttgaaa	cttgttctca	gggtgtgtgg	60
aatcaacttt	cgggaagcaa	ccagcccacc	agaggaggtc	ccgagcgaga	gcggagacga	120
tgcagcggag	actggttcag	cagtggagcg	tcgcggtgtt	cctgctgagc	tacgcggtgc	180
cctcctgcgg	gcgctcggtg	gagggctctca	gccgccgcct	caaaagagct	gtgtctgaac	240
atcagctcct	ccatgacaag	gggaagtcca	tccaagattt	acggcgacga	ttcttccttc	300
accatctgat	cgcagaaatc	cacacagctg	aaatcagagc	tacctcggag	gtgtccccta	360
actccaagcc	ctctcccaac	acaaagaacc	accccgtccg	atttgqgtct	gatgatgaag	420

```

gcagatacct aactcaggaa actaacaagg tggagacgta caaagagcag ccgctcaaga 480
cacctgggaa gaaaaagaaa ggcaagcccg ggaaacgcaa ggagcaggaa aagaaaaaac 540
ggcgaactcg ctctgcctgg ttagactctg gactgactgg gactgggcta gaaggggacc 600
acctgtctga cacctccaca acgtcgctgg agctcgattc acggaggcat tgaaattttc 660
agcagagacc ttccaaggac atattgcagg attctgtaat agtgaacata tggaaagtat 720
tagaaatatt tattgtctgt aaatactgta aatgcattgg aataaaactg tctcccccat 780
tgctctatga aactgcacat tggtcattgt gaatattttt ttttttgcca aggctaattc 840
aattattatt atcacattta ccataattta ttttgtccat tgatgtattt attttgtaaa 900
tgtatcttgg tgctgctgaa tttctatatt ttttgttaaca taatgcactt tagatataca 960
tatcaagtat gttgataaat gacacaatga agtgtctcta ttttgtgggt gattttaatg 1020
aatgcctaaa tataattatc caaattgatt ttcctttgtg catgtaaaaa taacagtatt 1080
ttaaatttgt aaagaatgtc taataaaata taatctaatt acatcatg 1128

```

<210> 164

<211> 1310

<212> DNA

<213> Homo sapien

<400> 164

```

gggcctggtt cgcaaagaag ctgacttcag agggggaaac tttcttcttt taggaggcgg 60
ttagccctgt tccacgaacc caggagaact gctggccaga ttaattagac attgctatgg 120
gagacgtgta aacacactac ttatcattga tgcataata aaaccatttt attttcgcta 180
ttatttcaga ggaagcgctt ctgatttgtt tcttttttcc ctttttgcct tttctggctg 240
tgtggtttgg agaaagcaca gttggagtag ccggttgcta aataagtcct gagcgcgagc 300
ggagacgatg cagcggagac tggttcagca gtggagcgct gcggtgttcc tgetgagcta 360
cgcggtgccc tctgcgggc gctcggtgga gggctctcgc cgcgcctca aaagagctgt 420
gtctgaacat cagctcctcc atgacaaggg gaagtccatc caagatttac ggcgacgatt 480
cttccttcac catctgatcg cagaaatcca cacagctgaa atcagagcta cctcggaggt 540
gtcccctaac tccaagccct ctcccaacac aaagaaccac cccgtccgat ttgggtctga 600
tgatgagggc agatacctaa ctcaggaaac taacaagggt gagacgtaca aagagcagcc 660
gctcaagaca cctgggaaga aaaagaaagg caagcccggg aaacgcaagg agcaggaaaa 720
gaaaaaacgg cgaactcgct ctgcctggtt agactctgga gtgactggga gtgggctaga 780
aggggaccac ctgtctgaca cctccacaac gtcgctggag ctcgattcac ggaggcattg 840
aaattttcag cagagacctt ccaaggacat attgcaggat tctgtaatag tgaacatatg 900
gaaagtatta gaaatattta ttgtctgtaa atactgtaaa tgcattggaa taaaactgtc 960
tccccattg ctctatgaaa ctgcacattg gtcattgtga atattttttt ttttgccaag 1020
gctaattcaa ttattattat cacatttacc ataattttatt ttgtccattg atgtatttat 1080
tttgtaaatg tatcttggtg ctgctgaatt tctatatatt ttgtaacata atgcacttta 1140
gatatacata tcaagtatgt tgataaatga cacaatgaag tgtctctatt ttgtggttga 1200
ttttaatgaa tgcctaaata taattatcca aattgatttt cctttgtgcc cgtaaaaata 1260
acagtatttt aaatttgtaa agaattgtcta ataaaatata atctaattac 1310

```

<210> 165

<211> 177

<212> PRT

<213> Homo sapien

<400> 165

```

Met Gln Arg Arg Leu Val Gln Gln Trp Ser Val Ala Val Phe Leu Leu
  1             5             10            15
Ser Tyr Ala Val Pro Ser Cys Gly Arg Ser Val Glu Gly Leu Ser Arg
          20          25          30
Arg Leu Lys Arg Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly
          35          40          45
Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile

```

50	55	60
Ala Glu Ile His Thr	Ala Glu Ile Arg Ala Thr	Ser Glu Val Ser Pro
65	70	75
Asn Ser Lys Pro Ser	Pro Asn Thr Lys Asn His	Pro Val Arg Phe Gly
85	90	95
Ser Asp Asp Glu Gly	Arg Tyr Leu Thr Gln Glu Thr	Asn Lys Val Glu
100	105	110
Thr Tyr Lys Glu Gln	Pro Leu Lys Thr Pro Gly Lys	Lys Lys Lys Gly
115	120	125
Lys Pro Gly Lys Arg	Lys Glu Gln Glu Lys Lys	Lys Arg Arg Thr Arg
130	135	140
Ser Ala Trp Leu Asp	Ser Gly Val Thr Gly Ser	Gly Leu Glu Gly Asp
145	150	155
His Leu Ser Asp Thr	Ser Thr Thr Ser Leu Glu	Leu Asp Ser Arg Arg
165	170	175
His		

<210> 166
 <211> 177
 <212> PRT
 <213> Homo sapien

<400> 166
Met Gln Arg Arg Leu Val Gln Gln Trp Ser Val Ala Val Phe Leu Leu
1 5 10 15
Ser Tyr Ala Val Pro Ser Cys Gly Arg Ser Val Glu Gly Leu Ser Arg
20 25 30
Arg Leu Lys Arg Ala Val Ser Glu His Gln Leu Leu His Asp Lys Gly
35 40 45
Lys Ser Ile Gln Asp Leu Arg Arg Arg Phe Phe Leu His His Leu Ile
50 55 60
Ala Glu Ile His Thr Ala Glu Ile Arg Ala Thr Ser Glu Val Ser Pro
65 70 75 80
Asn Ser Lys Pro Ser Pro Asn Thr Lys Asn His Pro Val Arg Phe Gly
85 90 95
Ser Asp Asp Glu Gly Arg Tyr Leu Thr Gln Glu Thr Asn Lys Val Glu
100 105 110
Thr Tyr Lys Glu Gln Pro Leu Lys Thr Pro Gly Lys Lys Lys Lys Gly
115 120 125
Lys Pro Gly Lys Arg Lys Glu Gln Glu Lys Lys Lys Arg Arg Thr Arg
130 135 140
Ser Ala Trp Leu Asp Ser Gly Val Thr Gly Ser Gly Leu Glu Gly Asp
145 150 155 160
His Leu Ser Asp Thr Ser Thr Thr Ser Leu Glu Leu Asp Ser Arg Arg
165 170 175
His

<210> 167
 <211> 3362
 <212> DNA
 <213> Homo sapien

<400> 167

cacaatgtat	gcagcaggct	cagtgtgagt	gaactggagg	cttctctaca	acatgaccca	60
aaggagcatt	gcaggtccta	tttgcaacct	gaagtttgtg	actctcctgg	ttgccttaag	120
ttcagaactc	ccattcctgg	gagctggagt	acagcttcaa	gacaatgggt	ataatggatt	180
gctcattgca	attaatcctc	aggtacctga	gaatcagaac	ctcatctcaa	acattaagga	240
aatgataaact	gaagcttcat	tttacctatt	taatgctacc	aagagaagag	tatttttctag	300
aaatataaag	attttaatac	ctgccacatg	gaaagctaata	aataacagca	aaataaaaaca	360
agaatcatat	gaaaaggcaa	atgtcatagt	gactgactgg	tatggggcac	atggagatga	420
tccatacacc	ctacaatata	gaggggtgtg	aaaagaggga	aaatacattc	atttcacacc	480
taatttccta	ctgaatgata	acttaacagc	tggctacgga	tcacgaggcc	gagtgtttgt	540
ccatgaatgg	gcccacctcc	gttgggggtg	gttcgatgag	tataacaatg	acaaaccttt	600
ctacataaat	gggcaaaatc	aaattaaaagt	gacaagggtg	tcactctgaca	tcacaggcat	660
ttttgtgtgt	gaaaaagggtc	cttgccccca	agaaaactgt	attattagta	agcttttttaa	720
agaaggatgc	accttttatct	acaatagcac	ccaaaatgca	actgcatcaa	taatgttcat	780
gcaaagttta	tcttctgtgg	ttgaattttg	taatgcaagt	accacaacc	aagaagcacc	840
aaacctacag	aaccagatgt	gcagcctcag	aagtgcattg	gatgtaatca	cagactctgc	900
tgactttcac	cacagctttc	ccatgaacgg	gactgagctt	ccacctcctc	ccacattctc	960
gcttgtagag	gctggtgaca	aagtgggtctg	tttagtgctg	gatgtgtcca	gcaagatggc	1020
agaggctgac	agactccttc	aactacaaca	agccgcagaa	ttttatttga	tgcagattgt	1080
tgaaattcat	accttcgtgg	gcattgccag	tttcgacagc	aaaggagaga	tcagagccca	1140
gctacaccaa	attaacagca	atgatgatcg	aaagtgtctg	gtttcatatc	tgcccaccac	1200
tgtatcagct	aaaacagaca	tcagcatttg	ttcaggggtt	aagaaaggat	ttgaggtggg	1260
tgaaaaactg	aatggaaaag	cttatggctc	tgtgatgata	ttagtacca	gcggagatga	1320
taagcttctt	ggcaattgct	taccactgtg	gctcagcagt	ggttcaacaa	ttcactccat	1380
tgccctgggt	tcactctgag	ccccaaatct	ggaggaatta	tcacgtctta	caggagggtt	1440
aaagttcttt	gttccagata	tatcaaactc	caatagcatg	attgatgctt	tcagtagaat	1500
ttcctctgga	actggagaca	ttttccagca	acatattcag	cttgaaagta	cagggtgaaaa	1560
tgtcaaacct	caccatcaat	tgaaaaaacac	agtgactgtg	gataaactg	tgggcaacga	1620
cactatgttt	ctagttacgt	ggcaggccag	tggctcctcct	gagattatat	tatttgatcc	1680
tgatggacga	aaataactaca	caaataattt	tatcaccaat	ctaacttttc	ggacagctag	1740
tctttggatt	ccaggaacag	ctaagcctgg	gcactggact	tacacocctga	tgtgtttcca	1800
ccatgcaaaa	ttattgacct	ggaagctgta	aaagtagaag	aggaattgac	cctatcttgg	1860
acagcacctg	gagaagactt	tgatcagggc	caggctacaa	gctatgaaat	aagaatgagt	1920
aaaagtctac	agaatatcca	agatgacttt	aacaatgcta	ttttagtaaa	tacatcaaag	1980
cgaaatcctc	agcaagctgg	catcagggag	atattttacgt	tctcacccca	aattttccacg	2040
aatggacctg	aacatcagcc	aaatggagaa	acacatgaaa	gccacagaat	ttatgtttgca	2100
atacgagcaa	tggataggaa	ctccttacag	tctgctgtat	ctaacattgc	ccaggcgcct	2160
ctgtttatct	cccccaattc	tgatcctgta	cctgccagag	attatcttat	attgaaagga	2220
gttttaacag	caatgggttt	gataggaatc	atttgcctta	ttatagttgt	gacacatcat	2280
actttaagca	ggaaaaagag	agcagacaag	aaagagaatg	gaacaaaatt	attataaata	2340
aatatccaaa	gtgtcttcct	tcttagatat	aagaccatg	gccttcgact	acaaaaacat	2400
actaacaag	tcaaattaac	atcaaaaactg	tattaaaaatg	cattgagttt	ttgtacaata	2460
cagataagat	ttttacatgg	tagatcaaca	aattcttttt	gggggtagat	tagaaaaacc	2520
ttacactttg	gctatgaaca	aataataaaa	attattcttt	aaagtaatgt	ctttaaaggc	2580
aaagggaagg	gtaaagtctg	accagtgtca	aggaaagttt	gttttattga	ggtggaaaaa	2640
tagccccaag	cagagaaaag	gagggtaggt	ctgcattata	actgtctgtg	tgaagcaatc	2700
atttagttac	tttgattaat	ttttcttttc	tccttatctg	tgcagaacag	gttgcttggt	2760
tacaactgaa	gatcatgcta	tatttcatat	atgaagcccc	taatgcaaag	ctctttacct	2820
cttgctatatt	tgttatatat	attacagatg	aaatctcact	gctaagtctc	agagatcttt	2880
tttactgtta	agaggttaacc	tttaacaata	tgggtatttac	ctttgtctct	tcataccggg	2940
tttatgacaa	aggtctattg	aattttatttg	tttgtaagtt	tctactccca	tcaaagcagc	3000
tttctaagtt	attgccttgg	ttattatgga	tgatagttat	agcccttata	atgccttaac	3060
taaggaagaa	aagatgttat	tctgagtttg	ttttaataca	tatatgaaca	tatagtttta	3120
ttcaattaaa	ccaaagaaga	ggtcagcagg	gagatactaa	cctttggaaa	tgattagctg	3180
gctctgtttt	ttgggttaaat	aagagtcttt	aatcctttct	ccatcaagag	ttacttacca	3240
agggcagggg	aagggggata	tagaggtcac	aaggaaataa	aaatcatctt	tcacttttaa	3300

ttttactcct tcctcttatt tttttaaaag attatcgaac aataaaatca tttgcctttt 3360
 tt 3362

<210> 168
 <211> 2784
 <212> DNA
 <213> Homo sapien

<400> 168

tctgcatcca	tattgaaaac	ctgacacaat	gtatgcagca	ggctcagtgt	gagtgaactg	60
gaggtctctc	tacaacatga	cccaaaggag	cattgcaggt	cctatttgca	acctgaagtt	120
tgtgactctc	ctggttgctt	taagttcaga	actcccattc	ctgggagctg	gagtacagct	180
tcaagacaat	gggtataatg	gattgctcat	tgcaattaat	cctcaggtac	ctgagaatca	240
gaacctcatc	tcaaacatta	aggaaatgat	aactgaagct	tcattttacc	tattttaatgc	300
taccaagaga	agagtatttt	tcagaaaat	aaagatttta	atacctgcca	catggaaagc	360
taataataac	agcaaaaata	aacaagaatc	atatgaaaag	gcaaagtgtc	tagtgactga	420
ctggtatggg	gcacatggag	atgatccata	caccctacaa	tacagagggg	gtggaaaaga	480
gggaaaatac	attcatttca	cacctaat	cctactgaat	gataacttaa	cagctggcta	540
cggatcacga	ggccgagtgt	ttgtccatga	atgggcccac	ctccgttggg	gtgtgttcga	600
tgagtataac	aatgacaaac	ctttctacat	aaatgggcaa	aatcaaatta	aagtgacaag	660
gtgttcatct	gacatcacag	gcatttttgt	gtgtgaaaaa	ggctccttgc	cccaagaaaa	720
ctgtattatt	agtaagcttt	ttaaagaagg	atgcaccttt	atctacaata	gcacccaaaa	780
tgcaactgca	tcaataatgt	tcatgcaaa	tttatcttct	gtggttgaat	tttghtaatgc	840
aagtaccac	aaccaagaag	caccaaacct	acagaaccag	atgtgcagcc	tcagaagtgc	900
atgggatgta	atcacagact	ctgctgactt	tcaccacagc	tttcccatga	acgggactga	960
gcttccacct	cctcccacat	tctcgcttgt	agaggtcgtg	gacaaagtgg	tctgtttagt	1020
gctggatgtg	tccagcaaga	tggcagaggc	tgacagactc	cttcaactac	aacaagccgc	1080
agaattttat	ttgatgcaga	ttgttgaaat	tcataccttc	gtgggcattg	ccagtttcga	1140
cagcaaagga	gagatcagag	cccagctaca	ccaaattaac	agcaatgatg	atcgaaagtt	1200
gctggtttca	tatctgcca	ccactgtatc	agctaaaaca	gacatcagca	tttgttcagg	1260
gcttaagaaa	ggatttgagg	tgggtgaaaa	actgaatgga	aaagcttatg	gctctgtgat	1320
gatattagtg	accagcggag	atgataagct	tcttggcaat	tgcttacc	atgtgtctcag	1380
cagtgggtca	acaattcact	ccattgcctt	gggttcatct	gcagcccaa	atctgtcagga	1440
attatcacgt	cttacaggag	gtttaaagtt	ctttgttcca	gatatatcaa	actccaatag	1500
catgattgat	gctttcagta	gaatttcctc	tggaactgga	gacattttcc	agcaacatat	1560
tcagcttgaa	agtacagggt	aaaatgtcaa	acctcaccat	caattgaaaa	acacagtgac	1620
tgtggataat	actgtgggca	acgacactat	gtttctagtt	acgtggcagg	ccagtgggtcc	1680
tcctgagatt	atattatttg	atcctgatgg	acgaaaatac	tacacaaata	attttatcac	1740
caatctaact	tttcggacag	ctagtctttg	gattccagga	acagctaagc	ctgggcactg	1800
gacttacacc	ctgaacaata	cccatcattc	tctgcaagcc	ctgaaagtga	cagtgcctc	1860
tcgcgcctcc	aactcagctg	tgccccagc	cactgtggaa	gcctttgtgg	aaagagacag	1920
cctccatttt	cctcatcctg	tgatgattta	tgccaatgtg	aaacagggat	tttatcccat	1980
tcttaatgcc	actgtcactg	ccacagttga	gccagagact	ggagatcctg	ttacgctgag	2040
actccttgat	gatggagcag	gtgctgatgt	tataaaaaat	gatggaattt	actcgaggta	2100
ttttttctcc	tttgctgcaa	atggtagata	tagcttgaaa	gtgcatgtca	atcactctcc	2160
cagcataagc	accccagccc	actctatttc	agggagtc	gctatgtatg	taccaggtta	2220
cacagcaaac	ggtaatatc	agatgaatgc	tccaaggaaa	tcagtaggca	gaaatgagga	2280
ggagcgaaag	tggggcttta	gccgagtcag	ctcaggaggc	tccttttcag	tgctgggagt	2340
tcagctggc	ccccaccctg	atgtgtttcc	accatgcaaa	attattgacc	tggaagctgt	2400
aaatagaaga	ggaattgacc	ctatcttggg	cagcacctgg	agaagacttt	gatcagggcc	2460
aggctacaag	ctatgaaata	agaatgagta	aaagtctaca	gaatatccaa	gatgacttta	2520
acaatgctat	tttagtaaat	acatcaaagc	gaaatcctca	gcaagctggc	atcagggaga	2580
tattttacgtt	ctcaccceaa	atttccacga	atggacctga	acatcagcca	aatggagaaa	2640
cacatgaaag	ccacagaatt	tatgttgcaa	tacgagcaat	ggataggaac	tccttacagt	2700
ctgctgtatc	taacattgcc	caggcgctc	tgttttattcc	ccccaattct	gatcctgtac	2760

ctgccagaga ttatcttata ttga

2784

<210> 169

<211> 592

<212> PRT

<213> Homo sapien

<400> 169

Met	Thr	Gln	Arg	Ser	Ile	Ala	Gly	Pro	Ile	Cys	Asn	Leu	Lys	Phe	Val
1				5					10					15	
Thr	Leu	Leu	Val	Ala	Leu	Ser	Ser	Glu	Leu	Pro	Phe	Leu	Gly	Ala	Gly
			20					25					30		
Val	Gln	Leu	Gln	Asp	Asn	Gly	Tyr	Asn	Gly	Leu	Leu	Ile	Ala	Ile	Asn
		35					40					45			
Pro	Gln	Val	Pro	Glu	Asn	Gln	Asn	Leu	Ile	Ser	Asn	Ile	Lys	Glu	Met
		50				55					60				
Ile	Thr	Glu	Ala	Ser	Phe	Tyr	Leu	Phe	Asn	Ala	Thr	Lys	Arg	Arg	Val
65					70				75						80
Phe	Phe	Arg	Asn	Ile	Lys	Ile	Leu	Ile	Pro	Ala	Thr	Trp	Lys	Ala	Asn
				85					90					95	
Asn	Asn	Ser	Lys	Ile	Lys	Gln	Glu	Ser	Tyr	Glu	Lys	Ala	Asn	Val	Ile
			100					105					110		
Val	Thr	Asp	Trp	Tyr	Gly	Ala	His	Gly	Asp	Asp	Pro	Tyr	Thr	Leu	Gln
		115					120					125			
Tyr	Arg	Gly	Cys	Gly	Lys	Glu	Gly	Lys	Tyr	Ile	His	Phe	Thr	Pro	Asn
	130					135					140				
Phe	Leu	Leu	Asn	Asp	Asn	Leu	Thr	Ala	Gly	Tyr	Gly	Ser	Arg	Gly	Arg
145					150					155					160
Val	Phe	Val	His	Glu	Trp	Ala	His	Leu	Arg	Trp	Gly	Val	Phe	Asp	Glu
				165					170					175	
Tyr	Asn	Asn	Asp	Lys	Pro	Phe	Tyr	Ile	Asn	Gly	Gln	Asn	Gln	Ile	Lys
			180					185					190		
Val	Thr	Arg	Cys	Ser	Ser	Asp	Ile	Thr	Gly	Ile	Phe	Val	Cys	Glu	Lys
		195					200					205			
Gly	Pro	Cys	Pro	Gln	Glu	Asn	Cys	Ile	Ile	Ser	Lys	Leu	Phe	Lys	Glu
	210					215					220				
Gly	Cys	Thr	Phe	Ile	Tyr	Asn	Ser	Thr	Gln	Asn	Ala	Thr	Ala	Ser	Ile
225					230					235					240
Met	Phe	Met	Gln	Ser	Leu	Ser	Ser	Val	Val	Glu	Phe	Cys	Asn	Ala	Ser
				245					250					255	
Thr	His	Asn	Gln	Glu	Ala	Pro	Asn	Leu	Gln	Asn	Gln	Met	Cys	Ser	Leu
			260					265					270		
Arg	Ser	Ala	Trp	Asp	Val	Ile	Thr	Asp	Ser	Ala	Asp	Phe	His	His	Ser
		275					280					285			
Phe	Pro	Met	Asn	Gly	Thr	Glu	Leu	Pro	Pro	Pro	Pro	Thr	Phe	Ser	Leu
		290				295					300				
Val	Glu	Ala	Gly	Asp	Lys	Val	Val	Cys	Leu	Val	Leu	Asp	Val	Ser	Ser
305					310					315					320
Lys	Met	Ala	Glu	Ala	Asp	Arg	Leu	Leu	Gln	Leu	Gln	Gln	Ala	Ala	Glu
				325					330					335	
Phe	Tyr	Leu	Met	Gln	Ile	Val	Glu	Ile	His	Thr	Phe	Val	Gly	Ile	Ala
			340					345					350		
Ser	Phe	Asp	Ser	Lys	Gly	Glu	Ile	Arg	Ala	Gln	Leu	His	Gln	Ile	Asn
		355					360					365			
Ser	Asn	Asp	Asp	Arg	Lys	Leu	Leu	Val	Ser	Tyr	Leu	Pro	Thr	Thr	Val

370	375	380
Ser Ala Lys Thr Asp Ile	Ser Ile Cys Ser Gly Leu Lys Lys Gly Phe	
385	390	395
Glu Val Val Glu Lys Leu Asn Gly Lys Ala Tyr Gly Ser Val Met Ile		400
	405	410
Leu Val Thr Ser Gly Asp Asp Lys Leu Gly Asn Cys Leu Pro Thr		415
	420	425
Val Leu Ser Ser Gly Ser Thr Ile His Ser Ile Ala Leu Gly Ser Ser		430
	435	440
Ala Ala Pro Asn Leu Glu Glu Leu Ser Arg Leu Thr Gly Gly Leu Lys		445
	450	455
Phe Phe Val Pro Asp Ile Ser Asn Ser Asn Ser Met Ile Asp Ala Phe		460
465	470	475
Ser Arg Ile Ser Ser Gly Thr Gly Asp Ile Phe Gln Gln His Ile Gln		480
	485	490
Leu Glu Ser Thr Gly Glu Asn Val Lys Pro His His Gln Leu Lys Asn		495
	500	505
Thr Val Thr Val Asp Asn Thr Val Gly Asn Asp Thr Met Phe Leu Val		510
	515	520
Thr Trp Gln Ala Ser Gly Pro Pro Glu Ile Ile Leu Phe Asp Pro Asp		525
	530	535
Gly Arg Lys Tyr Tyr Thr Asn Asn Phe Ile Thr Asn Leu Thr Phe Arg		540
545	550	555
Thr Ala Ser Leu Trp Ile Pro Gly Thr Ala Lys Pro Gly His Trp Thr		560
	565	570
Tyr Thr Leu Met Cys Phe His His Ala Lys Leu Leu Thr Trp Lys Leu		575
	580	585
		590

<210> 170

<211> 791

<212> PRT

<213> Homo sapien

<400> 170

Met Thr Gln Arg Ser Ile Ala Gly Pro Ile Cys Asn Leu Lys Phe Val	
1	5
Thr Leu Leu Val Ala Leu Ser Ser Glu Leu Pro Phe Leu Gly Ala Gly	
	20
Val Gln Leu Gln Asp Asn Gly Tyr Asn Gly Leu Leu Ile Ala Ile Asn	
	35
Pro Gln Val Pro Glu Asn Gln Asn Leu Ile Ser Asn Ile Lys Glu Met	
	50
Ile Thr Glu Ala Ser Phe Tyr Leu Phe Asn Ala Thr Lys Arg Arg Val	
65	70
Phe Phe Arg Asn Ile Lys Ile Leu Ile Pro Ala Thr Trp Lys Ala Asn	
	85
Asn Asn Ser Lys Ile Lys Gln Glu Ser Tyr Glu Lys Ala Asn Val Ile	
	100
Val Thr Asp Trp Tyr Gly Ala His Gly Asp Asp Pro Tyr Thr Leu Gln	
	115
Tyr Arg Gly Cys Gly Lys Glu Gly Lys Tyr Ile His Phe Thr Pro Asn	
	130
Phe Leu Leu Asn Asp Asn Leu Thr Ala Gly Tyr Gly Ser Arg Gly Arg	
145	150
Val Phe Val His Glu Trp Ala His Leu Arg Trp Gly Val Phe Asp Glu	
	155
	160

				165					170					175		
Tyr	Asn	Asn	Asp	Lys	Pro	Phe	Tyr	Ile	Asn	Gly	Gln	Asn	Gln	Ile	Lys	
			180					185					190			
Val	Thr	Arg	Cys	Ser	Ser	Asp	Ile	Thr	Gly	Ile	Phe	Val	Cys	Glu	Lys	
		195					200					205				
Gly	Pro	Cys	Pro	Gln	Glu	Asn	Cys	Ile	Ile	Ser	Lys	Leu	Phe	Lys	Glu	
	210					215					220					
Gly	Cys	Thr	Phe	Ile	Tyr	Asn	Ser	Thr	Gln	Asn	Ala	Thr	Ala	Ser	Ile	
225					230					235					240	
Met	Phe	Met	Gln	Ser	Leu	Ser	Ser	Val	Val	Glu	Phe	Cys	Asn	Ala	Ser	
			245					250						255		
Thr	His	Asn	Gln	Glu	Ala	Pro	Asn	Leu	Gln	Asn	Gln	Met	Cys	Ser	Leu	
			260					265					270			
Arg	Ser	Ala	Trp	Asp	Val	Ile	Thr	Asp	Ser	Ala	Asp	Phe	His	His	Ser	
		275					280					285				
Phe	Pro	Met	Asn	Gly	Thr	Glu	Leu	Pro	Pro	Pro	Pro	Thr	Phe	Ser	Leu	
	290					295					300					
Val	Glu	Ala	Gly	Asp	Lys	Val	Val	Cys	Leu	Val	Leu	Asp	Val	Ser	Ser	
305					310					315					320	
Lys	Met	Ala	Glu	Ala	Asp	Arg	Leu	Leu	Gln	Leu	Gln	Gln	Ala	Ala	Glu	
			325						330					335		
Phe	Tyr	Leu	Met	Gln	Ile	Val	Glu	Ile	His	Thr	Phe	Val	Gly	Ile	Ala	
			340					345					350			
Ser	Phe	Asp	Ser	Lys	Gly	Glu	Ile	Arg	Ala	Gln	Leu	His	Gln	Ile	Asn	
		355					360					365				
Ser	Asn	Asp	Asp	Arg	Lys	Leu	Leu	Val	Ser	Tyr	Leu	Pro	Thr	Thr	Val	
	370					375					380					
Ser	Ala	Lys	Thr	Asp	Ile	Ser	Ile	Cys	Ser	Gly	Leu	Lys	Lys	Gly	Phe	
385					390					395					400	
Glu	Val	Val	Glu	Lys	Leu	Asn	Gly	Lys	Ala	Tyr	Gly	Ser	Val	Met	Ile	
			405						410					415		
Leu	Val	Thr	Ser	Gly	Asp	Asp	Lys	Leu	Leu	Gly	Asn	Cys	Leu	Pro	Thr	
			420					425					430			
Val	Leu	Ser	Ser	Gly	Ser	Thr	Ile	His	Ser	Ile	Ala	Leu	Gly	Ser	Ser	
		435					440					445				
Ala	Ala	Pro	Asn	Leu	Glu	Glu	Leu	Ser	Arg	Leu	Thr	Gly	Gly	Leu	Lys	
	450					455					460					
Phe	Phe	Val	Pro	Asp	Ile	Ser	Asn	Ser	Asn	Ser	Met	Ile	Asp	Ala	Phe	
465					470					475					480	
Ser	Arg	Ile	Ser	Ser	Gly	Thr	Gly	Asp	Ile	Phe	Gln	Gln	His	Ile	Gln	
			485					490						495		
Leu	Glu	Ser	Thr	Gly	Glu	Asn	Val	Lys	Pro	His	His	Gln	Leu	Lys	Asn	
			500					505					510			
Thr	Val	Thr	Val	Asp	Asn	Thr	Val	Gly	Asn	Asp	Thr	Met	Phe	Leu	Val	
		515														

Ala Phe Val Glu Arg Asp Ser Leu His Phe Pro His Pro Val Met Ile
610 615 620
Tyr Ala Asn Val Lys Gln Gly Phe Tyr Pro Ile Leu Asn Ala Thr Val
625 630 635 640
Thr Ala Thr Val Glu Pro Glu Thr Gly Asp Pro Val Thr Leu Arg Leu
645 650 655
Leu Asp Asp Gly Ala Gly Ala Asp Val Ile Lys Asn Asp Gly Ile Tyr
660 665 670
Ser Arg Tyr Phe Phe Ser Phe Ala Asn Gly Arg Tyr Ser Leu Lys
675 680 685
Val His Val Asn His Ser Pro Ser Ile Ser Thr Pro Ala His Ser Ile
690 695 700
Pro Gly Ser His Ala Met Tyr Val Pro Gly Tyr Thr Ala Asn Gly Asn
705 710 715 720
Ile Gln Met Asn Ala Pro Arg Lys Ser Val Gly Arg Asn Glu Glu Glu
725 730 735
Arg Lys Trp Gly Phe Ser Arg Val Ser Ser Gly Gly Ser Phe Ser Val
740 745 750
Leu Gly Val Pro Ala Gly Pro His Pro Asp Val Phe Pro Pro Cys Lys
755 760 765
Ile Ile Asp Leu Glu Ala Val Asn Arg Arg Gly Ile Asp Pro Ile Leu
770 775 780
Asp Ser Thr Trp Arg Arg Leu
785 790

<210> 171

<211> 1491

<212> DNA

<213> Homo sapien

<400> 171

```

cctcctgcc  gccagtgaa  gacatgctta  cttccccttc  accttccttc  atgatgtggg      60
aagagtgctg  caaccagcc  ctagccaacg  ccgcatgaga  gggagtgtgc  cgagggcttc      120
tgagaagggtt  tctctcacat  ctgaaagaa  gcgcttaaga  tgtggcagcc  cctcttcttc      180
aagtggctct  tgtcctgttg  ccctgggagt  tctcaaattg  ctgcagcagc  ctccaccag      240
cctgaggatg  acatcaatac  acagaggaag  aagagtcagg  aaaagatgag  agaagttaca      300
gactctcctg  ggcgaccccg  agagcttacc  attcctcaga  cttcttcaca  tgggtgctaac      360
agatttgctc  ctaaaagtaa  agctctagag  gccgtcaaat  tggcaataga  agccgggttc      420
caccatattg  attctgcaca  tgtttacaat  aatgaggagc  aggttggtact  ggccatccga      480
agcaagattg  cagatggcag  tgtgaagaga  gaagacatat  tctacacttc  aaagctttgg      540
agcaattccc  atcgaccaga  gttggtccga  ccagccttgg  aaaggctcact  gaaaaatctt      600
caattggact  atgttgacct  ctatcttatt  cattttccag  tgtctgtaaa  gccaggtgag      660
gaagtgatcc  caaaagatga  aaatggaaaa  atactatttg  acacagtgga  tctctgtgcc      720
acatgggagg  ccatggagaa  gtgtaaagat  gcaggattgg  ccaagtccat  cgggggtgtcc      780
aacttcaacc  acaggctgct  ggagatgate  ctcaacaagc  cagggctcaa  gtacaagcct      840
gtctgcaacc  aggtggaatg  tcatccttac  ttcaaccaga  gaaaactgct  ggatttctgc      900
aagtcaaaaag  acattgttct  ggttgcttat  agtgctctgg  gatcccatcg  agaagaacca      960
tggttggaac  cgaactcccc  ggtgctcttg  gaggaccag  tcctttgtgc  cttggcaaaa     1020
aagcacaagc  gaacccagc  cctgattgcc  ctgcgtacc  agctgcagcg  tgggggtgtg     1080
gtcctggcca  agagctacaa  tgagcagcgc  atcagacaga  acgtgcaggt  gtttgaaattc     1140
cagttgactt  cagaggagat  gaaagccata  gatggcctaa  acagaaatgt  gcgatatttg     1200
acccttgata  tttttgctgg  cccccctaat  tatccatttt  ctgatgaata  ttaacatgga     1260
gggcattgca  tgaggtctgc  cagaaggccc  tgcgtgtgga  tggtgacaca  gaggatggct     1320
ctatgctggg  gactggacac  atcgctctcg  gttaaatact  tcctgcttgg  cgacttcagt     1380
aagctacagc  taagcccatc  ggccggaaaa  gaaagacaat  aattttgttt  ttcattttga     1440

```

aaaaattaaa tgctctctcc taaagattct tcacctaaaa aaaaaaaaaa a

1491

<210> 172
 <211> 364
 <212> PRT
 <213> Homo sapien

<400> 172
 Met Trp Gln Pro Leu Phe Phe Lys Trp Leu Leu Ser Cys Cys Pro Gly
 1 5 10 15
 Ser Ser Gln Ile Ala Ala Ala Ala Ser Thr Gln Pro Glu Asp Asp Ile
 20 25 30
 Asn Thr Gln Arg Lys Lys Ser Gln Glu Lys Met Arg Glu Val Thr Asp
 35 40 45
 Ser Pro Gly Arg Pro Arg Glu Leu Thr Ile Pro Gln Thr Ser Ser His
 50 55 60
 Gly Ala Asn Arg Phe Val Pro Lys Ser Lys Ala Leu Glu Ala Val Lys
 65 70 75 80
 Leu Ala Ile Glu Ala Gly Phe His His Ile Asp Ser Ala His Val Tyr
 85 90 95
 Asn Asn Glu Glu Gln Val Gly Leu Ala Ile Arg Ser Lys Ile Ala Asp
 100 105 110
 Gly Ser Val Lys Arg Glu Asp Ile Phe Tyr Thr Ser Lys Leu Trp Ser
 115 120 125
 Asn Ser His Arg Pro Glu Leu Val Arg Pro Ala Leu Glu Arg Ser Leu
 130 135 140
 Lys Asn Leu Gln Leu Asp Tyr Val Asp Leu Tyr Leu Ile His Phe Pro
 145 150 155 160
 Val Ser Val Lys Pro Gly Glu Glu Val Ile Pro Lys Asp Glu Asn Gly
 165 170 175
 Lys Ile Leu Phe Asp Thr Val Asp Leu Cys Ala Thr Trp Glu Ala Met
 180 185 190
 Glu Lys Cys Lys Asp Ala Gly Leu Ala Lys Ser Ile Gly Val Ser Asn
 195 200 205
 Phe Asn His Arg Leu Leu Glu Met Ile Leu Asn Lys Pro Gly Leu Lys
 210 215 220
 Tyr Lys Pro Val Cys Asn Gln Val Glu Cys His Pro Tyr Phe Asn Gln
 225 230 235 240
 Arg Lys Leu Leu Asp Phe Cys Lys Ser Lys Asp Ile Val Leu Val Ala
 245 250 255
 Tyr Ser Ala Leu Gly Ser His Arg Glu Glu Pro Trp Val Asp Pro Asn
 260 265 270
 Ser Pro Val Leu Leu Glu Asp Pro Val Leu Cys Ala Leu Ala Lys Lys
 275 280 285
 His Lys Arg Thr Pro Ala Leu Ile Ala Leu Arg Tyr Gln Leu Gln Arg
 290 295 300
 Gly Val Val Val Leu Ala Lys Ser Tyr Asn Glu Gln Arg Ile Arg Gln
 305 310 315 320
 Asn Val Gln Val Phe Glu Phe Gln Leu Thr Ser Glu Glu Met Lys Ala
 325 330 335
 Ile Asp Gly Leu Asn Arg Asn Val Arg Tyr Leu Thr Leu Asp Ile Phe
 340 345 350
 Ala Gly Pro Pro Asn Tyr Pro Phe Ser Asp Glu Tyr
 355 360

<210> 173
 <211> 1988
 <212> DNA
 <213> Homo sapiens

<400> 173
 cgaggagccgc ctccccgcgg cctcttcgct tttgtggcgg cgcccgcgct cgcaggccac 60
 tctctgctgt cgcccgctccc gcgcgctcct ccgaccgct ccgctccgct ccgctcggcc 120
 ccgcgcccgc cgtcaacatg atccgctgcg gcctggcctg cgagcgctgc cgtcggatcc 180
 tgcccctgct cctactcagc gccatcgctc tcgacatcat cgcgctggcc ggccgcggct 240
 ggttgcaagt tagcgaccac ggccagacgt cctcgctgtg gtggaaatgc tcccaagagg 300
 gcggcggcag cgggtcctac gaggagggtg gtcagagcct catggagtac gcgtggggta 360
 gagcagcggc tgccatgctc ttctgtggct tcatcatcct ggtgatctgt ttcacctct 420
 ccttcttcgc cctctgtgga cccagatgc ttgtcttcct gagagtgatt ggaggctctcc 480
 ttgccttggc tgctgtgttc cagatcatct ccctggtaat ttaccccgctg aagtaacccc 540
 agaccttcac ccttcatgcc aacctgctg tcacttacat ctataactgg gcctacggct 600
 ttgggtgggc agccacgatt atcctgatcg gctgtgcctt cttcttctgc tgccctccca 660
 actacgaaga tgaccttctg ggcaatgcc agcccaggta cttctacaca tctgctaacc 720
 ttgggaatga atgtgggaga aaatcgctgc tgctgagatg gactccagaa gaagaaactg 780
 tttctccagg cgactttgaa cccatttttt ggcaagtgtc atattattaa actagtcaaa 840
 aatgctaaaa taatttgga gaaaatattt ttaagtagt gttatagttt catgtttatc 900
 ttttattatg ttttgtgaag ttgtgtcttt tcactaatta cctatactat gccaatattt 960
 ccttatactc atccataaca tttatactac atttgaaga gaatatgcac gtgaaactta 1020
 acattttata aggtaaaaat gaggtttcca agatttaata atctgatcaa gttcttgta 1080
 tttccaaata gaatggactt ggtctgttaa gggctaagga gaagaggaag ataagggtta 1140
 aagttgttaa tgaccaaaca ttctaaaaga aatgcaaaaa aaaagtatat tttcaagcct 1200
 tcgaactatt taaggaaagc aaaatcattt cctaaatgca tatcatttgt gagaatttct 1260
 cattaatatc ctgaatcatt catttcagct aaggcttcat gttgactcga tatgtcatct 1320
 aggaaagtac tatttcatgg tccaaacctg ttgccatagt tggtaaggct ttcctttaag 1380
 tgtgaaatat ttagatgaaa ttttctcttt taaagtctt tatagggtta ggggtgtgga 1440
 aaatgctata ttaataaatc tgtagtggtt tgtgtttata tggtcagaac cagagtagac 1500
 tggattgaaa gatggactgg gtctaattta tcatgactga tagatctggt taagtttgtt 1560
 agtaaagcat taggaggggtc attcytgtca caaaagtgcc actaaaacag cctcaggaga 1620
 ataaatgact tgcttttcta aatctcaggt ttatctgggc tctatcatat agacaggctt 1680
 ctgatagttt gcarctgtaa gcagaaacct acatatagtt aaaatcctgg tctttcttgg 1740
 taaacagatt ttaaattgtc gatataaaac atgccacagg agaattcggg gatttgagtt 1800
 tctctgaata gcatatatat gatgcacgg ataggtcatt atgatttttt accatttcga 1860
 cttacataat gaaaaccaat tcattttaaa tatcagatta ttattttgta agttgtggaa 1920
 aaagctaatt gtagttttta ttatgaagtt ttcccaataa accaggtatt ctaaaaaaaaa 1980
 aaaaaaaaa 1988

<210> 174
 <211> 238
 <212> PRT
 <213> Homo sapiens

<400> 174
 Gly Ala Ala Ser Pro Arg Pro Leu Arg Phe Cys Gly Gly Ala Arg Ala
 5 10 15
 Arg Arg Pro Leu Ser Ala Val Ala Arg Pro Ala Arg Ser Ser Asp Pro
 20 25 30
 Leu Arg Ser Ala Pro Leu Gly Pro Ala Pro Pro Val Asn Met Ile Arg

35	40	45
Cys Gly Leu Ala Cys Glu Arg Cys Arg Trp Ile Leu Pro Leu Leu Leu		
50	55	60
Leu Ser Ala Ile Ala Phe Asp Ile Ile Ala Leu Ala Gly Arg Gly Trp		
65	70	75 80
Leu Gln Ser Ser Asp His Gly Gln Thr Ser Ser Leu Trp Trp Lys Cys		
	85	90 95
Ser Gln Glu Gly Gly Gly Ser Gly Ser Tyr Glu Glu Gly Cys Gln Ser		
	100	105 110
Leu Met Glu Tyr Ala Trp Gly Arg Ala Ala Ala Ala Met Leu Phe Cys		
	115	120 125
Gly Phe Ile Ile Leu Val Ile Cys Phe Ile Leu Ser Phe Phe Ala Leu		
	130	135 140
Cys Gly Pro Gln Met Leu Val Phe Leu Arg Val Ile Gly Gly Leu Leu		
145	150	155 160
Ala Leu Ala Ala Val Phe Gln Ile Ile Ser Leu Val Ile Tyr Pro Val		
	165	170 175
Lys Tyr Thr Gln Thr Phe Thr Leu His Ala Asn Pro Ala Val Thr Tyr		
	180	185 190
Ile Tyr Asn Trp Ala Tyr Gly Phe Gly Trp Ala Ala Thr Ile Ile Leu		
	195	200 205
Ile Gly Cys Ala Phe Phe Phe Cys Cys Leu Pro Asn Tyr Glu Asp Asp		
210	215	220
Leu Leu Gly Asn Ala Lys Pro Arg Tyr Phe Tyr Thr Ser Ala		
225	230	235

<210> 175

<211> 4181

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (3347)

<223> n=A,T,C or G

<221> unsure

<222> (3502)

<223> n=A,T,C or G

<221> unsure

<222> (3506)

<223> n=A,T,C or G

<221> unsure
 <222> (3520)
 <223> n=A,T,C or G
 <221> unsure
 <222> (3538)
 <223> n=A,T,C or G
 <221> unsure
 <222> (3549)
 <223> n=A,T,C or G
 <221> unsure
 <222> (3646)
 <223> n=A,T,C or G
 <221> unsure
 <222> (3940)
 <223> n=A,T,C or G
 <221> unsure
 <222> (3968)
 <223> n=A,T,C or G
 <221> unsure
 <222> (3974)
 <223> n=A,T,C or G
 <221> unsure
 <222> (4036)
 <223> n=A,T,C or G
 <221> unsure
 <222> (4056)
 <223> n=A,T,C or G
 <221> unsure
 <222> (4062)
 <223> n=A,T,C or G
 <221> unsure
 <222> (4080)
 <223> n=A,T,C or G
 <221> unsure
 <222> (4088)
 <223> n=A,T,C or G
 <221> unsure
 <222> (4115)
 <223> n=A,T,C or G

<400> 175

```

ggtggatgcg tttgggttgt agctaggctt tttcttttct ttctctttta aaacacatct 60
agacaaggaa aaaacaagcc tcggatctga tttttcactc ctctgttcttg tgcttggttc 120
ttactgtgtt tgtgtatttt aaaggcgaga agacgagggg aacaaaacca gctggatcca 180
tccatcaccg tgggtgggtt taatttttctg ttttttctcg ttattttttt ttaaacaacc 240
actcttcaca atgaacaaac tgtatatcgg aaacctcagc gagaacgcgc cccctcggga 300
cctagaaagt atcttcaagg acgccaagat cccggtgtcg ggaccttcc tggatgaagac 360
tggctacgcg ttcgtggact gcccggaaga gagctgggac ctcaaggcca tcgaggcgct 420
ttcaggtaaa atagaactgc acgggaaacc catagaagtt gagcactcgg tcccaaaaag 480
gcaaaggatt cggaacttc agatacgaat tatccgcct catttacagt gggaggtgct 540
ggatagttta ctagtccagt atggagtggg ggagagctgt gagcaagtga aactgactc 600
ggaaactgca gttgtaaatg taacctattc cagtaaggac caagctagac aagcactaga 660
caaactgaat ggatttcagt tagagaattt caccttgaaa gtacgcctata tccctgatga 720
aatggccgcc cagcaaaacc ccttcagca gccccaggt cgccgggggc ttgggcagag 780
gggctcctca aggcaggggt ctccaggatc cgtatccaag cagaaacat gtgatttgcc 840

```

```

tctgcgcctg ctgggttccca cccaatttgt tggagccatc ataggaaaag aaggtgccac 900
cattcggaac atcaccaaac agacccagtc taaaatcgat gtccaccgta aagaaaatgc 960
gggggctgct gagaagtcga ttactatcct ctctactcct gaaggcacct ctgcggttg 1020
taagtctatt ctggagatta tgcataagga agctcaagat ataaaattca cagaagagat 1080
ccccttgaag attttagctc ataataactt tgttggacgt cttattggta aagaaggaa 1140
aaatcttaaa aaaattgagc aagacacaga cactaaaatc acgatatctc cattgcagga 1200
attgacgctg tataatccag aacgcactat tacagttaaa ggcaatgttg agacatgtgc 1260
caaagctgag gaggagatca tgaagaaaat cagggagctc tatgaaaatg atattgcttc 1320
tatgaatctt caagcacatt taattcctgg attaaatctg aacgccttgg gtctgttccc 1380
accacttca gggatgccac ctcccacctc agggccccc tccagccatga ctctcccta 1440
cccgcagttt gagcaatcag aaacggagac tgttcacag tttatcccag ctctatcagt 1500
cgggtgccatc atcggcaagc agggccagca catcaagcag ctttctcgct ttgctggagc 1560
ttcaattaag attgctccag cggaagcacc agatgctaaa gtgaggatgg tgattatcac 1620
tggaccacca gaggtcagt tcaaggctca gggaagaatt tatggaaaaa ttaaagaaga 1680
aaactttgtt agtcctaaag aagaggtgaa acttgaagct catatcagag tgccatcctt 1740
tgctgctggc agagttattg gaaaaggagg caaaacgggtg aatgaacttc agaatttgtc 1800
aagtgcagaa gttgttgtcc ctctgaccca gacacctgat gagaatgacc aagtggttgt 1860
caaaataact ggtcacttct atgcttgcca ggttgcccag agaaaaattc aggaaattct 1920
gactcaggta aagcagcacc aacaacagaa ggctctgcaa agtggaccac ctcagtcaag 1980
acggaagtaa aggtcagga aacagcccac cacagaggca gatgccaaac caaagacaga 2040
ttgcttaacc aacagatggg cgctgacccc ctatccagaa tcacatgcac aagtttttac 2100
ctagccagtt gtttctgagg accaggcaac ttttgaactc ctgtctctgt gagaatgtat 2160
actttatgct ctctgaaatg tatgacaccc agctttaaaa caaacaaca aacaaacaaa 2220
aaaaggggtg gggaggagg gaaagagaag agctctgcac ttcccttgtg tgtagtctca 2280
cagtataaca gatattctaa ttcttcttaa tattcccca taatgccaga aattggctta 2340
atgatgcttt cactaaattc atcaaataga ttgtccttaa atccaattgt taaaattgga 2400
tcagaataat tatcacagga acttaaatgt taagccatta gcatagaaaa actgttctca 2460
gttttatttt tacctaacac taacatgagt aacctaaagg aagtgtgaa tgggtgtggc 2520
aggggtatta aacgtgcatt tttactcaac tacctcaggt attcagtaat acaattgaaa 2580
gcaaaattgt tccttttttt tgaaaaattt atatacttta taatgataga agtccaaccg 2640
ttttttaaaa aataaattta aaatttaaca gcaatcagct aacaggcaaa ttaagatttt 2700
tacttctggc tggtgacagt aaagctggaa aattaatttc agggtttttt gaggcttttg 2760
acacagttat tagttaaatc aaatgttcaa aaatacggag cagtgcctag tatctggaga 2820
gcagcactac catttattct ttcatttata gttgggaaag ttttgacgg tactaacaaa 2880
gtggtcgag gagatttttg aacggctggt ttaaatggct tcaggagact tcagtttttt 2940
gttttagctac atgattgaat gcataataaa tgctttgtgc ttctgactat caatacctaa 3000
agaaagtgca tcagtgaaga gatgcaagac tttcaactga ctggcaaaaa gcaagcttta 3060
gcttgtctta taggatgctt agtttgccac tacacttcag accaatggga cagtcataga 3120
tggtgtgaca gtgttttaaac gcaacaaaaa gctacatttc catggggcca gactgtcat 3180
gagcctcact aagctatttt gaagattttt aagcactgat aaattaaaaa aaaaaaaaaa 3240
aaattagact ccaccttaag tagtaaagta taacaggatt tctgtatact gtgcaatcag 3300
ttctttgaaa aaaaagtcaa aagatagaga atacaagaaa agttttnggg atataatttg 3360
aatgactgtg aaaacatatg acctttgata acgaactcat ttgctcactc cttgacagca 3420
aagcccagta cgtacaattg tgttgggtgt ggggtggtctc caaggccacg ctgctctctg 3480
aattgatttt ttgagttttg gnttgnaaga tgatcacagn catgttacac tgatcttnaa 3540
ggacatatnt tataaccctt taaaaaaaaa atcccctgcc tcattcttat ttcgagatga 3600
atttcgatac agactagatg tctttctgaa gatcaattag acattntgaa aatgatttaa 3660
agtgttttcc ttaatgttct ctgaaaaaaa gtttcttttg tagttttaac caaaaaagt 3720
ccctttttgt cactggtttc tcctagcatt catgattttt ttttcacaca atgaattaaa 3780
attgctaaaa tcatggactg gctttctggt tggatttcag gtaagatgtg ttaaggcca 3840
gagcttttct cagtatttga tttttttccc caatatttga ttttttaaaa atatacacat 3900
aggagctgca tttaaaacct gctggtttta attctgtcan atttcacttc tagcctttta 3960
gtatggcnaa tcanaattta cttttactta agcattttgt atttggagta tctggtacta 4020
gctaagaaat aattcnataa ttgagttttg tactcnccaa anatgggtca ttcctcatgn 4080
ataatgtnc cccaatgcag cttcattttc caganacctt gacgcaggat aaattttttc 4140

```

atcatttagg tccccaaaaa aaaaaaaaaa aaaaaaaaaa a

4181

<210> 176

<211> 580

<212> PRT

<213> Homo sapiens

<400> 176

Met Asn Lys Leu Tyr Ile Gly Asn Leu Ser Glu Asn Ala Ala Pro Ser
5 10 15

Asp Leu Glu Ser Ile Phe Lys Asp Ala Lys Ile Pro Val Ser Gly Pro
20 25 30

Phe Leu Val Lys Thr Gly Tyr Ala Phe Val Asp Cys Pro Asp Glu Ser
35 40 45

Trp Ala Leu Lys Ala Ile Glu Ala Leu Ser Gly Lys Ile Glu Leu His
50 55 60

Gly Lys Pro Ile Glu Val Glu His Ser Val Pro Lys Arg Gln Arg Ile
65 70 75 80

Arg Lys Leu Gln Ile Arg Asn Ile Pro Pro His Leu Gln Trp Glu Val
85 90 95

Leu Asp Ser Leu Leu Val Gln Tyr Gly Val Val Glu Ser Cys Glu Gln
100 105 110

Val	Asn	Thr	Asp	Ser	Glu	Thr	Ala	Val	Val	Asn	Val	Thr	Tyr	Ser	Ser
	115						120					125			

Lys Asp Gln Ala Arg Gln Ala Leu Asp Lys Leu Asn Gly Phe Gln Leu
130 135 140

Glu Asn Phe Thr Leu Lys Val Ala Tyr Ile Pro Asp Glu Met Ala Ala
145 150 155 160

Gln Gln Asn Pro Leu Gln Gln Pro Arg Gly Arg Arg Gly Leu Gly Gln
165 170 175

Arg Gly Ser Ser Arg Gln Gly Ser Pro Gly Ser Val Ser Lys Gln Lys
180 185 190

Pro Cys Asp Leu Pro Leu Arg Leu Leu Val Pro Thr Gln Phe Val Gly
195 200 205

Ala Ile Ile Gly Lys Glu Gly Ala Thr Ile Arg Asn Ile Thr Lys Gln
210 215 220

Thr Gln Ser Lys Ile Asp Val His Arg Lys Glu Asn Ala Gly Ala Ala
225 230 235 240

Glu Lys Ser Ile Thr Ile Leu Ser Thr Pro Glu Gly Thr Ser Ala Ala
245 250 255

Cys Lys Ser Ile Leu Glu Ile Met His Lys Glu Ala Gln Asp Ile Lys
 260 265 270
 Phe Thr Glu Glu Ile Pro Leu Lys Ile Leu Ala His Asn Asn Phe Val
 275 280 285
 Gly Arg Leu Ile Gly Lys Glu Gly Arg Asn Leu Lys Lys Ile Glu Gln
 290 295 300
 Asp Thr Asp Thr Lys Ile Thr Ile Ser Pro Leu Gln Glu Leu Thr Leu
 305 310 315 320
 Tyr Asn Pro Glu Arg Thr Ile Thr Val Lys Gly Asn Val Glu Thr Cys
 325 330 335
 Ala Lys Ala Glu Glu Glu Ile Met Lys Lys Ile Arg Glu Ser Tyr Glu
 340 345 350
 Asn Asp Ile Ala Ser Met Asn Leu Gln Ala His Leu Ile Pro Gly Leu
 355 360 365
 Asn Leu Asn Ala Leu Gly Leu Phe Pro Pro Thr Ser Gly Met Pro Pro
 370 375 380
 Pro Thr Ser Gly Pro Pro Ser Ala Met Thr Pro Pro Tyr Pro Gln Phe
 385 390 395 400
 Glu Gln Ser Glu Thr Glu Thr Val His Gln Phe Ile Pro Ala Leu Ser
 405 410 415
 Val Gly Ala Ile Ile Gly Lys Gln Gly Gln His Ile Lys Gln Leu Ser
 420 425 430
 Arg Phe Ala Gly Ala Ser Ile Lys Ile Ala Pro Ala Glu Ala Pro Asp
 435 440 445
 Ala Lys Val Arg Met Val Ile Ile Thr Gly Pro Pro Glu Ala Gln Phe
 450 455 460
 Lys Ala Gln Gly Arg Ile Tyr Gly Lys Ile Lys Glu Glu Asn Phe Val
 465 470 475 480
 Ser Pro Lys Glu Glu Val Lys Leu Glu Ala His Ile Arg Val Pro Ser
 485 490 495
 Phe Ala Ala Gly Arg Val Ile Gly Lys Gly Gly Lys Thr Val Asn Glu
 500 505 510
 Leu Gln Asn Leu Ser Ser Ala Glu Val Val Val Pro Arg Asp Gln Thr
 515 520 525
 Pro Asp Glu Asn Asp Gln Val Val Val Lys Ile Thr Gly His Phe Tyr
 530 535 540

Ala Cys Gln Val Ala Gln Arg Lys Ile Gln Glu Ile Leu Thr Gln Val
 545 550 555 560

Lys Gln His Gln Gln Gln Lys Ala Leu Gln Ser Gly Pro Pro Gln Ser
 565 570 575

Arg Arg Lys

<210> 177

<211> 401

<212> DNA

<213> Homo sapiens

<400> 177

```
atgccccgta aatgtcttca gtgttcttca gggtagttgg gatctcaaaa gatttggttc 60
agatccaaac aaatacacat tctgtgtttt agctcagtggt tttctaaaaa aagaaactgc 120
cacacagcaa aaaattgttt actttgttgg acaaaccaaa tcagttctca aaaaatgacc 180
gggtgcttata aaaagttata aatatcgagt agctctaaaa caaaccacct gaccaagagg 240
gaagtggagct tgtgcttagt atttacattg gatgccagtt ttgtaatcac tgacttatgt 300
gcaaaactggg gcagaaaattc tataaaactct ttgctgtttt tgatacctgc tttttgtttc 360
attttgtttt gttttgtaaa aatgataaaa cttcagaaaa t 401
```

<210> 178

<211> 561

<212> DNA

<213> Homo sapiens

<400> 178

```
acgcctttca aggggtgtacg caaagcactc attgataccc ttttggtatgg ctatgaaaca 60
gcccgctatg ggacaggggt ctttggccag aatgagtacc tacgctatca ggaggccctg 120
agtggagctgg ccaactgcggt taaagcacga attgggagct ctcagcgaca tcaccagtca 180
gcagccaaaag acctaactca gtccccctgag gtctcccca caaccatcca ggtgacatac 240
ctccccctcca gtcagaagag taaacgtgcc aagcacttcc ttgaattgaa gagctttaag 300
gataactata acacattgga gagtactctg tgacggagct gaaggactct tgccgtagat 360
taagccagtc agttgcaatg tgcaagacag gctgcttgcc gggccgccct cggaacatct 420
ggcccagcag gccagactg tatccatcca agttcccgtt gtatccagag ttcttagagc 480
ttgtgtctaa agggtaattc cccaaccctt ccttatgagc attttttagaa cattggctaa 540
gactattttc cccagtagc g 561
```

<210> 179

<211> 521

<212> DNA

<213> Homo sapiens

<400> 179

```
cccaacgcgt ttgcaaatat tcccctggta gcctaacttc ttacccccga atattggtaa 60
gatcgagcaa tggcttcagg acatgggttc tcttctctg tgatcattca agtgctcact 120
gcatgaagac tggcttgtct cagtgtttca acctcaccag ggctgtctct tgggtccacac 180
ctcgtccct gttagtgccg tatgacagcc cccatcaaat gaccttggtc aagtcacggt 240
ttctctgtgg tcaaggttgg ttggctgatt ggtggaaagt aggggtggacc aaaggaggcc 300
acgtgagcag tcagcaccag ttctgcacca gcagcgctc cgtcctagtg ggtgttctg 360
tttctcctgg ccctgggtgg gctagggcct gattcgggaa gatgccttg cagggagggg 420
aggataagtg ggatctacca attgattctg gcaaaacaat ttctaagatt tttttgcttt 480
```

atgtgggaaa cagatctaaa tctcatttta tgctgtatatt t

521

<210> 180

<211> 417

<212> DNA

<213> Homo sapiens

<400> 180

```

ggtggaattc gccgaagatg gcggaggtgc aggtcctggt gcttgatggt cgaggccatc 60
tcctggggccg cctggcggcc atcgtggcta aacaggtact gctggggccg aaggtggtgg 120
tcgtacgctg tgaaggcatc aacatttctg gcaatttcta cagaaacaag ttgaagtacc 180
tggttttctt ccgcaagcgg atgaacacca acccttcccg agggccctac cacttccggg 240
ccccagccg catcttctgg cggaccgtgc gaggtatgct gcccacaaa accaagcgag 300
gccaggccgc tctggaccgt ctcaaggtgt ttgacggcat cccaccgcc tacgacaaga 360
aaaagcggat ggtggttctt gctgccctca aggtcgtgcg tctgaagcct acaagaa 417

```

<210> 181

<211> 283

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (35)

<223> n=A,T,C or G

<400> 181

```

gattttcttct aaataggatg taaaacttct ttcanattac tcttcctcag tcctgcctgc 60
caagaactca agtgtaactg tgataaaata acctttccca ggtatatagg caggtagtg 120
tgtaattctca gaatacacag gtgacataga tatgatatga caactggtaa tggtaggattc 180
atttacattg tttacacttc tatgaccagg ccttaaggga aggtcagttt tttaaaaaac 240
caagtagtgt cttcctacct atctccagat acatgtcaaa aaa 283

```

<210> 182

<211> 401

<212> DNA

<213> Homo sapiens

<400> 182

```

atattcttgc tgcttatgca gctgacattg ttgccctccc taaagcaacc aagtagcctt 60
tatttcccac agtgaaagaa aacgctggcc tatcagttac attacaaaag gcagatttca 120
agaggattga gtaagtagtt ggatggcttt cataaaaaaca agaattcaag aagaggattc 180
atgctttaag aaacatttgt tatacattcc tcacaaatta tacctgggat aaaaactatg 240
tagcaggcag tgtgttttcc ttccatgtct ctctgacta cctgcagtgt gtcctctgag 300
gctgcaagtc tgtcctatct gaattcccag cagaagcact aagaagctcc accctatcac 360
ctagcagata aaactatggg gaaaacttaa atctgtgcat a 401

```

<210> 183

<211> 366

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (325)

<223> n=A,T,C or G

<400> 183

```
accgtgtcca agttttttaga acccttggtta gccagaccga ggtgtcctgg tcaccgtttc 60
accatcatgc tttgatgttc cctgtctttt ctctcttctg ctctcaagag caaagggttaa 120
tttaaggaca aagatgaagt cactgtaaac taatctgtca ttgtttttac ctcccttttc 180
tttttcagtg cagaaattaa aagtaagtat aaagcaccgt gattgggagt gtttttgctg 240
gtgtcggaat cactggtaaa tgttggtgta gaacaatccc tccccttgca cttgtgaaaa 300
cactttgagc gctttaagag attancctga gaaataatta aatatctttt ctcttcaaaa 360
aaaaaa
```

<210> 184

<211> 370

<212> DNA

<213> Homo sapiens

<400> 184

```
tcttacttca aaagaaaaat aaacataaaa aataagttgc tggttcctaa caggaaaaat 60
tttaataatt gtactgagag aaactgctta cgtacacatt gcagatcaaa tatttgaggt 120
taaaatgtta gtctacatag atgggtgatt gtaactttat tgccattaaa agatttcaaa 180
ttgcattcat gcttctgtgt acacataatg aaaaatgggc aaataatgaa gatctctcct 240
tcagtctgct ctgtttaatt ctgctgtctg ctcttctcta atgctgctgc cctaattgta 300
cacagtttag tgatatctag gagtataaag ttgtcgccca tcaataaaaa tcacaaagtt 360
ggtttaaaaa
```

<210> 185

<211> 107

<212> DNA

<213> Homo sapiens

<400> 185

```
ctcatattat tttccttttg agaaattgga aactctttct gttgctatta tattaataaaa 60
gttggtgttt attttctggt agtcaccttc cccatttaaa aaaaaaa 107
```

<210> 186

<211> 309

<212> DNA

<213> Homo sapiens

<400> 186

```
gaaaggatgg ctctggttgc cacagagctg ggacttcatg ttcttctaga gagggccaca 60
agagggccac aggggtggcc gggagttgtc agctgatgcc tgctgagagg caggaattgt 120
gccagtgagt gacagtcagt agggagtgtc tcttcttggg gaggaaagaa ggtagagcct 180
ttctgtctga atgaaaggcc aaggctacag tacagggccc cgccccagcc aggggtgttaa 240
tgcccacgta gtggaggcct ctggcagatc ctgcattcca aggtcactgg actgtacgtt 300
tttatggtt
```

<210> 187

<211> 477

<212> DNA

<213> Homo sapiens

<400> 187

```
ttcagtctta gcaagaagcg agaattctga gatcctccag aaagtcgagc agcaccacc 60
tccaacctcg ggccagtgtc ttcaggcttt actggggacc tgcgagctgg cctaattgtg 120
```

```

tggcctgcaa gccaggccat ccttggggcgc cacagacgag ctccgagcca ggtcaggctt 180
cggaggccac aagctcagcc tcaggcccag gcactgattg tggcagaggg gccactaccc 240
aaggtctagc taggcccag acctagttac ccagacagtg agaagcccct ggaaggcaga 300
aaagttggga gcatggcaga cagggaaggg aaacattttc agggaaaaga catgtatcac 360
atgtcttcag aagcaagtca ggtttcattg aaccgagtg cctcttgctg gtccaaaagt 420
agcccagggc tgtagcacag gcttcacagt gattttgtgt tcagccgtga gtcacac 477

```

<210> 188

<211> 220

<212> DNA

<213> Homo sapiens

<400> 188

```

taaatatggg agatattaat attcctctta gatgaccagt gattccaatt gtcccaagtt 60
ttaaataagt accctgtgag tatgagataa attagtgaca atcagaacaa gtttcagtat 120
cagatgttca agaggaagtt gctattgcat tgattttaat atttgtacat aaacactgat 180
ttttttgagc attattttgt atttgtttga ctttaataacc 220

```

<210> 189

<211> 417

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (76)

<223> n=A,T,C or G

<221> unsure

<222> (77)

<223> n=A,T,C or G

<400> 189

```

accatcttga cagaggatag atgtctccaa aacgtttgtt accacactta aaaatcactg 60
ccatcattaa gcatcnnttt caaaattata gccattcatg atttactttt tccagatgac 120
tatcattatt ctagtccctt gaatttgtaa ggggaaaaaa aacaaaaaca aaaacttacg 180
atgcactttt ctccagcaca tcagatttca aattgaaaat taaagacatg ctatggtaat 240
gcacttgcta gtactacaca ctttgtacaa caaaaaacag aggcaagaaa caacggaaaag 300
agaaaagcct tcctttgttg gcccttaaac tgagtcaaga tctgaaatgt agagatgatc 360
tctgacgata cctgtatggt cttattgtgt aaataaaatt gctggtatga aatgaca 417

```

<210> 190

<211> 497

<212> DNA

<213> Homo sapiens

<400> 190

```

gcactgcggc gctctcccgt cccgcgggtg ttgctgctgc tgccgctgct gctgggcctg 60
aacgcaggag ctgtcattga ctggcccaca gaggagggca aggaagtatg ggattatgtg 120
acggtccgca aggatgccta catgttcttg tggctctatt atgccaccaa ctccctgcaag 180
aacttctcag aactgcccct ggtcatgttg cttcaggggc gtccaggcgg ttctagcact 240
ggatttgga aactttgagga aattgggccc cttgacagtg atctcaaacc acggaaaaacc 300
acctggctcc aggctgccag tctcctatct gtggataatc ccgtgggcac tgggttcagt 360
tatgtgaatg gtagtggtgc ctatgccaa gacctggcta tgggtggctc agacatgatg 420
gttctcctga agaccttctt cagttgccac aaagaattcc agacagttcc attctacatt 480
ttctcagagt cctatgg 497

```

<210> 191
 <211> 175
 <212> DNA
 <213> Homo sapiens

<400> 191
 atgttgaata ttttgcttat taactttggt tattgtcttc tccctcgatt agaataattag 60
 ctacttgagt acaaggattt gagcctgtta cattcactgc tgaatttttag gtccttgga 120
 gatacccagc attcaataga gaccacacaa taaatatatg tcaaataaaa aaaaa 175

<210> 192
 <211> 526
 <212> DNA
 <213> Homo sapiens

<400> 192
 agtaaacatt attatTTTTT ttatatttgc aaaggaaaca tatctaatacc ttcctataga 60
 aagaacagta ttgctgtaat tccttttctt ttcttctctca tttcctctgc cccttaaaaag 120
 attgaagaaa gagaaacttg tcaactcata tccacgttat ctagcaaagt acataagaat 180
 ctatcactaa gtaatgtatc cttcagaatg tggttggtta ccagtgcacac cccatattca 240
 tcacaaaatt aaagcaagaa gtccatagta atttatttgc taatagtgga tttttaatgc 300
 tcagagtttc tgaggtcaaa ttttatcttt tcacttacaa gctctatgat cttaaataat 360
 ttacttaatg tattttggtg tattttcctc aaattaatat tgggtgttcaa gactatatct 420
 aattcctctg atcactttga gaaacaaact tttattaaat gtaaggcact tttctatgaa 480
 ttttaaatat aaaaataaat attgttctga ttattactga aaaaaa 526

<210> 193
 <211> 553
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (290)
 <223> n=A,T,C or G
 <221> unsure
 <222> (300)
 <223> n=A,T,C or G
 <221> unsure
 <222> (411)
 <223> n=A,T,C or G
 <221> unsure
 <222> (441)
 <223> n=A,T,C or G

<400> 193
 tccattgtgg tggaattcgc tctctggtaa aggcgtagc gtgttggtccg cggcctctga 60
 gctgggatga gccgtgctcc cgggtggaagc aagggagccc agccggagcc atggccagta 120
 cagtggtagc agttggactg accattgctg ctgcaggatt tgcaggccgt tacgttttgc 180
 aagccatgaa gcatatggag cctcaagtaa aacaagtttt tcaaagccta ccaaaatctg 240
 ctttcagtgg tggctattat agaggtgggt ttgaacccaa aatgacaaan cgggaagcan 300
 cattaatact aggtgtaagc cctactgcc aataagggaa aataagagat gctcatcgac 360
 gaattatgct tttaaatcat cctgacaaag gaggatctcc ttatatagca nccaaaatca 420
 atgaagctaa agatttacta naaggtcaag ctaaaaaatg aagtaaattg atgatgaatt 480

ttaagttcgt attagtttat gtatatgagt actaagtttt tataataaaa tgcctcagag 540
ctacaatttt aaa 553

<210> 194
<211> 320
<212> DNA
<213> Homo sapiens

<400> 194
cccttcccaa tccatcagta aagaccccat ctgccttgct catgccgttt cccaacaggg 60
atgtcacttg atatgagaat ctcaaatctc aatgccttat aagcattcct tcctgtgtcc 120
attaagactc tgataattgt ctccccctcca taggaatttc tcccaggaaa gaaatatatc 180
cccatctccg tttcatatca gaactaccgt ccccgatatt cccttcagag agattaaaga 240
ccagaaaaaa gtgagcctct tcatctgcac ctgtaatagt ttcagttcct attttcttcc 300
attgacccat atttatacct 320

<210> 195
<211> 320
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (203)
<223> n=A,T,C or G
<221> unsure
<222> (218)
<223> n=A,T,C or G

<400> 195
aagcatgacc tggggaaatg gtcagacctt gtatttgtgt tttggccttg aaagtagcaa 60
gtgaccagaa tctgccatgg caacaggctt taaaaaagac ccttaaaaag acactgtctc 120
aactgtggtg ttagcaccag ccagctctct gtacatttgc tagcttgtag ttttctaaga 180
ctgagtaaac ttcttatttt tanaaagggg aggctggntt gtaactttcc ttgtacttaa 240
ttgggtaaaa gtctttttcca caaaccacca tctattttgt gaactttgtt agtcatcttt 300
tatttggtaa attatgaact 320

<210> 196
<211> 357
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (36)
<223> n=A,T,C or G

<400> 196
atataaaata atacgaaact ttaaaaagca ttggantgtc agtatgttga atcagtagtt 60
tcactttaac tgtaaacaaat ttcttaggac accatttggg ctagtctctg tgtaagtgtg 120
aatactacaa aaacttattt atactgttct tatgtcattt gttatattca tagatttata 180
tgatgatatg acatctggct aaaaagaaat tattgcaaaa ctaaccacta tgtacttttt 240
tataaatact gtatggacaa aaaatggcat tttttatatt aaattgttta gctctggcaa 300
aaaaaaaaa ttttaagagc tgggtactaat aaaggattat tatgactgtt aaaaaaa 357

<210> 197
 <211> 565
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (27)
 <223> n=A,T,C or G

<400> 197
 tcagctgagt accatcagga tatttanccc tttaagtgct gttttgggag tagaaaaacta 60
 aagcaacaat acttcctctt gacagctttg attggaatgg gggtattaga tcattcacct 120
 tggctctaca ctttttagga tgcttggtga acataacacc acttataatg aacatccctg 180
 gttcctatat tttgggctat gtgggtagga attgttactt gttactgcag cagcagccct 240
 agaaagtaag cccagggctt cagatctaag ttagtccaaa agctaaatga tttaaagtca 300
 agttgtaatg ctaggcataa gcactctata atacattaaa ttataggccg agcaattagg 360
 gaatgtttct gaaacattaa acttgtattt atgtcactaa aattctaaca caaacttaaa 420
 aaatgtgtct catacatatg ctgtactagg cttcatcatg catttctaaa tttgtgtatg 480
 atttgaatat atgaaagaat ttatacaaga gtgttattta aaattattaa aaataaatgt 540
 atataatttg tacctattgt aaaaa 565

<210> 198
 <211> 484
 <212> DNA
 <213> Homo sapiens

<400> 198
 tatgtaagta ttggtgtctg ctttaaaaaa ggagaccag acttcacctg tccttttttaa 60
 acatttgaga acagtgttac tctgagcagt tgggccacct tcaccttate cgacagctga 120
 ctgttggtatg tgtccattgt cgccagtttg gctgttgccc ggacaggaca ggacctccat 180
 tgggcgcagc agcaggtggc aggggtgtgg cttgaggtgg gtggcagcgt ctggctctcc 240
 tctctggtgc tttctgagag ggtctctaaa gcagagtgtg gttggcctgg gggaaggcag 300
 agcacgtatt tctccctctt agtacctctg catttgtgag tgttccctct ggctttctga 360
 agggcagcag actcttgagt atactgcaga ggacatgctt tatcagtagg tctgagggc 420
 tccaggggct caactgacca agtaacacag aagttggggg atgtggccta tttgggtcgg 480
 aaac 484

<210> 199
 <211> 429
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (77)
 <223> n=A,T,C or G
 <221> unsure
 <222> (88)
 <223> n=A,T,C or G
 <221> unsure
 <222> (134)
 <223> n=A,T,C or G
 <221> unsure
 <222> (151)

<223> n=A,T,C or G
 <221> unsure
 <222> (189)
 <223> n=A,T,C or G
 <221> unsure
 <222> (227)
 <223> n=A,T,C or G
 <221> unsure
 <222> (274)
 <223> n=A,T,C or G
 <221> unsure
 <222> (319)
 <223> n=A,T,C or G

<400> 199
 gcttatgttt tttgttttaa cttttgtttt ttaacattta gaatattaca ttttgtatta 60
 tacagtacct ttctcanaca ttttgtanaa ttcatttcgg cagctcacta ggattttgct 120
 gaacattaaa aagngtgata gcgatattag ngccaatcaa atggaaaaaa ggtagtctta 180
 ataaacaana cacaacgttt ttatacaaca tactttaaaa tattaanaaa actccttaat 240
 attgtttcct attaatgtatt attctttggg caanattttc tgatgctttt gattttctct 300
 caatttagca tttgctttng gtttttttct ctatttagca ttctgttaag gcacaaaaac 360
 tatgtactgt atgggaaatg ttgtaaatat taccttttcc acatttttaa cagacaactt 420
 tgaatccaa 429

<210> 200
 <211> 279
 <212> DNA
 <213> Homo sapiens

<400> 200
 gcttttttga ggaattacag ggaagctcct ggaattgtac atggatatct ttatccctag 60
 ggggaaatca aggagctggg caccctaat tctttatgga agtgttttaa actatttttaa 120
 ttttattaca agtattacta gagtagtggt tctactctaa gattttcaaaa gtgcatttaa 180
 aatcatacat gttcccgctt gcaaatatat tgttattttg gtggagaaaa aaatagtata 240
 ttctacataa aaaattaaag atattaacta agaaaaaaa 279

<210> 201
 <211> 569
 <212> DNA
 <213> Homo sapiens

<400> 201
 taggtcagta ttttttagaaa ctcttaatat ctcatactct tgataccaaa agcagccctg 60
 attgttaaag cacacacctg cacaagaagc agtgatggtt gcattttacat ttcctgggtg 120
 cacaaaaaaa aattctcaaa aagcaaggac ttacgctttt tgcaaagcct ttgagaagtt 180
 actggatcat aggaagctta taacaagaat ggaagattct taaataactc actttctttg 240
 gtatccagta acagtagatg ttcaaaatat gtagctgatt aataccagca ttgtgaacgc 300
 tgtacaacct tgtggttatt actaagcaag ttactactag cttctgaaaa gtagcttcat 360
 aattaatgtt atttatacac tgccctccat gacttttact ttgccctaag ctaatctcca 420
 aaatctgaaa tgctactcca atatcagaaa aaaaggggga ggtggaatta tatttctctg 480
 gatttttaaga gtacagagaa tcatgcacat ctctgattag ttcatatatg tctagtgtgt 540
 aataaaaagtc aaagatgaac tctcaaaaa 569

<210> 202
 <211> 501

<212> DNA

<213> Homo sapiens

<400> 202

```
attaataggg ttaataattg ttggcaagga tccttttgct ttctttggca tgcaagctcc 60
tagcatctgg cagtggggcc aagaaaataa ggtttatgca tgtatgatgg ttttcttctt 120
gagcaacatg attgagaacc agtgtatgtc aacagggtgca tttgagataa ctttaaataga 180
tgtacctgtg tggcttaagc tggaatctgg tcaccttcca tccatgcaac aacttgttca 240
aattcttgac aatgaaatga agctcaatgt gcatatggat tcaatccac accatcgatc 300
atagcaccac ctatcagcac tgaaaactct tttgcattaa gggatcattg caagagcagc 360
gtgactgaca ttatgaaggc ctgtactgaa gacagcaagc tgtagtaca gaccagatgc 420
tttcttggca ggctcgttgc acctcttgga aaacctcaat gcaagatagt gtttcagtgc 480
tggcatattt tggaattctg c 501
```

<210> 203

<211> 261

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (36)

<223> n=A,T,C or G

<221> unsure

<222> (96)

<223> n=A,T,C or G

<400> 203

```
gacaagctcc tggctctgag atgtcttctc gttaangaga tgggcctttt ggaggtaaag 60
gataaaatga atgagttctg tcatgattca ctatntata acttgcata cctttactgt 120
gttagctctt tgaatgttct tgaaatttta gactttcttt gtaaacaat gatatgtcct 180
tatcattgta taaaagctgt tatgtgcaac agtgtggaga ttccttgtct gatttaataa 240
aatacttaaa cactgaaaaa a 261
```

<210> 204

<211> 421

<212> DNA

<213> Homo sapiens

<400> 204

```
agcatctttt ctacaacgtt aaaattgcag aagtagctta tcattaataa acaacaacaa 60
caacaataac aataaatcct aagtgtaaat cagttattct acccctacc aaggatatca 120
gctgtttttt tccctttttt ctctgggaa taattgtggg cttcttccca aatttctaca 180
gctcttttcc tcttctcatg cttgagcttc cctgtttgca cgcattgctg tgcaggactg 240
gcttgtgtgc ttggaactcg ctccagggtg aagcatgctt tcccttgta ctgttgaga 300
aactcaaacc ttcaagccct aggtgtagcc attttgtcaa gtcatacaact gtatttttgt 360
actggcatta acaaaaaaag aagataaaat attgtacat taaacttta taaaacttta 420
a 421
```

<210> 205

<211> 460

<212> DNA

<213> Homo sapiens

<400> 205

```

tactctcaca atgaaggacc tggaatgaaa aatctgtgtc taaacaagtc ctcttttagat 60
tttagtgcaa atccagagacc agcgtcgggt gcctcgagta attctttcat gggtagccttt 120
ggaaaagctc tcaggagacc tcacctagat gcctattcaa gctttggaca gccatcagat 180
tgtcagccaa gagcctttta ttgaaaagct cattcttccc cagacttgga ctctgggtca 240
gaggaagatg ggaaagaaag gacagatttt caggaagaaa atcacatttg tacctttaaa 300
cagacttttag aaaactacag gactccaaat tttcagtctt atgacttgga cacatagact 360
gaatgagacc aaaggaaaag cttaacatac tacctcaagg tgaactttta tttaaaagag 420
agagaatctt atgtttttta aatggagtta tgaattttta 460

```

<210> 206

<211> 481

<212> DNA

<213> Homo sapiens

<400> 206

```

tgtggtggaa ttcgggacgc cccagacccc tgactttttc ctgctggtggc cgtctcctcc 60
tgcggaagca gtgacctctg acccctggtg accttcgctt tgagtgcctt ttgaacgctg 120
gtcccgcggg acttggtttt ctcaagctct gtctgtccaa agacgctccg gtcgaggtcc 180
cgctgcctt gggtggatac ttgaaccca gacgcccctc tgtgctgctg tgtccggagg 240
cgcccttccc atctgcctgc ccacccggag ctctttccgc cggcgagggg tcccaagccc 300
acctcccgcc ctgagtcctg cgggtgtgct ctgggcacgt cctgcacaca caatgcaagt 360
cctggcctcc gcgcccgcgc gccacgcga gccgtaccgc cgcgaactc tgttatttat 420
ggtgtgaccc cctggagggt cctcggccc accggggcta tttattgttt aatttatttg 480
t 481

```

<210> 207

<211> 605

<212> DNA

<213> Homo sapiens

<400> 207

```

accttttttg gattcagggc tcctcacaat taaaatgagt gtaatgaaac aagggtgaaaa 60
tatagaagca tccctttgtg tactgttttg ctacttacag tgtacttggc attgctttat 120
ctcactggat tctcaccgta ggattttctga gatcttaatc taagctccaa agttgtctac 180
ttttttgatc ctaggggtgct cctttttgtt tacagagcag ggtcacttga tttgctagct 240
gggtggcagaa ttggcaccat taccaggtc tgactgacca ccagtcagag gcactttatt 300
tgtatcatga aatgatttga aatcatttga aagcagcgaa gtctgataat gaatgccagc 360
tttccttgtg ctttgataac aaagactcca aatattctgg agaacttga taaaagtgtg 420
aagggtctaga ttgggatttg aagacaaaat tgtaggaaat cttacatttt tgcaataaca 480
aacattaatg aaagcaaaac attataaaag taatttttaat tcaccacata cttatcaatt 540
tcttgatgct tccaaatgac atctaccaga tatggttttg tggacatctt tttctgttta 600
cataa 605

```

<210> 208

<211> 655

<212> DNA

<213> Homo sapiens

<400> 208

```

ggcgttggtt tggattcccc tcgtaactta aagggaact ttcacaatgt ccggagccct 60
tgatgtcctg caaatgaagg aggaggatgt ccttaagttc cttgcagcag gaaccactt 120
aggtggcacc aatcttgact tccagatgga acagtacatc tataaaagga aaagtgatgg 180
catctatatc ataaatctca agaggacctg ggagaagctt ctgctggcag ctctgccaat 240
tggtgccatt gaaaaccctg ctgatgtcag tggtatatcc tccaggaata ctggccagag 300
ggctgtgctg aagtttgctg ctgccactgg agccactcca attgctggcc gcttcaactc 360

```

```

tggaaccttc actaaccaga tccaggcagc cttccgggag ccacggcttc ttgtggttac 420
tgaccccgagg gctgaccacc agcctctcac ggaggcatct tatgttaacc tacctaccat 480
tgcgctgtgt aacacagatt ctctctctgog ctatgtggac attgccatcc catgcaacaa 540
caagggagct cactcagtgg gtttgatgtg gtggatgctg gctcgggaag ttctgcgcat 600
gcgtggcacc atttcccgtg aacacccatg ggaggatcatg cctgatctgt acttc 655

```

<210> 209

<211> 621

<212> DNA

<213> Homo sapiens

<400> 209

```

catttagaac atggttatca tccaagacta ctctaccctg caacattgaa ctcccaagag 60
caaatccaca ttctctctga gttctgcagc ttctgtgtaa atagggcagc tgcgtctat 120
gccgtagaat cacatgatct gaggaccatt catggaagct gctaaatagc ctagtctggg 180
gagtcttcca taaagttttg catggagcaa acaaacagga ttaaactagg tttggttcct 240
tcagccctct aaaagcatag ggcttagcct gcaggcttcc ttgggctttc tctgtgtgtg 300
tagttttgta aacactatag catctgttaa gatccagtgt ccatggaaac cttcccat 360
cccgtgactc tggactatat cagtttttgg aaagcagggg tcctctgcct gctaacaagc 420
ccacgtggac cagtctgaat gtctttcctt tacacctatg tttttaataa gtcaaacttc 480
aagaaacaat ctaaacaagt ttctgttgca tatgtgtttg tgaacttgta tttgtattta 540
gtaggcttct atattgcatt taacttgttt ttgtaactcc tgattcttcc ttttcggata 600
ctattgatga ataaagaaat t 621

```

<210> 210

<211> 533

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (20)

<223> n=A,T,C or G

<221> unsure

<222> (21)

<223> n=A,T,C or G

<221> unsure

<222> (61)

<223> n=A,T,C or G

<400> 210

```

cgccttgggg agccggcggn ngagtccggg acgtggagac ccgggggtccc ggcagccggg 60
nggcccgcgg gcccgagggtg gggatgcacc gccgcggggt gggagctggc gccatcgcca 120
agaagaaact tgcagaggcc aagtataagg agcgagggac ggtcttggct gaggaccagc 180
tagcccagat gtcaaagcag ttggacatgt tcaagaccaa cctggaggaa tttgccagca 240
aacacaagca ggagatccgg aagaatcctg agttccgtgt gcagttccag gacatgtgtg 300
caaccattgg cgtggatccg ctggcctctg gaaaaggatt ttggtctgag atgctgggcg 360
tgggggactt ctattacgaa ctagggtgtcc aaattatcga agtgtgcctg gcgctgaagc 420
atcggaatgg aggtctgata actttggagg aactacatca acagggtgtg aaggggaagg 480
gcaagttcgc ccaggatgtc agtcaagatg acctgatcag agccatcaag aaa 533

```

<210> 211

<211> 451

<212> DNA

<213> Homo sapiens

<400> 211
ttagcttgag ccgagaacga ggcgagaaag ctggagaccg aggagaccgc ctagagcgga 60
gtgaacgggg aggggaccgt ggggaccggc ttgatcgtgc gcggacacct gctaccaagc 120
ggagcttcag caaggaagtg gaggagcgga gtagagaacg gccctcccag cctgaggggc 180
tgcgcaaggc agctagcctc acggaggatc gggaccgtgg gcgggatgcc gtgaagcgag 240
aagctgccct acccccagtg agccccctga aggcggctct ctctgaggag gagttagaga 300
agaaatccaa ggctatcatt gaggaatata tccatctcaa tgacatgaaa gaggcagtcc 360
agtgcgtgca ggagctggcc tcaccctcct tgctcttcat ctttgtacgg catggtgtcg 420
agtctacgct ggagcgcagt gccattgctc g 451

<210> 212
<211> 471
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (54)
<223> n=A,T,C or G

<400> 212
gtgattattc ttgatcaggg agaagatcat ttagatttgt tttgcattcc ttanaatgga 60
gggcaacatt ccacagctgc cctggctgtg atgagtgtcc ttgcaggggc cggagtagga 120
gcactggggt gggggcggaa ttggggttac tcgatgtaag ggattccttg ttgttgtgtt 180
gagatccagt gcagttgtga tttctgtgga tcccagcttg gttccaggaa ttttgtgtga 240
ttggcttaaa tccagttttc aatcttcgac agctgggctg gaacgtgaac tcagtagctg 300
aacctgtctg acccggtcac gttcttggat cctcagaact ctttgcctct gtcgggggtg 360
gggtgggaac tcacgtgggg agcgggtggc gagaaaatgt aaggattctg gaatacatat 420
tccatgggac tttccttccc tctcctgctt cctcttttcc tgctccctaa c 471

<210> 213
<211> 511
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (27)
<223> n=A,T,C or G
<221> unsure
<222> (63)
<223> n=A,T,C or G
<221> unsure
<222> (337)
<223> n=A,T,C or G
<221> unsure
<222> (442)
<223> n=A,T,C or G

<400> 213
ctaattagaa acttgctgta ctttttnttt tcttttaggg gtcaaggacc ctctttatag 60
ctnccatttg cctacaataa attattgcag cagtttgcaa tactaaaata ttttttatag 120
actttatatt tttccttttg ataaagggat gctgcatagt agagttggtg taattaaact 180
atctcagccg tttccctgct ttcccttctg ctccatatgc ctcatgtcc ttccagggag 240

```

ctcttttaaat cttaaagtcc tacatttcat gctcttagtc aaattctggt accttttttaa 300
taactcttcc cactgcatat ttccatcttg aattggnggt tctaaattct gaaactgtag 360
ttgagataca gctattttaat atttctggga gatgtgcac cctcttcttt gtgggtgccc 420
aagggtgttt tgcgtaactg anactccttg atatgcttca gagaatttag gcaaactg 480
gccatggccg tgggagtact gggagtaaaa t 511

```

<210> 214

<211> 521

<212> DNA

<213> Homo sapiens

<400> 214

```

agcattgcca aataatccct aattttccac taaaaatata atgaaatgat gttaagcttt 60
ttgaaaagtt taggttaaac ctactgttgt tagattaatg tatttggtgc ttccctttat 120
ctggaatgtg gcattagctt ttttatttta accctcttta attcttattc aattccatga 180
cttaagggtg gagagctaaa cactgggatt tttggataac agactgacag ttttgcataa 240
ttataatcgg cattgtacat agaaaggata tggctacctt ttgttaaate tgcactttct 300
aaatatcaaa aaagggaaat gaagtataaa tcaatttttg tataatctgt ttgaaacatg 360
agttttatatt gcttaatat agggctttgc cccttttctg taagtctctt gggatcctgt 420
gtagaagctg ttctcattaa acaccaaaca gttaagtcca ttctctggta ctagctacaa 480
attcggtttc atattctact taacaattta aataaactga a 521

```

<210> 215

<211> 381

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (17)

<223> n=A,T,C or G

<221> unsure

<222> (20)

<223> n=A,T,C or G

<221> unsure

<222> (60)

<223> n=A,T,C or G

<221> unsure

<222> (61)

<223> n=A,T,C or G

<221> unsure

<222> (365)

<223> n=A,T,C or G

<400> 215

```

gagcggagag cggaccngtn agagccctga gcagccccac cgccgccgcc ggccctagttt 60
ncatcacacc ccgggaggag ccgcagctgc cgcagccggc cccagtcacc atcacgcgaa 120
ccatgagcag cgaggccgag acccagcagc cgcccgccgc ccccccgccc gccccgccc 180
tcagcgccgc cgacaccaag cccggcacta cgggcagcgg cgcagggagc ggtggcccg 240
gcggcctcac atcggcggcg cctgccggcg gggacaagaa ggtcatcgca acgaagggtt 300
tgggaacagt aaaatgggtt aatgtaagga acggatatgg tttcatcaac aggaatgaca 360
ccaangaaga tgtatttgta c 381

```

<210> 216

<211> 425

<212> DNA

<213> Homo sapiens

<400> 216

```

ttactaacta ggtcattcaa ggaagtcaag ttaacttaaa catgtcacct aaatgcactt 60
gatgggtgttg aaatgtccac cttcttaaat ttttaagatg aacttagttc taaagaagat 120
aacaggccaa tcctgaaggt actccctggt tgctgcagaa tgtcagatat tttggatggt 180
gcataagagt cctatttgcc ccagttaatt caacttttgt ctgcctgttt tgtggactgg 240
ctggctctgt tagaactctg tccaaaaagt gcatggaata taacttgtaa agcttcccac 300
aattgacaat atatatgcat gtgttttaaac caaatccaga aagcttaaac aatagagctg 360
cataatagta ttatttaaag aatcacaact gtaaacaatga gaataactta aggattctag 420
tttag                                           425

```

<210> 217

<211> 181

<212> DNA

<213> Homo sapiens

<400> 217

```

gagaaaccaa atgatagggt gtagagcctg atgactccaa acaaagccat caccgcatt 60
cttcctcctt cttctgggtg tacagctcca agggcccttc accttcattg ctgaaatgga 120
actttggcctt tttcagtggg agaatatggt gaaggtttca ttttggttcta gaaaaaaaaa 180
a                                           181

```

<210> 218

<211> 405

<212> DNA

<213> Homo sapiens

<400> 218

```

caggccttcc agttcactga caaacatggg gaagtgtgcc cagctggctg gaaacctggc 60
agtgatacca tcaagcctga tgtccaaaag agcaaagaat atttctccaa gcagaagtga 120
gcgctgggct gtttttagtg caggctgcgg tgggcagcca tgagaacaaa acctcttctg 180
tatttttttt ttccattagt aaaacacaag acttcagatt cagccgaatt gtggtgtctt 240
acaaggcagg cttttcctac aggggggtgga gagaccagcc tttcttctct tggtaggaat 300
ggcctgagtt ggcgttggtg gcaggctact ggtttgtatg atgtattagt agagcaaccc 360
attaatcttt tgtagtttgt attaaacttg aactgagaaa aaaaaa 405

```

<210> 219

<211> 216

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (207)

<223> n=A, T, C or G

<221> unsure

<222> (210)

<223> n=A, T, C or G

<400> 219

```

actccaagag ttagggcagc agagtggagc gatttagaaa gaacatttta aaacaatcag 60
ttaattttacc atgtaaaatt gctgtaaatg ataatgtgta cagattttct gttcaaatat 120
tcaattgtaa acttcttggt aagactgtta cgtttctatt gcttttgtat gggatattgc 180

```

aaaaataaaa aggaaagaac cctcttnaan aaaaaa

216

<210> 220

<211> 380

<212> DNA

<213> Homo sapiens

<400> 220

```

cttacaaatt gcccccatgt gtaggggaca cagaaccctt tgagaaaact tagatttttg 60
tctgtacaaa gtctttgcct ttttccttct tcattttttt ccagtacatt aaatttgtca 120
atttcatctt tgagggaagc tgattagatg ggttgtgttt gtgttctgat ggagaaaaca 180
gcacccaag gactcagaag atgattttta cagttcagaa cagatgtgtg caatattggt 240
gcatgtaata atgttgagtg gcagtcacaa gtcattgatt ttatcttagt tcttcattac 300
tgcattgaaa aggaaaacct gtctgagaaa atgcctgaca gtttaattta aaactatggt 360
gtaagtcttt gacaaaaaaa

```

380

<210> 221

<211> 398

<212> DNA

<213> Homo sapiens

<400> 221

```

ggttagtaag ctgtcgactt tgtaaaaaag ttaaaaatga aaaaaaaagg aaaaatgaat 60
tgtatatatta atgaatgaac atgtacaatt tgccactggg aggagggtcc tttttgttgg 120
gtgagtcctgc aagtgaattt cactgatgtt gatattcatt gtgtgtagtt ttatttcggt 180
cccagccccg tttcctttta ttttgagct aatgccagct gcgtgtctag ttttgagtgc 240
agtaaaatag aatcagcaaa tcaactcttat ttttcacctt tttccggtat tttttgggtt 300
gtttctgtgg gagcagtgtt caccaactct tctgtatat tgcctttttg ctggaaaatg 360
ttgtatgttg aataaaattt tctataaaaa ttaaaaaa

```

398

<210> 222

<211> 301

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (49)

<223> n=A,T,C or G

<221> unsure

<222> (64)

<223> n=A,T,C or G

<400> 222

```

ttcgataatt gatctcatgg gctttccctg gaggaaggt tttttttgnt gtttattttt 60
taanaacttg aaacttgtaa actgagatgt ctgtagcttt tttgccatc tgtagtgtat 120
gtgaagattt caaacctga gagcactttt tctttgttta gaattatgag aaaggcacta 180
gatgacttta ggatttgcac ttttcctttt attgcctcat ttcttgtgac gccttgttgg 240
ggagggaaat ctgtttattt tttcctacaa ataaaaagct aagattctat atcgcaaaaa 300
a

```

301

<210> 223

<211> 200

<212> DNA

<213> Homo sapiens

<400> 223

```

gtaagtgcctt aggaagaaac tttgcaaaca tttaatgagg atacactggt cattttttaa 60
attccttcac actgtaattt aatgtgtttt atattctttt gtagtaaaac aacataactc 120
agatttctac aggagacagt ggttttattt ggattgtctt ctgtaatagg tttcaataaa 180
gctggatgaa cttaaaaaaa                                200

```

<210> 224

<211> 385

<212> DNA

<213> Homo sapiens

<400> 224

```

gaaaggtttg atccggactc aaagaaagca aaggagtgtg agccgccatc tgctggagca 60
gctgtaactg caagacctgg acaagagatt cgtcagcgaa ctgcagctca aagaaacctt 120
tctccaacac cagcaagccc taaccagggc cctcctccac aagttccagt atctcctgga 180
ccaccaaagg acagttctgc ccttggtgga cccccagaaa ggactgttac tccagcccta 240
tcatcaaatg tgttaccaag acatcttgga tcccctgcta cttcagtgcc tggaatgggt 300
aaacagagca cttaatgtta tttacagttt atattgtttt ctctgggttac caataaaacg 360
ggccattttc aggtggtaaa aaaaa                                385

```

<210> 225

<211> 560

<212> PRT

<213> Homo sapien

<400> 225

```

Met Glu Cys Leu Tyr Tyr Phe Leu Gly Phe Leu Leu Leu Ala Ala Arg
 1              5              10              15
Leu Pro Leu Asp Ala Ala Lys Arg Phe His Asp Val Leu Gly Asn Glu
      20              25              30
Arg Pro Ser Ala Tyr Met Arg Glu His Asn Gln Leu Asn Gly Trp Ser
      35              40              45
Ser Asp Glu Asn Asp Trp Asn Glu Lys Leu Tyr Pro Val Trp Lys Arg
      50              55              60
Gly Asp Met Arg Trp Lys Asn Ser Trp Lys Gly Gly Arg Val Gln Ala
65              70              75              80
Val Leu Thr Ser Asp Ser Pro Ala Leu Val Gly Ser Asn Ile Thr Phe
      85              90              95
Ala Val Asn Leu Ile Phe Pro Arg Cys Gln Lys Glu Asp Ala Asn Gly
      100             105             110
Asn Ile Val Tyr Glu Lys Asn Cys Arg Asn Glu Ala Gly Leu Ser Ala
      115             120             125
Asp Pro Tyr Val Tyr Asn Trp Thr Ala Trp Ser Glu Asp Ser Asp Gly
      130             135             140
Glu Asn Gly Thr Gly Gln Ser His His Asn Val Phe Pro Asp Gly Lys
145             150             155             160
Pro Phe Pro His His Pro Gly Trp Arg Arg Trp Asn Phe Ile Tyr Val
      165             170             175
Phe His Thr Leu Gly Gln Tyr Phe Gln Lys Leu Gly Arg Cys Ser Val
      180             185             190
Arg Val Ser Val Asn Thr Ala Asn Val Thr Leu Gly Pro Gln Leu Met
      195             200             205
Glu Val Thr Val Tyr Arg Arg His Gly Arg Ala Tyr Val Pro Ile Ala

```

210		215		220
Gln Val Lys Asp Val Tyr Val Val Thr Asp Gln Ile Pro Val Phe Val				
225		230		235
Thr Met Phe Gln Lys Asn Asp Arg Asn Ser Ser Asp Glu Thr Phe Leu				240
	245		250	255
Lys Asp Leu Pro Ile Met Phe Asp Val Leu Ile His Asp Pro Ser His				
	260	265		270
Phe Leu Asn Tyr Ser Thr Ile Asn Tyr Lys Trp Ser Phe Gly Asp Asn				
	275	280		285
Thr Gly Leu Phe Val Ser Thr Asn His Thr Val Asn His Thr Tyr Val				
	290	295	300	
Leu Asn Gly Thr Phe Ser Leu Asn Leu Thr Val Lys Ala Ala Ala Pro				
305		310	315	320
Gly Pro Cys Pro Pro Pro Pro Pro Pro Pro Arg Pro Ser Lys Pro Thr				
	325		330	335
Pro Ser Leu Gly Pro Ala Gly Asp Asn Pro Leu Glu Leu Ser Arg Ile				
	340	345		350
Pro Asp Glu Asn Cys Gln Ile Asn Arg Tyr Gly His Phe Gln Ala Thr				
	355	360		365
Ile Thr Ile Val Glu Gly Ile Leu Glu Val Asn Ile Ile Gln Met Thr				
	370	375	380	
Asp Val Leu Met Pro Val Pro Trp Pro Glu Ser Ser Leu Ile Asp Phe				
385		390	395	400
Val Val Thr Cys Gln Gly Ser Ile Pro Thr Glu Val Cys Thr Ile Ile				
	405		410	415
Ser Asp Pro Thr Cys Glu Ile Thr Gln Asn Thr Val Cys Ser Pro Val				
	420	425		430
Asp Val Asp Glu Met Cys Leu Leu Thr Val Arg Arg Thr Phe Asn Gly				
	435	440		445
Ser Gly Thr Tyr Cys Val Asn Leu Thr Leu Gly Asp Asp Thr Ser Leu				
	450	455	460	
Ala Leu Thr Ser Thr Leu Ile Ser Val Pro Asp Arg Asp Pro Ala Ser				
465		470	475	480
Pro Leu Arg Met Ala Asn Ser Ala Leu Ile Ser Val Gly Cys Leu Ala				
	485		490	495
Ile Phe Val Thr Val Ile Ser Leu Leu Val Tyr Lys Lys His Lys Glu				
	500	505		510
Tyr Asn Pro Ile Glu Asn Ser Pro Gly Asn Val Val Arg Ser Lys Gly				
	515	520		525
Leu Ser Val Phe Leu Asn Arg Ala Lys Ala Val Phe Phe Pro Gly Asn				
	530	535	540	
Gln Glu Lys Asp Pro Leu Leu Lys Asn Gln Glu Phe Lys Gly Val Ser				
545		550	555	560

<210> 226

<211> 9

<212> PRT

<213> Homo sapien

<400> 226

Ile Leu Ile Pro Ala Thr Trp Lys Ala

1

5

<210> 227

<211> 9

<212> PRT
<213> Homo sapien

<400> 227
Phe Leu Leu Asn Asp Asn Leu Thr Ala
1 5

<210> 228
<211> 9
<212> PRT
<213> Homo sapien

<400> 228
Leu Leu Gly Asn Cys Leu Pro Thr Val
1 5

<210> 229
<211> 10
<212> PRT
<213> Homo sapien

<400> 229
Lys Leu Leu Gly Asn Cys Leu Pro Thr Val
1 5 10

<210> 230
<211> 10
<212> PRT
<213> Homo sapien

<400> 230
Arg Leu Thr Gly Gly Leu Lys Phe Phe Val
1 5 10

<210> 231
<211> 9
<212> PRT
<213> Homo sapien

<400> 231
Ser Leu Gln Ala Leu Lys Val Thr Val
1 5

<210> 232
<211> 20
<212> PRT
<213> Homo sapiens

<400> 232
Ala Gly Ala Asp Val Ile Lys Asn Asp Gly Ile Tyr Ser Arg Tyr Phe
5 10 15

Phe Ser Phe Ala
20

<210> 233
<211> 21
<212> PRT
<213> Homo sapiens

<400> 233
Phe Phe Ser Phe Ala Ala Asn Gly Arg Tyr Ser Leu Lys Val His Val
5 10 15

Asn His Ser Pro Ser
20

<210> 234
<211> 20
<212> PRT
<213> Homo sapiens

<400> 234
Phe Leu Val Thr Trp Gln Ala Ser Gly Pro Pro Glu Ile Ile Leu Phe
5 10 15

Asp Pro Asp Gly
20

<210> 235
<211> 20
<212> PRT
<213> Homo sapiens

<400> 235
Leu Gln Ser Ala Val Ser Asn Ile Ala Gln Ala Pro Leu Phe Ile Pro
5 10 15

Pro Asn Ser Asp
20

<210> 236
<211> 20
<212> PRT
<213> Homo sapiens

<400> 236
Ile Gln Asp Asp Phe Asn Asn Ala Ile Leu Val Asn Thr Ser Lys Arg
5 10 15

Asn Pro Gln Gln
20

<210> 237

115

<211> 21

<212> PRT

<213> Homo sapiens

<400> 237

Arg Asn Ser Leu Gln Ser Ala Val Ser Asn Ile Ala Gln Ala Pro Leu
5 10 15

Phe Ile Pro Pro Asn
20

<210> 238

<211> 20

<212> PRT

<213> Homo sapiens

<400> 238

Thr His Glu Ser His Arg Ile Tyr Val Ala Ile Arg Ala Met Asp Arg
5 10 15

Asn Ser Leu Gln
20

<210> 239

<211> 20

<212> PRT

<213> Homo sapiens

<400> 239

Arg Asn Pro Gln Gln Ala Gly Ile Arg Glu Ile Phe Thr Phe Ser Pro
5 10 15

Gln Ile Ser Thr
20

<210> 240

<211> 21

<212> PRT

<213> Homo sapiens

<400> 240

Gly Gln Ala Thr Ser Tyr Glu Ile Arg Met Ser Lys Ser Leu Gln Asn
5 10 15

Ile Gln Asp Asp Phe
20

<210> 241

<211> 20

<212> PRT

<213> Homo sapiens

<400> 241

Glu Arg Lys Trp Gly Phe Ser Arg Val Ser Ser Gly Gly Ser Phe Ser
5 10 15

Val Leu Gly Val
20

<210> 242

<211> 20

<212> PRT

<213> Homo sapiens

<400> 242

Gly Ser His Ala Met Tyr Val Pro Gly Tyr Thr Ala Asn Gly Asn Ile
5 10 15

Gln Met Asn Ala
20

<210> 243

<211> 20

<212> PRT

<213> Homo sapiens

<400> 243

Val Asn His Ser Pro Ser Ile Ser Thr Pro Ala His Ser Ile Pro Gly
5 10 15

Ser His Ala Met
20

<210> 244

<211> 20

<212> PRT

<213> Homo sapiens

<400> 244

Ala Val Pro Pro Ala Thr Val Glu Ala Phe Val Glu Arg Asp Ser Leu
5 10 15

His Phe Pro His
20

<210> 245

<211> 20

<212> PRT

<213> Homo sapiens

<400> 245

Lys Pro Gly His Trp Thr Tyr Thr Leu Asn Asn Thr His His Ser Leu

117

5

10

15

Gln Ala Leu Lys
20

<210> 246

<211> 20

<212> PRT

<213> Homo sapiens

<400> 246

Asn Leu Thr Phe Arg Thr Ala Ser Leu Trp Ile Pro Gly Thr Ala Lys
5 10 15

Pro Gly His Trp
20

<210> 247

<211> 20

<212> PRT

<213> Homo sapiens

<400> 247

Leu His Phe Pro His Pro Val Met Ile Tyr Ala Asn Val Lys Gln Gly
5 10 15

Phe Tyr Pro Ile
20

<210> 248

<211> 20

<212> PRT

<213> Homo sapiens

<400> 248

Pro Glu Thr Gly Asp Pro Val Thr Leu Arg Leu Leu Asp Asp Gly Ala
5 10 15

Gly Ala Asp Val
20

<210> 249

<211> 20

<212> PRT

<213> Homo sapiens

<400> 249

Gly Phe Tyr Pro Ile Leu Asn Ala Thr Val Thr Ala Thr Val Glu Pro
5 10 15

Glu Thr Gly Asp

20

<210> 250

<211> 20

<212> PRT

<213> Homo sapiens

<400> 250

Phe Asp Pro Asp Gly Arg Lys Tyr Tyr Thr Asn Asn Phe Ile Thr Asn
 5 10 15

Leu Thr Phe Arg

20

<210> 251

<211> 20

<212> PRT

<213> Homo sapiens

<400> 251

Leu Gln Ala Leu Lys Val Thr Val Thr Ser Arg Ala Ser Asn Ser Ala
 5 10 15

Val Pro Pro Ala

20

<210> 252

<211> 153

<212> PRT

<213> Homo sapien

<400> 252

Met Ala Ser Val Arg Val Ala Ala Tyr Phe Glu Asn Phe Leu Ala Ala
 1 5 10 15
 Trp Arg Pro Val Lys Ala Ser Asp Gly Asp Tyr Tyr Thr Leu Ala Val
 20 25 30
 Pro Met Gly Asp Val Pro Met Asp Gly Ile Ser Val Ala Asp Ile Gly
 35 40 45
 Ala Ala Val Ser Ser Ile Phe Asn Ser Pro Glu Glu Phe Leu Gly Lys
 50 55 60
 Ala Val Gly Leu Ser Ala Glu Ala Leu Thr Ile Gln Gln Tyr Ala Asp
 65 70 75 80
 Val Leu Ser Lys Ala Leu Gly Lys Glu Val Arg Asp Ala Lys Ile Thr
 85 90 95
 Pro Glu Ala Phe Glu Lys Leu Gly Phe Pro Ala Ala Lys Glu Ile Ala
 100 105 110
 Asn Met Cys Arg Phe Tyr Glu Met Lys Pro Asp Arg Asp Val Asn Leu
 115 120 125
 Thr His Gln Leu Asn Pro Lys Val Lys Ser Phe Ser Gln Phe Ile Ser
 130 135 140
 Glu Asn Gln Gly Ala Phe Lys Gly Met
 145 150

<210> 253
 <211> 462
 <212> DNA
 <213> Homo sapien

<400> 253
 atggccagtg tccgcgtggc ggcctaacttt gaaaactttc tcgcggcgtg gcggcccgtg 60
 aaagcctctg atggagatta ctacaccttg gctgtaccga tgggagatgt accaatggat 120
 ggtatctctg ttgctgatat tggagcagcc gtctctagca tttttaattc tccagaggaa 180
 tttttaggca aggccgtggg gctcagtgc gaagcactaa caatacagca atatgctgat 240
 gttttgtcca aggctttggg gaaagaagtc cgagatgcaa agattacccc ggaagctttc 300
 gagaagctgg gattccctgc agcaaaggaa atagccaata tgtgtcgttt ctatgaaatg 360
 aagccagacc gagatgtcaa tctcacccac caactaaatc ccaaagtcaa aagcttcagc 420
 cagtttatct cagagaacca gggagccttc aagggcattg ag 462

<210> 254
 <211> 8031
 <212> DNA
 <213> Homo sapien

<400> 254
 tggcgaatgg gacgcgccct gtagcggcgc attaagcgcg gcgggtgtgg tggttacgcg 60
 cagcgtgacc gctacacttg ccagcgcctt agcgcgcgt cctttcgtt tcttcccttc 120
 ctttctcgcc acgttcgcgc gctttccccg tcaagctcta aatcgggggc tccctttagg 180
 gttccgattt agtgctttac ggcacctcga ccccaaaaaa cttgattagg gtgatggttc 240
 acgtagtggg ccacgcacct gatagacggg ttttcgcctt ttgacgttgg agtccacgtt 300
 ctttaatatg ggactcttgt tccaaactgg aacaacactc aacctatct cgtctattc 360
 ttttgattta taagggattt tgccgatttc ggccatttgg ttaaaaaatg agctgattta 420
 acaaaaaatt aacgcgaatt ttaacaaaat attaacgttt acaatttcag gtggcacttt 480
 tcgggggaaat gtgcgcggaa cccctatttg tttatttttc taaatacatt caaatatgta 540
 tccgctcatg aattaattct tagaaaaact catcgagcat caaatgaaac tgcaatttat 600
 tcatatcagg attatcaata ccataatttt gaaaaagccg tttctgtaat gaaggagaaa 660
 actcaccgag gcagttccat aggatggcaa gatcctggta tcggtctgcg attccgactc 720
 gtccaacatg aatacaacct attaatcttc cctcgtcaaa aataaggtta tcaagtgaga 780
 aatcaccatg agtgacgact gaatccggtg agaatggcaa aagtttatgc atttctttcc 840
 agacttgttc aacaggccag ccattacgct cgtcatcaaa atcactcgca tcaaccaaac 900
 cgttattcat tcgtgattgc gcctgagcga gacgaaatac gcgatcgtg ttaaaaggac 960
 aattacaaac aggaatcgaa tgcaaccggc gcaggaacac tgccagcgca tcaacaatat 1020
 tttcacctga atcaggatat tcttctaata cctggaatgc tgttttcccg gggatcgcag 1080
 tgggtagtaa ccatgcatca tcaggagtac ggataaaatg cttgatggtc ggaagaggca 1140
 taaattccgt cagccagttt agtctgacca tctcatctgt aacatcattg gcaacgctac 1200
 ctttgccatg tttcagaaac aactctggcg catcgggctt cccatacaat cgatagattg 1260
 tcgcacctga ttgcccgaac ttatcgcgag ccattttata cccatataaa tcagcatcca 1320
 tgttggaatt taatcgcggc ctagagcaag acgtttcccg ttgaatatgg ctcataaacac 1380
 cccttgattt actgtttatg taagcagaca gttttattgt tcatgaccaa aatcccttaa 1440
 cgtgagtttt cgttccactg agcgtcagac cccgtagaaa agatcaaagg atcttcttga 1500
 gatccttttt ttctgcgcgt aatctgctgc ttgcaaaaaa aaaaaccacc gctaccagcg 1560
 gtggtttgtt tgccggatca agagctacca actctttttc cgaaggtaac tggcttcagc 1620
 agagcgcaga taccaaatac tgtccttcta gtgtagccgt agttaggcca ccacttcaag 1680
 aactctgtag caccgcctac atacctcgct ctgctaatac tgttaccagt ggctgctgcc 1740
 agtggcgata agtcgtgtct taccgggttg gactcaagac gatagttacc ggataaggcg 1800
 cagcggtcgg gctgaacggg ggggttcgtg acacagccca gcttggagcg aacgacctac 1860
 accgaactga gatacctaca gcgtgagcta tgagaaagcg ccacgcttcc cgaagggaga 1920
 aaggcggaca ggtatccggt aagcggcagg gtcggaacag gagagcgcac gagggagctt 1980

ccaggggggaa	acgcctggta	tctttatagt	cctgtcgggt	ttcgccacct	ctgacttgag	2040
cgtcgatttt	tgtgatgctc	gtcagggggg	cggagcctat	ggaaaaacgc	cagcaacgcg	2100
gcctttttac	ggttcctggc	cttttgctgg	ccttttgctc	acatgttctt	tcctgcgtta	2160
tcccctgatt	ctgtggataa	ccgtattacc	gcctttgagt	gagctgatac	cgctcgccgc	2220
agccgaacga	ccgagcgag	cgagtcagt	agcgaggaag	cggaagagcg	cctgatgcgg	2280
tattttctcc	ttacgcctct	gtgcggtatt	tcacaccgca	tatatgggtg	actctcagta	2340
caatctgctc	tgatgccgca	tagttaagcc	agtatacact	ccgctatcgc	tacgtgactg	2400
ggatcatggc	gcgccccgac	acccgccaac	acccgctgac	gcgcccctgac	gggcttgtct	2460
gctcccggca	tccgcttaca	gacaagctgt	gaccgtctcc	gggagctgca	tgtgtcagag	2520
gttttcaccg	tcacaccga	aacgcgcgag	gcagctgcgg	taaagctcat	cagcgtggtc	2580
gtgaagcgat	tcacagatgt	ctgcctgttc	atccgcgtcc	agctcggtga	gtttctccag	2640
aagcgtaaat	gtctggcttc	tgataaagcg	ggccatgtta	agggcggttt	tttcctgttt	2700
ggctactgat	gcctccgtgt	aagggggatt	tctgttcctg	ggggtaatga	taccgatgaa	2760
acgagagagg	atgctcacga	tacgggttac	tgatgatgaa	catgcccggg	tactggaacg	2820
ttgtgagggg	aaacaactgg	cggatggat	gcggcgggac	cagagaaaaa	tactcagggg	2880
tcaatgccag	cgcttcgtta	atacagatgt	aggtgttcca	cagggtagcc	agcagcatcc	2940
tgcatgacag	atccggaaca	taatgggtgca	gggcgctgac	ttccgcgttt	ccagacttta	3000
cgaaacacgg	aaaccgaaga	ccattcatgt	tgttgctcag	gtcgcagacg	ttttgcagca	3060
gcagtcgctt	cacgttcgct	cgcgtatcgg	tgattcattc	tgctaaccag	taaggcaacc	3120
ccgccagcct	agccgggtcc	tcaacgacag	gagcacgac	atgcgcaccc	gtggggccgc	3180
catgccggcg	ataatggcct	gcttctcgcc	gaaacgtttg	gtggcgggac	cagtgaacga	3240
ggcttgagcg	agggcggtga	agattccgaa	taccgcaagc	gacaggccga	tcctcgtcgc	3300
gctccagcga	aagcgttcct	cgccgaaaa	gaccagagc	gctgcgggca	cctgtcctac	3360
gagttgacag	ataaagaaga	cagtcataag	tgccgcgacg	atagtcagtc	cccgcgcccc	3420
ccggaaggag	ctactgggtg	tgaaggctct	caagggcatc	ggtcgagatc	ccggtgccta	3480
atgagtgagc	taactttacat	taattgcgtt	gcgtcactg	cccgccttcc	agtcgggaaa	3540
cctgtcgtgc	cagctgcatt	aatgaatcgg	ccaacgcgcg	gggagaggcg	gtttgcgtat	3600
tggggcgccag	ggtggttttt	cttttcacca	gtgagacggg	caacagctga	ttgcccttca	3660
ccgcctggcc	ctgagagagt	tgcagcaagc	ggtccacgct	ggtttgcccc	agcaggcgaa	3720
aatcctgttt	gatggtggtt	aacggcgggg	tataacatga	gctgtcttcg	gtatcgctgt	3780
atcccactac	cgagatatcc	gcaccaacgc	gcagcccggg	ctcggtaatg	gcgcgcattg	3840
cgcccagcgc	catctgatcg	ttggcaacca	gcctcgcagt	gggaacgatg	ccctcattca	3900
gcattttgcat	ggtttgttga	aaaccggaca	tggcactcca	gtcgccttcc	cgttccgcta	3960
tcggctgaat	ttgattgcga	gtgagatatt	tatgccagcc	agccagacgc	agacgcgcgc	4020
agacagaact	taatggggcc	gctaacagcg	cgatttgctg	gtgacccaat	gcgaccagat	4080
gctccacgcc	cagtcgcgta	ccgtcttcat	gggagaaaa	aatactgttg	atgggtgtct	4140
ggtcagagac	atcaagaaat	aacgcgggaa	cattagtgcg	ggcagcttcc	acagcaatgg	4200
catcctgggt	atccagcgga	tagttaatga	tcagcccact	gacgcgttgc	gcgagaagat	4260
tgtgcaccgc	cgctttacag	gcttcgacgc	cgcttcgttc	taccatcgac	accaccacgc	4320
tggcaccag	ttgatcgggc	cgagatttaa	tcgccgcgac	aatttgcgac	ggcgcggtga	4380
gggcccagact	ggaggtggca	acgccaatca	gcaacgactg	tttgcccgcc	agttgttgtg	4440
ccacgcgggt	gggaatgtaa	ttcagctccg	ccatcgccgc	ttccactttt	tcgcgcgttt	4500
tcgcagaaac	gtggctggcc	tggttcacca	cgcgggaaac	ggtctgataa	gagacaccgg	4560
catactctgc	gacatcgtat	aacgttactg	gtttcacatt	caccaccctg	aattgactct	4620
cttcggggcg	ctatcatgcc	ataccgcgaa	aggttttgcg	ccattcgatg	gtgtccggga	4680
tctcgacgct	ctcccttatg	cgactcctgc	attaggaagc	agcccagtag	taggttgagg	4740
ccgttgagca	ccgcgcggcg	aaggaatggg	gcctgcaagg	agatggcgcc	caacagtcgc	4800
ccggcccagc	ggcctgccac	catacccacg	ccgaaacaag	cgctcatgag	cccgaagtgg	4860
cgagcccgat	cttccccatc	ggtgatgtcg	gcgatatagg	cgccagcaac	cgacactgtg	4920
gcgcgggtga	tgccggccac	gatgcgtccg	gcgtagagga	tcgagatctc	gatcccgcca	4980
aattaatacg	actcactata	ggggaattgt	gagcggataa	caattccctc	ctagaaataa	5040
ttttgtttta	ctttaagaag	gagatataca	tatgcagcat	caccaccatc	accacggagt	5100
acagcttcaa	gacaatgggt	ataatggatt	gctcattgca	attaatcctc	aggtacctga	5160
gaatcagaac	ctcatctcaa	acattaagga	aatgataact	gaagcttcat	tttacctatt	5220
taatgctacc	aagagaagag	tattttttcag	aaatataaag	attttaatac	ctgccacatg	5280

gaaagcta	aat	acagca	aaataaaa	aca	agaatcatat	gaaaaggcaa	atgtcatagt	5340
gactgact	gg	tatggggc	ac	atggagatga	tccatacacc	ctacaatata	gaggggtgtg	5400
aaaagagg	ga	aaatacatt	c	atttcacacc	taatttccta	ctgaatgata	acttaacagc	5460
tggctac	gga	tcacgagg	cc	gagtgtttgt	ccatgaatgg	gcccacctcc	gttgggggtg	5520
gttcgat	gag	tataacaat	g	acaaaccttt	ctacataaat	gggcaaaatc	aaattaaagt	5580
gacaagg	tgt	tcattctga	ca	tcacaggcat	ttttgtgtgt	gaaaaaggtc	cttgcccca	5640
agaaaact	gt	attattagta		agctttttta	agaaggatgc	acctttatct	acaatagcac	5700
ccaaaat	gca	actgcatcaa		taatgttcat	gcaaagttta	tcttctgtgg	ttgaattttg	5760
taatgca	agt	accacaacc		aagaagcacc	aaacctacag	aaccagatgt	gcagcctcag	5820
aagtgc	atg	gatgtaatca		cagactctgc	tgactttcac	cacagctttc	ccatgaacgg	5880
gactgag	ctt	ccacctctc		ccacattctc	gcttgtagag	gctggtgaca	aagtggctc	5940
tttagtg	ctg	gatgtgtcca		gcaagatggc	agaggctgac	agactccttc	aactacaaca	6000
agccgc	agaa	ttttattttg	a	tgcagattgt	tgaaattcat	accttcgtgg	gcattgccag	6060
tttcgac	agc	aaaggagaga		tcagagccca	gctacaccaa	attaacagca	atgatgatcg	6120
aaagtgt	ctg	gtttcatatc		tgcccaccac	tgtatcagct	aaaacagaca	tcagcatttg	6180
ttcaggg	ctt	aagaaaggat		ttgaggtgg	tgaaaaactg	aatggaaaag	cttatggctc	6240
tgtgat	gata	ttagtacca		gcggagatga	taagcttctt	ggcaattgct	taccactgt	6300
gctcag	cagt	ggttcaacaa		ttcactccat	tgccctgggt	tcattctgcag	ccccaaatct	6360
ggagga	atta	tcacgtctta		caggaggttt	aaagttcttt	gttcagata	tatcaaactc	6420
caatag	catg	attgatgctt		tcagtagaat	ttcctctgga	actggagaca	ttttccagca	6480
acata	ttcag	cttgaaagta		caggtgaaaa	tgtcaaacct	caccatcaat	tgaaaaacac	6540
agtga	ctgtg	gataatactg		tgggcaacga	cactatgttt	ctagttaagt	ggcaggccag	6600
tggtc	ctcct	gagattatat		tatttgatcc	tgatggacga	aaatactaca	caaataattt	6660
tatcac	caat	ctaacttttc		ggacagctag	tctttggatt	ccaggaacag	ctaagcctgg	6720
gcact	ggact	tacacctga		acaataccca	tcattctctg	caagccctga	aagtgcag	6780
gacct	ctcgc	gcctccaact		cagctgtgcc	cccagccact	gtggaagcct	ttgtggaaag	6840
agacag	cctc	cattttcctc		atcctgtgat	gatttatgcc	aatgtgaaac	agggatttta	6900
tcccatt	ctt	aatgccactg		tcactgccac	agttgagcca	gagactggag	atcctgttac	6960
gctgag	actc	cttgatgatg		gagcaggtgc	tgatgttata	aaaaatgatg	gaatttactc	7020
gaggtat	ttt	ttctcctttg		ctgcaaagtg	tagatatagc	ttgaaagtgc	atgtcaatca	7080
ctctccc	agc	ataagcacc		cagcccactc	tattccaggg	agtcatgcta	tgtatgtacc	7140
aggttac	aca	gcaaacggta		atattcagat	gaatgctcca	aggaaatcag	taggcagaaa	7200
tgaggag	gag	cgaaagtggg		gcttttagccg	agtcagctca	ggaggctcct	tttcagtgct	7260
gggag	ttcca	gctggcccc		accctgatgt	gtttccacca	tgcaaaatta	ttgacctgga	7320
agctg	taaaa	gtagaagagg		aattgaccct	atcttgagaca	gcacctggag	aagactttga	7380
tcaggg	ccag	gctacaagct		atgaaataag	aatgagtaaa	agtctacaga	atatccaaga	7440
tgact	tttaac	aatgctat	tt	tagtaaatac	atcaaagcga	aatcctcagc	aagctggcat	7500
cagggag	ata	tttacgttct		caccccaa	ttccacgaat	ggacctgaac	atcagccaaa	7560
tggagaa	aca	catgaaagcc		acagaattta	tggttgcaata	cgagcaatgg	ataggaactc	7620
cttacag	tct	gctgtatcta		acattgccca	ggcgctctg	tttattcccc	ccaattctga	7680
tcctgt	acct	gccagagatt		atcttatatt	gaaaggagtt	ttaacagcaa	tggttttgat	7740
aggaat	catt	tgctttatta		tagttgtgac	acatcatact	ttaagcagga	aaaagagagc	7800
agacaag	aaa	gagaatggaa		caaaattatt	ataatgaatt	ctgcagatat	ccatcacact	7860
ggcg	gccgct	cgagcaccac		caccaccacc	actgagatcc	ggctgcta	aaagcccgaa	7920
aggaag	ctga	gttggtgct	gct	gccaccgctg	agcaataact	agcataaccc	cttggggcct	7980
ctaaac	gggt	cttgaggggt		tttttgctga	aaggaggaac	tatatccgga	t	8031

<210> 255

<211> 401

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(401)

<223> n = A,T,C or G

<400> 255

gtggccagng	actagaaggc	gaggcgccgc	gggacccatgg	cggcgccggc	ggacgagcgg	60
agtcganagg	acggagaaga	cgaggaagag	gaggagcagt	tggttctggt	ggaattatca	120
ggaattattg	attcagactt	cctctcaaaa	tgtgaaaata	aatgcaaggt	tttgggcatt	180
gacactgaga	ggcccattct	gcaagtggac	agctgtgtct	ttgctgggga	gtatgaagac	240
actctangga	cctgtgttat	atttgaagaa	aatgntnaac	atgctgatac	agaaggcaat	300
aataaaacag	tgctaaaata	taaatgccat	acaatgaaga	agctcagcat	gacaagaact	360
ctcctgacag	agaagaagga	aggagaagaa	aacatangtg	g		401

<210> 256

<211> 401

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(401)

<223> n = A,T,C or G

<400> 256

tggtggncct	gggatgggga	accgcggtgg	cttcocngga	ggtttcggca	ntggcatccg	60
gggcccgggt	cgcggccgng	gacggggccg	gggcccngnc	cgngganctc	gcggangcaa	120
ggccgaggat	aaggagtggg	tgcccgtcac	caacttgggc	cgcttgncca	aggacatgaa	180
nancaagccc	ctgnaggaga	tctatntctt	cttcctgcc	ccattaagga	atcaagagat	240
catttgattt	cttcctgggg	gcctctctca	aggatnaggt	ttttgaagat	tatgccagtg	300
canaaaannan	accccgttgc	ccngtccatc	tncacccaac	ncttccaagg	gcnatttttg	360
tttaggcctc	attncngggg	ggaaccttaa	cccaatttgg	g		401

<210> 257

<211> 401

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(401)

<223> n = A,T,C or G

<400> 257

atgtatgtaa	aacacttcat	aaaatgtaaa	gggctataac	aaatatgtta	taaagtgatt	60
ctctcagccc	tgaggtatac	agaatcattt	gcctcagact	gctgttggat	tttaaaattt	120
ttaaaatata	tgctaagtaa	tttgctatgt	cttctcccac	actatcaata	tgctgtcttc	180
taacaggctc	cccactttct	tttaatgtgc	tgttatgagc	tttggacatg	agataaccgt	240
gcctgttcag	agtgtctaca	gtaagagctg	gacaaactct	ggagggacac	agtctttgag	300
acagctcttt	tggttgcttt	ccacttttct	gaaaggttca	cagtaacctt	ctagataata	360
gaaactccca	gttaaagcct	angctancaa	ttttttttag	t		401

<210> 258

<211> 401

<212> DNA

<213> Homo sapien

<400> 258

```

ggagcgcctag gtcgggtgtac gaccgagatt aggggtgcgtg ccagctccgg gaggccgcgg      60
tgagggggccg ggcccaagct gccgaccga gccgatcgtc agggtcgcca gcgcctcagc      120
tctgtggagg agcagcagta gtcggaggggt gcaggatatt agaaatggct actccccagt      180
caattttcat ctttgcaatc tgcattttta tgataacaga attaattctg gcctcaaaaa      240
gctactatga tatcttaggt gtgccaaaat cggcatcaga gcgccaaatc aagaaggcct      300
ttcacaagtt ggccatgaag taccaccctg acaaaaaata gacccagatg ctgaagcaaa      360
attcagagag attgcagaag catatgaaac actctcagat g                                401

```

<210> 259

<211> 401

<212> DNA

<213> Homo sapien

<400> 259

```

attgggtttg gagggaggat gatgacagag gaatgccctt tggccatcac ggttttgatt      60
ctccagaata ttgtgggttt gatcatcaat gcagtcatgt taggctgcat tttcatgaaa      120
acagctcagg ctcacagaag ggcagaaact ttgattttca gccgccatgc tgtgattgcc      180
gtccgaaaatg gcaagctgtg cttcatgttc cgagtgggtg acctgaggaa aagcatgac      240
attagtgcct ctgtgcgcac ccaggtggtc aagaaaacaa ctacacctga aggggagggtg      300
gttcctattc accaactgga cattcctgtt gataacccaa tcgagagcaa taacattttt      360
ctggtggccc ctttgatcat ctgccacgtg attgacaagc g                                401

```

<210> 260

<211> 363

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(363)

<223> n = A,T,C or G

<400> 260

```

aggaganang gaggggggana tgaatagggg tggagaggga natagtggat gagcagggca      60
canggagagg aancagaaaag gagaggcaag acagggagac acacancaca nangangana      120
caggtggggg ctgggggtggg gcatggagag ccttttnangt cncccaggcc accctgctct      180
cgctggncctg ttgaaaccca ctccatggct tcctgccact gcagttgggc ccagggctgg      240
cttatnctg gaatgcaagt ggctgtggct tggagcctcc cctctggnnn anggaaannn      300
attgctccct tatctgcttg gaatatctga gtttttccan cccggaaata aaacacacac      360
aca                                                                363

```

<210> 261

<211> 401

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(401)

<223> n = A,T,C or G

<400> 261

```

eggctctccg ccgctctccc ggggtttcgg ggcacttggg tcccacagtc tggctctgct      60
tcacctccc ctgacctgag tagtcgccat ggcacagggt ctcagaggca ctgngactga      120

```

```

cttccttgga tttgatgagc gggctgatgc anaaactctt cggaaggcta tgaaaggctt 180
gggcacagat gaggagagca tcttgactct gttgacatcc cgaagtaatg ctcagcgcca 240
ggaaatctct gcagctttta agactctgtt tggcagggat cttctggatg acctgaaatc 300
agaactaact ggaaaatttg aaaaattaat tgtggctctg atgaaaccct ctcggcttta 360
tgatgcttat gaactgaaac atgccttgaa gggagctgga a 401

```

```

<210> 262
<211> 401
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(401)
<223> n = A,T,C or G

```

```

<400> 262
agtctanaac atttctaata ttttngcctt tcatatatca aaggagatta tgtgaaacta 60
tttttaaata ctgtaaagtg acatatagtt ataagatata tttctgtaca gtagagaaaag 120
agtttataac atgaagaata ttgtaccatt atacattttc attctcgatc tcataagaaa 180
ttcaaaagaa taatgataga ggtgaaaata tgtttacttt ctctaaatca agcctagtgtg 240
tcaactcaaa aattatgntg catagtttta ttttgaattt aggttttggg actacttttt 300
tccancttca atgagaaaat aaaatctaca actcaggagt tactacagaa gttctaanta 360
tttttttgct aannagcnaa aaatataaac atatgaaaat g 401

```

```

<210> 263
<211> 401
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(401)
<223> n = A,T,C or G

```

```

<400> 263
ctgtccgacc aagagaggcc ggccgagccc gaggccttggg cttttgcttt ctggcgaggg 60
gatctgcggc ggtttaggag gcggcgctga tcttgggagg aagaggcagc tacggcgggc 120
gcggcggttg cggctagggc ggccggcgaat aaagggggccg ccgcccgggtg atgcggtgac 180
cactgcggca ggcccaggag ctgagtgggc cccggccctc agcccgtccc gncggaccgc 240
ctttcctcaa ctctccatct tctcctgccg accgagatcg ccgaggcggn ctcaggctcc 300
ctanccctt ccccgctcct tcccncccc cgcccccgcc ccggggggccg ccgccacccg 360
cctcccacca tggctctgaa ganaatccac aaggaattga a 401

```

```

<210> 264
<211> 401
<212> DNA
<213> Homo sapien

```

```

<400> 264
aacaccagcc actccaggac cctgaaggc ctctaccagg tcaccagtgt tctgcgccta 60
aagccacccc ctggcagaaa cttcagctgt gtgttctgga atactcacgt gagggaaactt 120
actttggcca gcattgacct tcaaagtcag atggaacca ggaccatcc aacttggtg 180
cttcacattt tcatccctc ctgcctcatt gctttcattt tcatagccac agtgatagcc 240
ctaagaaaac aactctgtca aaagctgtat tcttcaaaag acacaacaaa aagacctgtc 300

```

accacaacaa agagggaagt gaacagtgct gtgaatctga acctgtggtc ttgggagcca 360
gggtgacctg atatgacatc taaagaagct tctggactct g 401

<210> 265
<211> 271
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(271)
<223> n = A,T,C or G

<400> 265
gccacttct gtggacatgg gcagagcgct gctgccagtt cctggtagcc ttgaccacna 60
cgctgggggg tctttgtgat ggtcatgggt ctcatttgca cttgggggtg tgggattcaa 120
gttagaagtt tctagatctg gccgggcgca gtggctcaca cctgtaatcc cagcacttta 180
ggaggctgag gcaggcggat catgaggta ggagatcgag accgtcctgg ctaacacagt 240
gaaaccccg ctctactaaa aatacaaaaa a 271

<210> 266
<211> 401
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(401)
<223> n = A,T,C or G

<400> 266
attcataaat ttagctgaaa gatactgatt caatttgtat acagngaata taaatgagac 60
gacagcaaaa ttttcatgaa atgtaaaata tttttatagt ttgttcatac tatatgaggt 120
tctattttaa atgactttct ggatttttaa aaatttcttt aaatacaatc atttttgtaa 180
tatttatttt atgcttatga tctagataat tgcagaatat cattttatct gactctgtct 240
tcataagaga gctgtggccg aattttgaac atctgttata gggagtgatc aaattagaag 300
gcaatgtgga aaaacaattc tgggaaagat ttctttatat gaagtccttg ccactagcca 360
gccatcctaa ttgatgaaag ttatctgttc acaggcctgc a 401

<210> 267
<211> 401
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(401)
<223> n = A,T,C or G

<400> 267
gaagaggcat cacctgatcc cggagacctt tggagttaag aggcggcgga agcgagggcc 60
tgtggagtcg gatcctcttc ggggtgagcc agggtcggcg cgcgcggctg tctcanaact 120
catgcagctg ttcccgcgag gcctgtttga ggacgcgctg ccgcccacgc tgctgaggag 180
ccaggtgtac agccttgtgc ctgacaggac cgtggccgac cggcagctga aggagcttca 240
agagcanggg gagacaaaat cgtccagctg ggcttcnact tggatgccca tgggaantt 300

tctttcnctt ganggactta cnngggaccc aagaanccct tncaaggggc ccttngtgga 360
 tgggncccgga aaccccnnta tttgcccttg ggggggncca a 401

<210> 268
 <211> 223
 <212> DNA
 <213> Homo sapien

<400> 268
 tcgccatggt ggccaggctg gtcttgaact cctgacttta agtgatccac ccgcctcaac 60
 ctcccaaagt gctgggatta caggtgtgag ccaccgcgcc tggcctgata catactttta 120
 gaatcaagta gtcacgcact ttttctgttc atttttctaa aaagtaaata tacaaatggt 180
 ttgttttttg tttttttgt ttgtttgttt ctgttttttt ttt 223

<210> 269
 <211> 401
 <212> DNA
 <213> Homo sapien

<400> 269
 actatgtaaa ccacattgta ctttttttta ctttggcaac aaatatttat acatacaaga 60
 tgctagttca tttgaatatt tctcccaact tatccaagga tctccagctc taacaaaatg 120
 gtttattttt atttaaagt caatagttgt tttttaaaat ccaaatacaga ggtgcaggcc 180
 accagttaaa tgccgtctat caggttttgt gccttaagag actacagagt caaagctcat 240
 ttttaaagga gtaggacaaa gttgtcacag gtttttgttg ttgtttttat tgcccccaa 300
 attacatggt aatttccatt tatatcaggg attctattta cttgaagact gtgaagttgc 360
 cattttgtct cattgttttc tttgacataa ctaggatcca t 401

<210> 270
 <211> 401
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (401)
 <223> n = A,T,C or G

<400> 270
 tggctgttga ttcacctcag cactgcttgg tatctgcacc ctacctctct ttagaggctg 60
 ccttgtcaac tgaaaaatgc acctgacttc gagcaagact ctttccttag gttctggatc 120
 tgtttgagcc ccatggcact gagctggaat ctgaggggtct tgttccaagg atgtgatgat 180
 gtgggagaat gttctttgaa agagcagaaa tccagtctgc atggaaacag cctgtagagn 240
 agaagtttcc agtgataagt gttcactggt ctaaggagggt acaccacagc tacctgaatt 300
 ttcccaaaat gagtgcttct gtgcgttaca actggccttt gtacttgact gtgatgactt 360
 tgttttttct tttcaattct anatgaacat gggaaaaaat g 401

<210> 271
 <211> 329
 <212> DNA
 <213> Homo sapien

<400> 271
 ccacagcctc caagtcagggt ggggtggagt ccagagctg cacagggttt ggcccaagtt 60
 totaaggag gcacttctc cctcgccca tcagtgccag cccctgctgg ctggtgcctg 120

```

agccccctcag acagccccct gccccgcagg cctgccttct cagggacttc tgcggggcct      180
gaggcaagcc atggagtgag acccaggagc cggacacttc tcaggaaatg gcttttccca      240
acccccagcc cccacccggt ggttcttcct gttctgtgac tgtgtatagt gccaccacag      300
cttatggcat ctcattgagg acaaaaaaa      329

```

```

<210> 272
<211> 401
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(401)
<223> n = A,T,C or G

```

```

<400> 272
nggctgntaa cntcggaggt nacttcctgg actatcctgg agacccctc cgcttccacg      60
nncatnatat cnetcatngc tgggcccntn angacacnat cccactccaa cacctgngng      120
atgctggncn cctnggaacc ancntcagaa ngaccctgnt cntntgtntt ccgcaantcg      180
aagnnaangc gggntacacc tncntgcant ggnccacnct gcngggaact ntacacacct      240
acgggatgtg gctgcgccan gagccaagag cntttctgga tgattcccca gcctcttggn      300
agggantcta caacattgct nnntaccttt ntccnncngc nnntnntgga ntacaggngn      360
tnntaacact acatcttttt tactgcncn tncttggtgg g      401

```

```

<210> 273
<211> 401
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(401)
<223> n = A,T,C or G

```

```

<400> 273
cagcaccatg aagatcaaga tcatcgcacc cccagagcgc aagtactcgg tgtggatcgg      60
tggctccatc ctggcctcac tgtccacctt ccagcagatg tggattagca agcaggagta      120
cgacgagtcg ggcccccca tcgtccaccg caaatgcttc taaacggact cagcagatgc      180
gtagcatttg ctgcatgggt taattgagaa tagaaatttg cccctggcaa atgcacacac      240
ctcatgctag cctcacgaaa ctggaataag ccttcgaaaa gaaattgtcc ttgaagcttg      300
tatctgatat cagcactgga ttgtagaact tgttgctgat tttgaccttg tattgaagtt      360
aactgttccc cttggtatta acgtgtcagg gctgagtgnt c      401

```

```

<210> 274
<211> 401
<212> DNA
<213> Homo sapien

```

```

<400> 274
ccaccacac ccaccgcgcc ctggttcgcc tcttctccgg gagccagtcc gcgccaccgc      60
cgccgccag gccatcgcca ccctccgcag ccatgtccac caggtccgtg tcctcgtcct      120
cctaccgcag gatgttcggc ggccccggca ccgcgagccg gccgagctcc agccggagct      180
acgtgactac gtccacccgc acctacagcc tgggcagcgc gctgcgcccc agcaccagcc      240
gcagcctcta cgctcgtcc ccgggcggcg tgtatgccac gcgctcctct gccgtgcgcc      300
tgccgagcag cgtgcccggg gtgcggctcc tgcaggactc ggtggacttc tcgctggccg      360

```

acgccatcaa caccgagttc aagaacaccc gcaccaacga g 401

<210> 275
 <211> 401
 <212> DNA
 <213> Homo sapien

<400> 275
 ccacttccac cactttgttg agcagtgcct tcagcgcaac ccggatgcca ggtatccctg 60
 ctggcctggg cctgggcttc gggagagcag aggggtgctca ggagggttaag gccaggggtgt 120
 gaagggactt acctcccaaa ggttctgcag gggaaatctgg agctacacac aggaggggatc 180
 agtcctctgg tgtgtcagag gccagcctgg ggagctctgg cactgcttc ccatgagctg 240
 agggagaggg agaggggacc cgaggctgag gcataagtgg caggatttct ggaagctggg 300
 gacacggcag tgatgctgcg gtctctcctc ccttttccct ccaggcccag tgccagcacc 360
 ctctgaacc actctttctt caagcagatc aagcgacgtg c 401

<210> 276
 <211> 401
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(401)
 <223> n = A,T,C or G

<400> 276
 tctgatattg ntacccttga gccacctaag ttagaagaaa ttggaaatca agaagttgtc 60
 attgttgaag aagcacagag ttcagaagac tttaacatgg gctcttcctc tagcagccag 120
 tatactttct gtcagccaga aactgtatct tcattctcagc ctagtgtatga tgaatcaagt 180
 agtgatgaaa ccagtaatca gccagtcctt gccttttagac gacgccgtgc taggaagaag 240
 accgtttctg cttcagaatc tgaagaccgg ctagtgtgtg aacaagaaac tgaaccttct 300
 aaggagttga gtaaacgtca gttcagtagt ggtctcaata agtgtgttat acttgctttg 360
 gtgattgcaa tcagcatggg atttgccat ttctatggca c 401

<210> 277
 <211> 401
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(401)
 <223> n = A,T,C or G

<400> 277
 aactttggca acatatctca gcaaaaacta cagctatgtt attcatgcc aataaaaagc 60
 tgtgcagagg agtggctgca atgaggtcac aacgggtggg gatgtaaaag agatcttcaa 120
 gtctcatca cccatccctc gaactcaagt cccgctcatt acaaattctt cttgccagt 180
 tccacacatc ctgccccatc aagatgttct catcatgtgt tacgagnggc gctcaaggat 240
 gatgcttctt gaaaattgct tagttgaaaa atggagagat cagcttagta aaagatccat 300
 acagtgggaa gagaggctgc aggaacagcg ganaacagtt caggacaaga agaaaacagc 360
 cgggcgcacc agtcgtagta atcccccaa accaaagggg a 401

<210> 278

<211> 401
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(401)
 <223> n = A,T,C or G

<400> 278
 aatgagtgtg agaccacaaa tgaatgccgg gaggatgaaa tgtgttggaa ttatcatggc 60
 ggcttccgtt gttatccacg aaatccttgt caagatccct acattctaac accagagAAC 120
 cgatgtgttt gccagctctc aaatgccatg tgccgagAAC tgccccagtc aatagtctac 180
 aaatacatga gcatccgacg tgataggtct gtgccatcag acatcttcca gatacaggcc 240
 acaactatTT atgccaacac catcaatact tttcggatta aatctggaaa tgaaaatgga 300
 gagtctacct acgacaacaa anccctgtaa gtgcaatgct tgtgctcgtg aagncattat 360
 caggaccaag agaacatatc gtggacctgg agatgctgac a 401

<210> 279
 <211> 401
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(401)
 <223> n = A,T,C or G

<400> 279
 aaattattgc ctctgataca tacctaagtn aacanaacat taatacctaa gtaaacataa 60
 cttacttggg aggggttgag nttctaantg aaactgtatt tgaaactttt aagtataactt 120
 taggaaacaa gcatgaacgg cagtctagaa taccagAAC atctacttgg gtagcttggn 180
 gccattatcc tgtggaatct gatatgtctg gnagcatgtc attgatggga catgaagaca 240
 tctttggaaa tgatgagatt atttcctgtg ttaaaaaaaaa aaaaaatctt aaattcctac 300
 aatgtgAAC tgaaactaat aattttgatc ctgatgtatg ggacagcgta tctgtaccag 360
 gctctaaata acaaaagnta gggngacaag nacatgttcc t 401

<210> 280
 <211> 326
 <212> DNA
 <213> Homo sapien

<400> 280
 gaagtggAat tgtataattc aattcgataa ttgatctcat gggctttccc tggaggAaag 60
 gttttttttg ttgttttttt tttaagaact tgaaacttgt aaactgagat gtctgtagct 120
 tttttgccca tctgtagtgt atgtgaagat ttcaaaacct gagagcactt tttctttgtt 180
 tagaattatg agaaaggcac tagatgactt taggatttgc atttttccct ttattgcctc 240
 atttcttgtg acgccttgtt ggggagggaa atctgtttat tttttcctac aaataaaaaag 300
 ctaagattct atatcgcaaa aaaaaa 326

<210> 281
 <211> 374
 <212> DNA
 <213> Homo sapien

<400> 281
caacgcgttt gcaaatattc ccctggtagc ctacttcctt acccccgaat attggtaaga 60
tcgagcaatg gcttcaggac atgggttctc ttctcctgtg atcattcaag tgctcactgc 120
atgaagactg gcttgtctca gtgtttcaac ctcaccaggg ctgtctcttg gtccacacct 180
cgctccctgt tagtgccgta tgacagcccc catcaaataga ccttggccaa gtcaacggttt 240
ctctgtgggc aagggttggt ggctgattgg tggaaagtag ggtggaccaa aggaggccac 300
gtgagcagtc agcaccagtt ctgcaccagc agcgcctccg tcctagtggg tgttcctggt 360
tctcctggcc ctgg 374

<210> 282
<211> 404
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(404)
<223> n = A,T,C or G

<400> 282
agtgtggtgg aattcccgca tcctanncgc cgactcacac aaggcagagt ngccatggag 60
aaaattccag tgtcagcatt cttgctcctt gtggccctct cctacactct ggccagagat 120
accacagtca aacctgnagc caaaaaggac acaaaggact ctcgacccaa actgccccan 180
accctctcca gaggttgggg tgaccaactc atctggactc anacatatga agaagctcta 240
tataaatcca agacaagcaa caaaccttg atgattattc atcacttgga tgagtgccca 300
cacagtcaag ctttaaagaa agtgtttgct gaaaataaag aaatccagaa attggcagag 360
cagtttgtcc tcctcaatct ggtttatgaa acaactgaca aaca 404

<210> 283
<211> 184
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(184)
<223> n = A,T,C or G

<400> 283
agtgtggtgg aattcacttg cttaanttgt gggcaaaaga gaaaaagaag gattgatcag 60
agcattgtgc aatacagttt cattaactcc ttccctcgtc cccccaaaaa tttgaatttt 120
tttttcaaca ctcttacacc tgttatggaa aatgtcaacc tttgtaagaa aacccaaata 180
aaaa 184

<210> 284
<211> 421
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(421)
<223> n = A,T,C or G

<400> 284

```

ctattaatcc tgcacaaata tttttaatta cgtacaaaga tctgacatgt caccagggga      60
cccatttcac ccactgctct gtttgccgc cagtcttttg tctctctctt cagcaatggg      120
gaggcggata ccctttcttc ggggaanana aatccatggg ttgttgccct tgccaataac      180
aaaaatgttg gaaagtcgag tggcaaagct gttgccattg gcattcttca cgtgaaccac      240
gtcaaaagat ccagggtgcc tctctctgtt ggtgatcaca ccaattcttc ctaggttagc      300
acctccagtc accatacaca ggttaccagt gtcgaacttg atgaaatcag taatcttgcc      360
agtctctaaa tcaatctgaa tggatatcatt caccttgatg aggggatcgg ggtagcggat      420
g                                                                                   421

```

```

<210> 285
<211> 361
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(361)
<223> n = A,T,C or G

```

```

<400> 285
ctgggtggta actctttatt tcattgtccg gaanaaagat gggagtggga acagggtgga      60
cactgtgcag gcttcagctt ccactccggg caggattcag gctatctggg accgcaggga      120
ctgccagggt cacagccctg gctcccgagg caggcaggca aggtgacggg actggaagcc      180
cttttcanag ccttggagga gctgggtccg ccacaagcaa tgagtgccac tctgcagttt      240
gcaggggatg gataaacagg gaaacactgt gcattcctca cagccaacag ttaggtctt      300
ggtgaagccc cggcgctgag ctaagctcag gctgttccag ggagccacga aactgcaggt      360
a                                                                                   361

```

```

<210> 286
<211> 336
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(336)
<223> n = A,T,C or G

```

```

<400> 286
tttgagtggc agcgctttaa tttgtggggg ccttcaaggn agggtcgtgg ggggcagcgg      60
ggaggaanag ccganaaact gtgtgaccgg ggcctcaggt ggtgggcatt gggggctcct      120
cttgcanatg ccatttgga tcaccgggtg agccattggg ggcagcgggt accggctcct      180
tcttgttcaa catagggtag gtggcagcca cgggtccaac tcgcttgagg ctgggccctg      240
ggcgctccat tttgtgttcc angagcatgt gggtctgtgg cgggagcccc acgcaggccc      300
tgaggatggt ctgatgcag ctgcgctggc ggaaaaa                                     336

```

```

<210> 287
<211> 301
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(301)
<223> n = A,T,C or G

```

<400> 287
 tgggtaccaa atttntttat ttgaaggaat ggnacaaatc aaanaactta agnggatgtt 60
 ttggtacaac ttatanaaaa ggnaaaggaa accccaacat gcatgcncctg ccttgngnac 120
 cagggaagtc accccacggc tatggggaaa ttancccgag gcttancttt cattatcact 180
 gtctcccagg gngngcttgt caaaaanata ttcnccaag ccaaattcgg gcgctcccat 240
 nttgcncaa gttggtcacgt ggtcacccaa ttctttgatg gctttcacct gtcattcag 300
 g 301

<210> 288
 <211> 358
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(358)
 <223> n = A,T,C or G

<400> 288
 aagtttttaa actttttatt tgcattattaa aaaaattgng cattccaata attaaaatca 60
 tttgaacaaa aaaaaaatg gcaactctgat taaactgcat tacagcctgc aggacacctt 120
 gggccagctt ggttttactc tanatttcac tgcgtccca cccacttct tccacccac 180
 ttcttccttc accaactgc aagttcttct cttccctgcc agccanata atagacagat 240
 gggaaaggca ggcgcggcct tcgtttgcag tagttctttg atgtgaaagg ggcagcacag 300
 tcatttaaac ttgatccaac ctctttgcat cttacaaagt taaacagcta aaagaagt 358

<210> 289
 <211> 462
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(462)
 <223> n = A,T,C or G

<400> 289
 ggcacagaa atgctgttta tttctctgct gctcccaagc tggctggcct ttgcagagga 60
 gcagacaaca gatgcatagt tgggganaaa gggaggacag gttccaggat agaggggtgca 120
 ggctgaggga ggaagggtaa naggaaggaa ggccatcctg gatccccaca tttcagtctc 180
 anatgaggac aaagggactc ccaagcccc aaatcatcan aaaacaccaa ggagcaggag 240
 gagcttgagc aggccccagg gagcctcana gccataccag ccaactgtcta cttcccatcc 300
 tcctctccca ttccctgtct gttcanacc acctccagc taagccccag ctccattccc 360
 ccaatcctgg ccttgccag cttgacagtc acagtgcctg gaattccacc actgaggctt 420
 ctcccagttg gattaggacg tcgccctgtt agcatgctgc cc 462

<210> 290
 <211> 481
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(481)

<223> n = A,T,C or G

<400> 290

tacttttcta	aacttttatta	aagaaaaaag	caataagcaa	tggnggtaaa	tctctanaac	60
atacccaatt	ttctgggctt	cctccccga	gaatgtgaca	ttttgatttc	caaacatgcc	120
anaagtgtat	ggttcccaac	tgtactaaag	taggtganaa	gctgaagtcc	tcaagtgttc	180
atcttccaac	ttttcccagt	ctgtggtctg	tctttggatc	agcaataatt	gcctgaacag	240
ctactatggc	ttcgttgatt	tttgtctgta	gctctctgag	ctcctctatg	tgcagcaatc	300
gcanaatttg	agcagcttca	ttaanaactg	catctcctgt	gtcaaaacca	anaatatgtt	360
tgtctaaagc	aacaggtaag	ccctcttttg	tttgatttgc	cttancaact	gcctcctgtg	420
tcaggcgctc	ctgaaccaa	atccgaattg	ccttaagcat	taccaggtaa	tcctcatgac	480
g						481

<210> 291

<211> 381

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(381)

<223> n = A,T,C or G

<400> 291

tcataagtaat	gtaaaaccat	ttgttttaatt	ctaaatcaaa	tcactttcac	aacagtgaaa	60
attagtgaact	ggttaaggng	tgccactgta	catatcatca	ttttctgact	ggggtcagga	120
cctggtccta	gtccacaagg	gtggcaggag	gaggggtggag	gctaanaaca	cagaaaacac	180
acaaaanaaa	ggaaagctgc	cttggcanaa	ggatgaggng	gtgagcttgc	cgaaggatgg	240
tgggaagggg	gctccctggt	ggggccgagc	caggagctcc	aagtcagctc	tcctgcctta	300
cttagctcct	ggcanagggt	gagtggggac	ctacgagggt	caaaatcaaa	tggcatttgg	360
ccagcctggc	tttactaaca	g				381

<210> 292

<211> 371

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(371)

<223> n = A,T,C or G

<400> 292

gaaaaaataa	tcggtttaat	tgaaaaacct	gnaggatact	attccactcc	cccanatgag	60
gaggctgagg	anaccaaacc	cctacatcac	ctcgtagcca	cttctgatac	tcttcacgag	120
gcagcaggca	aagacaattc	ccaaaacctc	nacaaaagca	attccaaggg	ctgctgcagc	180
taccaccanc	acattttttc	tcagccagcc	cccaatcttc	tccacacagc	cctccttatg	240
gatcgcttcc	tcgttgaaat	taatcccaca	gcccacagta	acattaatgc	ancaggagtc	300
ggggactcgg	ttcttcgaca	tggaagggat	tttctcccaa	tctgtgtagt	tagcagcccc	360
acagcactta	a					371

<210> 293

<211> 361

<212> DNA

<213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(361)
 <223> n = A,T,C or G

<400> 293
 gattttaaag aaaacacttt attgttcagc aattaaaagt tagccaaata tgtatttttc 60
 tccataatth attgngatgt tatcaacatc aagtaaaatg ctcattttca tcatttgctt 120
 ctgttcatgt tttcttgaac acgtcttcaa ttttccttcc aaaatgctgc atgccacact 180
 tgaggtaacg aagcanaagt atttttaaac atgacagcta anaacattca tctacagcaa 240
 cctatatgct caatacatgc cgcgtgatcc tagtagtttt ttcacaacct tctacaagtt 300
 tttggaaaac atctgttatg atgactttca tacaccttca cctcaaaggc tttcttgca 360
 c 361

<210> 294
 <211> 391
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(391)
 <223> n = A,T,C or G

<400> 294
 tatttttaaag tttaattatg attcanaaaa aatcgagcga ataactttct ctgaaaaaat 60
 atattgactc tgtatanacc acagttattg gggganaagg gctggtaggt taaattatcc 120
 tattttttat tctgaaaatg atattaatan aaagtcccgt ttccagtctg attataaaga 180
 tacatatgcc caaaatggct ganaataaat acaacaggaa atgcaaaagc tgtaaagcta 240
 agggcatgca ananaaaatc tcanaataacc caaagnggca acaaggaacg tttggctgga 300
 atttgaagtt atttcagtca tctttgtctt tggctccatg tttcaggatg cgtgtgaact 360
 cgatgtaatt gaaattcccc tttttatcaa t 391

<210> 295
 <211> 343
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(343)
 <223> n = A,T,C or G

<400> 295
 ttcttttgggt ttattgataa cagaaactgt gcataattac agatttgatg aggaatctgc 60
 aaataataaaa gaatgtgtct actgccagca aaatacaatt attccatgcc ctctcaacat 120
 acaaatatag agttcttcac accanatggc tctgggtgtaa caaagccatt ttanatgttt 180
 aattgtgctt ctacaaaacc ttcanagcat gaggtagttt cttttaccta cnatattttc 240
 cacatttcca ttattacact ttagtgagc taaaatcctt ttaacatagc ctgcggatga 300
 tctttcacaa aagccaagcc tcatttaca agggtttatt tct 343

<210> 296
 <211> 241
 <212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(241)

<223> n = A,T,C or G

<400> 296

ttcttggata ttggttgttt ttgtgaaaaa gtttttgttt ttcttctcag tcaactgaat	60
tattttctcta ctttgccctc ctgatgcccc catgananaa cttaanataa tttctaacag	120
cttccacttt ggaaaaaaa aaaacctgtt ttctctcatgg aaccccagga gttgaaagtg	180
gatanatcgc tctcaaaatc taaggctctg ttcagcttta cattatgtta cctgacgttt	240
t	241

<210> 297

<211> 391

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(391)

<223> n = A,T,C or G

<400> 297

gttgtggctg anaatgctgg agatgctcag ttctctccct cacaaggtag gccacaaatt	60
cttggtggtg ccttcacatc tggggtcttc aggaccagc catgcctgcc gaggagtgt	120
gtcaggacan accatgtccg tgctaggccc aggacagcc caaccactcc tcatccaagt	180
ctctcccagg tttctgggtc cgatgggcaa ggatgacccc tccagtggct ggtacccac	240
catcccaacta cccctcacat gctctcactc tccatcaggt cccaatcct ggcttccctc	300
ttcacgaact ctcaaagaaa aggaaggata aaacctaaat aaaccagaca gaagcagctc	360
tggaaaagta caaaaagaca gccagaggtg t	391

<210> 298

<211> 321

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(321)

<223> n = A,T,C or G

<400> 298

caagccaaac tgtntccagc tttattaaan atactttcca taaacaatca tggatatttca	60
ggcaggacat gggcanacaa tcgttaacag tatacaacaa ctttcaaact cccttnttca	120
atggactacc aaaaaatcaaa aagccactat aaaacccaat gaagtcttca tctgatgtc	180
tgaacagggg aagttttaaag ngagggttga catttcacat ttagcatgtt gtttaacaac	240
ttttcacaag ccgaccctga ctttcaggaa gtgaaatgaa aatggcanaa tttatctgaa	300
natccacaat ctaaaaatgg a	321

<210> 299

<211> 401

<212> DNA

<213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(401)
 <223> n = A,T,C or G

<400> 299
 tatcataaag agtggtgaag tttatattt atagcaccat tgagacattt tgaaattgga 60
 attggtaaaa aaataaaaaca aaaagcattt gaattgtatt tggnggaaca gcaaaaaaag 120
 agaagtatca tttttctttg tcaaattata ctgtttccaa acattttgga aataaataac 180
 tggaattttg tcggtcactt gcaactggtt acaagattag aacaagagga acacatatgg 240
 agttaaattt tttttgttgg gatttcanat agagtgttgg ttataaaaag caaacagggc 300
 caacgtccac accaaattct tgatcaggac caccaatgtc ataggnggca atatctacaa 360
 taggtagtct cacagccttg cgtgttcgat attcaaagac t 401

<210> 300
 <211> 188
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(188)
 <223> n = A,T,C or G

<400> 300
 tgaatgcttt gtcataattaa gaaagttaaa gtgcaataat gtttgaanac aataagtgg 60
 ggtgtatctt gtttctaata agataaactt ttttgtcttt gctttatctt attagggagt 120
 tgtatgtcag tgtataaaac atactgtgtg gtataacagg cttaataaat tctttaaaag 180
 gaaaaaaa 188

<210> 301
 <211> 291
 <212> DNA
 <213> Homo sapien

<400> 301
 aagattttgt tttatatttat tatggctaga aagacactgt tatagccaaa atcggcaatg 60
 acactaaaga aatcctctgt gcttttcaat atgcaaatat atttcttcca agagttgccc 120
 tgggtgtgact tcaagagttc atgttaactt cttttctgga aacttccttt tcttagttgt 180
 tgtattcttg aagagcctgg gccatgaaga gcttgcctaa gttttgggca gtgaactcct 240
 tgatgttctg gcagtaagtg tttatctggc ctgcaatgag cagcgagtcc a 291

<210> 302
 <211> 341
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(341)
 <223> n = A,T,C or G

<400> 302
 tgatttttca taattttatt aaatnatcac tgggaaaact aatggttcgc gtatcacaca 60

```

attacactac aatctgatag gagtggtaaa accagccaat ggaatccagg taaagtacaa 120
aaacgccacc ttttattgtc ctgtcttatt tctcgggaag gaggggtcta ctttacacat 180
ttcatgagcc agcagtggac ttgagttaca atgtgtagggt tccttggtgt tatagctgca 240
gaagaagcca tcaaattctt gaggacttga catctctcgg aaagaagcaa actagtggat 300
ccccggggct gcaggaattc gatatcaagc ttatcgatac c 341

```

```

<210> 303
<211> 361
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(361)
<223> n = A,T,C or G

```

```

<400> 303
tgcagacagt aaatnaattt tatttgngtt cacagaacat actaggcgat ctgcacagtc 60
gtccgtgac agcccaccaa cccccaaccc tntacctcgc agccacccta aaggcgactt 120
caanaanatg gaaggatctc acggatctca ttctaatgg tccgccgaag tctcacacag 180
tanacagacg gagttganat gctggaggat gcagtcacct cctaaactta cgaccaccca 240
ccanacttca tcccagccgg gacgtcctcc cccacccgag tcctcccat ttcttctcct 300
actttgccgc agttccaggn gtctgtcttc caccagtccc acaaagctca ataaatacca 360
a 361

```

```

<210> 304
<211> 301
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(301)
<223> n = A,T,C or G

```

```

<400> 304
ctcttttcaa cagcctttat ttncggccct tgatcctgct cggatgctgg tggaggccct 60
tagctccgcc cgccaggctc tgtgccgcct cccgcaggc gcanattcat gaacacggtg 120
ctcaggggct tgaggccgta ctccccagc gggagctggt cctccagggg cttccccctcg 180
aaggtcagcc anaacaggtc gtctgcaca ccctocagcc cgctcacttg ctgcttcagg 240
tgggccacgg tctgcgtcag ccgcacctcg taggtgctgc tgcggccctt gttattcctc 300
a 301

```

```

<210> 305
<211> 331
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(331)
<223> n = A,T,C or G

```

```

<400> 305
ganaggctag taacatcagt tttattgggt tgggngggca accatagcct ggctgggggn 60

```

```

ggggctggcc ctcacaggtt gttgagttcc agcaggggtct ggtccaaggt ctggtgaatc 120
tcgacgttct cctccttggc actggccaag gtctcttcta ggtcatcgat ggtttttctcc 180
aactttgcca canacctctc ggcaaaactct gctcgggtct canctctctt cagcttctcc 240
tccaacagtt tgatctcctc ttcataattta tcttctttgg gggaatactc ctcctctgag 300
gccatcaggg acttgagggc ctggtccatg g 331

```

<210> 306
 <211> 457
 <212> DNA
 <213> Homo sapien

```

<400> 306
aatatgtaaa ggtaataact tttattatat taaagacaat gcaaacgaaa aacagaattg 60
agcagtgcga aatttaaagg actgttttgt tctcaaagtt gcaagtttca aagccaaaag 120
aattatatgt atcaaatata taagtaaaaa aaagttagac tttcaagcct gtaatcccag 180
cactttggga ggctgaggca ggtggatcac taacattaaa aagacaacat tagattttgt 240
cgatttatag caattttata aatatataac tttgtcactt ggatcctgaa gcaaaataat 300
aaagtgaatt tgggattttt gtacttggtg aaaagtttaa caccctaaat tcacaactag 360
tggatcccc gggtgcagg aattcgatat caagcttate gataccgtcg acctcgaggg 420
ggggcccggt acccaattcg ccctatagtg agtcgta 457

```

<210> 307
 <211> 491
 <212> DNA
 <213> Homo sapien

```

<400> 307
gtgcttgga ggaacccggc gctcgttccc cccccggcc ggccgcccac agccagccct 60
ccgtcacctc ttcaccgcac cctcggactg cccaaggcc cccgcgcgcg ctccagcgcc 120
gcgagccac cgccgcgcg gccgcctctc cttagtcgac gccatgacga ccgctccac 180
ctcgcaggtg cgccagaact accaccagga ctgagaggcc gccatcaacc gccagatcaa 240
cctggagctc tacgcctcct acgtttacct gtccatgtct tactactttg accgcgatga 300
tgtggctttg aagaactttg ccaaataact tcttcaccaa tctcatgagg agagggaaca 360
tgctgagaaa ctgatgaagc tgcagaacca acgaggtggc cgaatcttcc ttcaggatat 420
caagaaacca gactgtgatg actgggagag cgggctgaat gcaatggagt gtgcattaca 480
tttggaataa a 491

```

<210> 308
 <211> 421
 <212> DNA
 <213> Homo sapien

```

<400> 308
ctcagcgctt cttcttttctt ggtttgatcc tgactgctgt catggcgtgc cctctggaga 60
agggccctgga tgtgatgggtg tccaccttcc acaagtactc gggcaaagag ggtgacaagt 120
tcaagctcaa caagtcagaa ctaaaggagc tgctgacctg ggagctgccc agcttcttgg 180
ggaaaaggac agatgaagct gctttccaga agctgatgag caacttggac agcaacaggg 240
acaacgaggt ggacttccaa gagtactgtg tcttctgtc ctgcatcgcc atgatgtgta 300
acgaattctt tgaaggcttc ccagataagc agcccaggaa gaaatgaaaa ctcctctgat 360
gtgggtgggg ggtctgccag ctggggccct ccctgtcgcc agtgggcact tttttttttc 420
c 421

```

<210> 309
 <211> 321
 <212> DNA

<213> Homo sapien

<400> 309

accaaattggc	ggatgacgcc	ggtgcagcgg	gggggcccgg	gggccctggg	ggccctggga	60
tggggaaccg	cgggtggcttc	cgcggaggtt	tcggcagtg	catccggggc	cgggggtcgcg	120
gccgtggacg	gggccggggc	cgaggccgcg	gagctcgcg	aggcaaggcc	gaggataagg	180
agtggatgcc	cgtcaccaag	ttggggccgct	tggtcaagga	catgaagatc	aagtccctgg	240
aggagatcta	tctcttctcc	ctgcccatta	aggaatcaga	gatcattgat	ttcttctctgg	300
gggcctctct	caaggatgag	g				321

<210> 310

<211> 381

<212> DNA

<213> Homo sapien

<400> 310

ttaaccagcc	atattggctc	aataaatagc	ttcggtaagg	agttaatttc	cttctagaaa	60
tcagtgccta	tttttcctgg	aaactcaatt	ttaaatagtc	caattccatc	tgaagccaag	120
ctgttgatcat	tttcattcgg	tgacattctc	tcccatgaca	cccagaagg	gcagaagaac	180
cacatttttc	atttatagat	gtttgcatcc	tttgtattaa	aattattttg	aaggggttgc	240
ctcattggat	ggcttttttt	tttttcctcc	agggagaagg	ggagaaatgt	acttggaaat	300
taatgtatgt	ttacatctct	ttgcaaattc	ctgtacatag	agatatattt	tttaagtgtg	360
aatgtaacaa	catactgtga	a				381

<210> 311

<211> 538

<212> DNA

<213> Homo sapien

<400> 311

tttgaattta	caccaagaac	ttctcaataa	aagaaaatca	tgaatgctcc	acaatttcaa	60
cataccacaa	gagaagttaa	tttcttaaca	ttgtgttcta	tgattatttg	taagaccttc	120
accaagttct	gatatctttt	aaagacatag	ttcaaaattg	cttttgaaaa	tctgtattct	180
tgaaaatata	cttggtgtgt	attaggtttt	taaataccag	ctaaaggatt	acctcactga	240
gtcatcagta	ccctcctatt	cagctcccca	agatgatgtg	tttttgctta	ccctaagaga	300
ggttttcttc	ttatttttag	ataattcaag	tgcttagata	aattatgttt	tctttaagtg	360
tttatggtaa	actcttttaa	agaaaattta	atatgttata	gctgaatctt	tttggttaact	420
ttaaatcttt	atcatagact	ctgtacatat	gttcaaatta	gctgcttgcc	tgatgtgtgt	480
atcatcggtg	ggatgacaga	acaaacatat	ttatgatcat	gaataatgtg	ctttgtaa	538

<210> 312

<211> 176

<212> DNA

<213> Homo sapien

<400> 312

ggaggagcag	ctgagagata	gggtcagtga	atgcggttca	gcctgctacc	tctcctgtct	60
tcatagaacc	attgccttag	aattattgtg	tgacacgttt	tttggttggt	aagctgtaag	120
gttttgttct	ttgtgaacat	gggtattttg	aggggaggg	ggaggagta	gggaag	176

<210> 313

<211> 396

<212> DNA

<213> Homo sapien

<400> 313

ccagcacc	ccccc	caggccctgg	gggacctggg	ttctcagact	gccaaagaag	ccttgccatc	60
tggcgctccc	atggctcttg	caacatctcc	ccttcgtttt	tgaggggggc	atgccggggg		120
agccaccagc	ccctcactgg	gttcggagga	gagtcaggaa	gggccaagca	cgacaaagca		180
gaaacatcgg	atttggggaa	cgcgtgtcaa	tcccttgtgc	cgcagggctg	ggcgggagag		240
actgtttctgt	tccttgtgta	actgtgttgc	tgaaagacta	cctcgttctt	gtcttgatgt		300
gtcacccggg	caactgcctg	ggggcgggga	tgggggcagg	gtggaagcgg	ctccccattt		360
tataccaaag	gtgctacatc	tatgtgatgg	gtgggg				396

<210> 314

<211> 311

<212> DNA

<213> Homo sapien

<400> 314

cctcaacatc	ctcagagagg	actggaagcc	agtccttacg	ataaactcca	taatttatgg	60
cctgcagtat	ctcttcttgg	agcccaaccc	cgaggaccca	ctgaacaagg	aggccgcaga	120
ggtcctgcag	aacaaccggc	ggctgtttga	gcagaacgtg	cagcgctcca	tgccgggtgg	180
ctacatcggc	tcacctact	ttgagcgctg	cctgaaatag	ggttggcgca	taccacccc	240
cgccacggcc	acaagccctg	gcacccctg	caaataattta	ttgggggcca	tgggtagggg	300
tttggggggc	g					311

<210> 315

<211> 336

<212> DNA

<213> Homo sapien

<400> 315

tttagaacat	ggttatcatc	caagactact	ctaccctgca	acattgaact	cccaagagca	60
aatccacatt	cctcttgagt	tctgcagctt	ctgtgtaaat	agggcagctg	tcgtctatgc	120
cgtagaatca	catgatctga	ggaccattca	tggagctgc	taaatagcct	agtctgggga	180
gtcttcata	aagttttgca	tggagcaaac	aaacaggatt	aaactagggt	tggttccttc	240
agccctctaa	aagcataggg	cttagcctgc	aggcttcctt	gggctttctc	tgtgtgtgta	300
gttttgtaaa	cactatagca	tctgttaaga	tccagt			336

<210> 316

<211> 436

<212> DNA

<213> Homo sapien

<400> 316

aacatgggtct	gcgtgcctta	agagagacgc	ttcctgcaga	acaggacctg	actacaaaga	60
atgtttccat	tgggaattgtt	ggtaaagact	tggagtttac	aatctatgat	gatgatgatg	120
tgtctccatt	cctggaagggt	cttgaagaaa	gaccacagag	aaaggcacag	cctgctcaac	180
ctgctgatga	acctgcagaa	aaggctgatg	aaccaatgga	acattaagtg	ataagccagt	240
ctatatatgt	attatcaaat	atgtaagaat	acaggcacca	catactgatg	acaataatct	300
atactttgaa	ccaaaagtgtg	cagagtgggtg	gaatgctatg	ttttaggaat	cagtccagat	360
gtgagttttt	tccaagcaac	ctcactgaaa	cctatataat	ggaatacatt	tttctttgaa	420
agggctctgta	taatca					436

<210> 317

<211> 196

<212> DNA

<213> Homo sapien

<400> 317

tattccttgt	gaagatgata	tactatTTTT	gttaagcgtg	tctgtattta	tgtgtgagga	60
gctgctggct	tgcagtgcgc	gtgcacgtgg	agagctgggtg	cccggagatt	ggacggcctg	120
atgctccctc	ccctgccttg	gtccagggaa	gctggccgag	ggtcctggct	cctgaggggc	180
atctgcccc	ccccca					196

<210> 318

<211> 381

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(381)

<223> n = A,T,C or G

<400> 318

gacgcttngg	ccgtaacgat	gatcggagac	atcctgctgt	tcgggacgtt	gctgatgaat	60
gccggggcgg	tgctgaactt	taagctgaaa	aagaaggaca	cncagggtt	tggggaggag	120
tncagggagc	ccaacacagg	tgacaacatc	cggaattct	tgctgancct	cagatacttt	180
cnaatcttca	tcncctgtg	gaacatcttc	atgatgttct	gcatgattgt	gctgntcggc	240
tcttgaatcc	cancgatgaa	accannaact	cactttcccg	ggatgccgan	tctccattcc	300
tccattcctg	atgacttcaa	naatgttttt	gaccaaaaaa	ccgacaacct	tcccagaaaag	360
tccaagctcg	tggtggngg	a				381

<210> 319

<211> 506

<212> DNA

<213> Homo sapien

<400> 319

ctaagcttta	cgaatggggt	gacaacttat	gataaaaact	agagctagt	aattagccta	60
tttgtaaata	cctttgttat	aattgatagg	atacatcttg	gacatggaat	tgtaagcca	120
cctctgagca	gtgtatgtca	ggacttggtc	attagggttg	cagcagaggg	gcagaaggaa	180
ttatacaggt	agagatgtat	gcagatgtgt	ccatatatgt	ccatatttac	atcttgatag	240
ccattgatgt	atgcatctct	tggtgtact	ataagaacac	attaattcaa	tggaataaca	300
ctttgcta	atcttaattg	tatagatctg	ctaataaatt	ctcttaaaaa	catactgtat	360
tctgttgctg	tgtgtttcat	tttaaatga	gcattaaggg	aatgcagcat	ttaaatcaga	420
actctgccaa	tgcttttatc	tagaggcgtg	ttgccatttt	tgtcttatat	gaaatttctg	480
tccaagaaa	ggcaggatta	catctt				506

<210> 320

<211> 351

<212> DNA

<213> Homo sapien

<400> 320

ctgacctgca	ggacgaaacc	atgaagagcc	tgatccttct	tgccatcctg	gccgccttag	60
cggtagtaac	tttgtgttat	gaatcacatg	aaagcatgga	atcttatgaa	cttaatccct	120
tcattaacag	gagaaatgca	aataccttca	tatccccctca	gcagagatgg	agagctaaag	180
tccaagagag	gatccgagaa	cgctctaagc	ctgtccacga	gctcaatagg	gaagcctgtg	240
atgactacag	actttgcgaa	cgctacgccg	tggtttatgg	atacaatgct	gcctataatc	300
gctacttcag	gaagcgccga	gggaccaa	gagactgagg	gaagaaaaaa	a	351

<210> 321

<211> 421
 <212> DNA
 <213> Homo sapien

<400> 321
 ctccggaggcg ttccagctgct tcaagatgaa gctgaacatc tccttcccag ccactggctg 60
 ccagaaactc attgaagtgg acgatgaacg caaacttcgt actttctatg agaagcgtat 120
 ggccacagaa gttgctgctg acgctctggg tgaagaatgg aagggttatg tgggccgaat 180
 cagtgggtggg aacgacaaac aagggttccc catgaagcag ggtgtcttga cccatggccg 240
 tgtccgcctg ctactgagta aggggcattc ctgttacaga ccaaggagaa ctggagaaag 300
 aaagagaaaa tcagttcgtg gttgcattgt ggatgcaa atctgagcgttc tcaacttggg 360
 tattgtaaaa aaaggagaga aggatattcc tggactgact gatactacag tgcctcgccg 420
 c 421

<210> 322
 <211> 521
 <212> DNA
 <213> Homo sapien

<400> 322
 agcagctctc ctgccacagc tcctcacccc ctgaaaatgt tcgcctgctc caagtttgtc 60
 tccactccct ccttggtcaa gagcacctca cagctgctga gccgtccgct atctgcagtg 120
 gtgctgaaac gaccggagat actgacagat gagagcctca gcagcttggc agtctcatgt 180
 ccccttacct cacttgtctc tagccgcagc ttccaaacca gcgccatttc aagggacatc 240
 gacacagcag ccaagttcat tggagctggg gctgccacag ttgggggtggc tggttctggg 300
 gctgggattg gaactgtgtt tgggagcctc atcattgggt atgccaggaa cccttctctg 360
 aagcaacagc tcttctccta cgccattctg ggctttgcc tctcgaggc catggggctc 420
 ttttgtctga tggtagcctt tctcatcctc tttgccatgt gaaggagccg tctccacctc 480
 ccatagttct cccgcgtctg gttggccccg tgtgttcctt t 521

<210> 323
 <211> 435
 <212> DNA
 <213> Homo sapien

<400> 323
 ccgaggtcgc acgcgtgaga cttctccgcc gcagacgccg ccgcgatgcg ctacgtcgcc 60
 tcctacctgc tggctgccct aggggggcaac tcctccccca gcgccaagga catcaagaag 120
 atcttggaac gcgtgggtat cgaggcggac gacgaccggc tcaacaaggt tatcagtga 180
 ctgaatggaa aaaacattga agacgtcatt gccagggtta ttggcaagct tgccagtga 240
 cctgctggtg gggctgtagc cgtctctgct gcccaggct ctgcagcccc tgctgctgg 300
 tctgccccctg ctgcagcaga ggagaagaaa gatgagaaga aggaggagtc tgaagagtca 360
 gatgatgaca tgggatttgg cctttttgat taaattcctg ctccctgca aataaagcct 420
 ttttacacat ctcaa 435

<210> 324
 <211> 521
 <212> DNA
 <213> Homo sapien

<400> 324
 aggagatcga ctttcggtgc ccgcaagacc agggctggaa cgccgagatc acgctgcaga 60
 tgggtgcagta caagaatcgt caggccatcc tggcggtcaa atccacgcgg cagaagcagc 120
 agcacctggg ccagcagcag ccccccctgc agccgcagcc gcagccgcag ctccagcccc 180
 aaccccagcc tcagcctcag ccgcaacccc agcccgaatc acaaccccag cctcagcccc 240

```

aaccceaagcc tcagccccag cagctccacc cgtatccgca tccacatcca catccacact 300
ctcatcctca ctgcgaccca caccctcacc cgcacccgca tccgcaccaa ataccgcacc 360
cacacccaca gccgcactcg cagccgcacg ggcacccgct tctccgcagc acctccaact 420
ctgcctgaaa ggggcagctc ccgggcaaga caaggttttg aggacttgag gaagtgggac 480
gagcacattt ctattgtctt cacttggatc aaaagcaaaa c 521

```

<210> 325

<211> 451

<212> DNA

<213> Homo sapien

<400> 325

```

attttcattt ccattaacct ggaagctttc atgaatattc tcttctttta aaacatttta 60
acattattta aacagaaaaa gatgggctct ttctggtttag ttgttacatg atagcagaga 120
tatttttact tagattactt tgggaatgag agattgttgt cttgaactct ggcactgtac 180
agtgaatgtg tctgtagtgt tgttagtttg cattaagcat gtataacatt caagtatgtc 240
atccaaataa gaggcataata cattgaattg tttttaatcc tctgacaagt tgactcttcg 300
acccccaccc ccacccaaga cattttaata gtaaataagag agagagagaa gagttaatga 360
acatgaggta gtgttccact ggcaggatga cttttcaata gctcaaatca atttcagtgc 420
ctttatcact tgaattatta acttaatttg a 451

```

<210> 326

<211> 421

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(421)

<223> n = A,T,C or G

<400> 326

```

cgcggtcgta agggctgagg attttttggtc cgcacgctcc tgctcctgac tcaccgctgt 60
tcgctctcgc cgaggaacaa gtgcggtcagg aagcccgcgc gcaacagcca tggctttttaa 120
ggataccgga aaaacacccg tggagccgga ggtggcaatt caccgaattc gaatcacccct 180
aacaagccgc aacgtaaaaat ccttggaata ggtgtgtgct gacttgataa gaggcgcaaa 240
agaaaagaat ctcaaagtga aaggaccagt tcgaatgcct accaagactt tgagantcac 300
tacaagaaaa actccttggt gtgaaggttc taagacgtgg gatcgtttcc agatgagaaat 360
tcacaagcga ctcatcgact tgcacagtcc ttctgagatt gttaagcaga ttacttccat 420
c 421

```

<210> 327

<211> 456

<212> DNA

<213> Homo sapien

<400> 327

```

atcttgacga ggctgcggtg tctgctgcta ttctccgagc ttgcgaatgc cgctaagga 60
cgacaagaag aagaaggacg ctggaaagtgc ggccaagaaa gacaaagacc cagtgaacaa 120
atccggggggc aaggccaaaa agaagaagtgc gtccaaaggc aaagtccggg acaagctcaa 180
taacttagtc ttgtttgaca aagctacctg tgataaactc tgtaagggaag ttcccaacta 240
taaacttata accccagctg tggctctctga gagactgaag attcgaggct ccctggccag 300
ggcagccctt caggagctcc ttagtaaaagg acttatcaaa ctgggtttcaa agcacagagc 360
tcaagtaatt tacaccagaa ataccaaggg tggagatgct ccagctgctg gtgaagatgc 420
atgaatagggt ccaaccagct gtacatttgg aaaaat 456

```

<210> 328
 <211> 471
 <212> DNA
 <213> Homo sapien

<400> 328
 gtggaagtga catcgtcttt aaaccctgcg tggcaatccc tgacgcaccg ccgtgatgcc 60
 caggaagac agggcgacct ggaagtccaa ctacttcctt aagatcatcc aactattgga 120
 tgattatccg aaatgtttca ttgtgggagc agacaatgtg ggctccaagc agatgcagca 180
 gatccgcgatg tcccttcgcg ggaaggctgt ggtgctgatg ggcaagaaca ccatgatgcg 240
 caaggccatc cgagggcacc tggaaaacaa cccagctctg gagaaactgc tgcctcatat 300
 ccgggggaat gtgggctttg tgttcaccaa ggaggacctc actgagatca gggacatggt 360
 gctggccaat aaggtgccag ctgctgcccg tgctggtgcc attgccccat gtgaagtcac 420
 tgtgccagcc cagaacactg gtctcgggcc cgagaagacc tcctttttcc a 471

<210> 329
 <211> 278
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (278)
 <223> n = A,T,C or G

<400> 329
 gtttaaaactt aagcttggtg ccgagctcgg atccactagt ccagtgtggt ggaattctag 60
 aaattgagat gcccccccag gccagcaaat gttccttttt gttcaaagtc tatttttatt 120
 ccttgatatt tttctttttt tttttttttt ttgnggatgg ggacttgtga atttttctaa 180
 aggtgctatt taacatggga gganagcgtg tgcggtcca gccagcccg ctgctcactt 240
 tccacctct ctccacctgc ctctggcttc tcaggcct 278

<210> 330
 <211> 338
 <212> DNA
 <213> Homo sapien

<400> 330
 ctgaggcttc aacatcgaat acgcgcgagg ccccttcgcc ctattcttca tagccgaata 60
 cacaaacatt attataataa acaccctcac cactacaatc ttctaggaa caacatatga 120
 cgcactctcc cctgaactct acacaacata ttttgtcacc aagaccctac ttctaacctc 180
 cctgtttctta tgaattcgaa cagcataccc ccgattccgc tacgaccaac tcatacacct 240
 cctatgaaaa aacttcctac cactcacctc agcattactt atatgatatg totccatacc 300
 cattacaatc tccagcatte cccctcaaac ctaaaaaa 338

<210> 331
 <211> 2820
 <212> DNA
 <213> Homo sapiens

<400> 331
 tggcaaaatc ctggagccag aagaaaggac agcagcattg atcaatctta cagctaacat 60
 gttgtacctg gaaaacaatg cccagactca atttagtgag ccacagtaca cgaacctggg 120

```

gctcctgaac agcatggacc agcagattcg gaacgggtcc tcgtccacca gtcctataa 180
cacagaccac gcgcagaaca gcgtcacggc gccctcgccc tacgcacagc ccagccccac 240
cttcgatget ctctctccat caccgcgccat cccctccaac accgactacc caggccccga 300
cagttccgac gtgtccttcc agcagtcgag caccgccaaag tcggccacct ggacgtattc 360
cactgaactg aagaaactct actgccaaat tgcaaagaca tgccccatcc agatcaaggt 420
gatgacccca cctcctcagg gagctgttat ccgcgccatg cctgtctaca aaaaagctga 480
gcacgtcacg gaggtggtga agcgggtgcc caacctagag ctgagccgtg agttcaacga 540
gggacagatt gccctccta gtcatttgat tcgagtagag gggaacagcc atgcccagta 600
tgtagaagat cccatcacag gaagacagag tgtgctggta ccttatgagc cccccaggt 660
tggaactgaa ttcacgacag tcttgtagaa tttcatgtgt aacagcagtt gtgttgagg 720
gatgaaccgc cgtccaattt taatcattgt tactctggaa accagagatg ggcaagtcct 780
gggccgacgc tgctttgagg ccgggatctg tgcttgccca ggaagagaca ggaaggcgga 840
tgaagatagc atcagaaaagc agcaagtttc ggacagtaca aagaacggtg atggtacgaa 900
gcgcccgttt cgtcagaaca cacatggtat ccagatgaca tccatcaaga aacgaagatc 960
cccagatgat gaactgttat acttaccagt gaggggcccgt gagacttatg aaatgctgtt 1020
gaagatcaaa gagtccctgg aactcatgca gtaccttctt cagcacacaa ttgaaacgta 1080
caggcaacag caacagcagc agcaccagca cttacttcag aaacagacct caatacagtc 1140
tccatcttca tatggttaaca gtcccccacc tctgaacaaa atgaacagca tgaacaagct 1200
gccttctgtg agccagctta tcaacctca gcagcgcaac gccctcactc ctacaacat 1260
tcttgatggc atgggagcca acattcccat gatgggcacc cacatgccaa tggctggaga 1320
catgaatgga ctcagcccca ccaggcact cctccccca ctctccatgc catccacctc 1380
ccactgcaca cccccacctc cgtatccac agattgcagc attgtcagtt tcttagcgag 1440
gttgggctgt tcatcatgtc tggactattt cagcaccag gggctgacca ccatctatca 1500
gattgagcat tactccatgg atgatctggc aagtctgaaa atccctgagc aatttcgaca 1560
tgcatctgg aagggcaccc tggaccaccg gcagctccac gaattctctt ccccttctca 1620
tctcctgagg accccaagca gtgcctctac agtcagtgtg ggctccagtg agaccggggg 1680
tgagcgtgtt attgatgctg tgcgattcac cctccgcccag accatctctt tcccaccccg 1740
agatgagtgg aatgacttca actttgacat gtagctctgc cgcaataagc aacagcgcat 1800
caaagaggag ggggagttag cctcaccatg tgagctcttc ctatccctct cctaactgct 1860
agccccctaa aagcactcct gcttaatctt caaagccttc tccctagctc ccccccttc 1920
tcttgtctga tttcttaggg gaaggagaag taaggaggta cctcttacct aacatctgac 1980
ctggcatcta attctgattc tggctttaag ccttcaaaac tatagcttgc agaactgtag 2040
ctgccatggc taggtagaag tgagcaaaaa agagtgggt gtctccttaa gctgcagaga 2100
tttctcattg acttttataa agcatgttca ccttatagt ctaagactat atatataaat 2160
gtataaatat acagtataga tttttgggtg gggggcattg agtattgttt aaaatgtaat 2220
ttaaatgaaa gaaaattgag ttgcacttat tgaccatttt ttaatttact tgttttgat 2280
ggcttgtcta tactccttcc cttaaggggt atcatgtatg gtgataggta tctagagctt 2340
aatgctacat gtgagtgcga tgatgtacag attctttcag ttctttggat tctaaatata 2400
tgccacatca aacctttgag tagatccatt tccattgctt attatgtagg taagactgta 2460
gatatgtatt cttttctcag tgttggtata ttttatatta ctgacatttc ttctagtgat 2520
gatggttcac gttgggtgga tttaatccag ttataagaag aagttcatgt ccaaacgggtc 2580
ctcttttagtt tttggttggg aatgaggaaa attcttaaaa ggcccatagc agccagttca 2640
aaaacacccg acgtcatgta tttgagcata tcagtaaccc ccttaaattt aatacccaga 2700
taccttatct tacaatgttg attgggaaaa catttgctgc ccattacaga ggtattaaaa 2760
ctaaatttca ctactagatt gactaactca aatacacatt tgctactgtt gtaagaattc 2820

```

<210> 332

<211> 2270

<212> DNA

<213> Homo sapiens

<400> 332

```

tcgttgatat caaagacagt tgaaggaaat gaattttgaa acttcacggg gtgccaccct 60
acagtactgc cctgaccctt acatccagcg tttcgtagaa acccagctca tttctcttgg 120

```

```

aaagaaagtt attaccgatc caccatgtcc cagagcacac agacaaatga attcctcagt 180
ccagagggttt tccagcatat ctgggatttt ctggaacagc ctatatgttc agttcagccc 240
attgacttga actttgtgga tgaaccatca gaagatgggtg cgacaaacaa gattgagatt 300
agcatggact gtatccgcat gcaggactcg gacctgagtg accccatgtg gccacagtac 360
acgaacctgg ggctcctgaa cagcatggac cagcagattc agaacggctc ctcgctccacc 420
agtccctata acacagacca cgcgcagaac agcgtaacgg cgccctcgcc ctacgcacag 480
cccagctcca ccttcgatgc tctctctcca tcaccgcga tccctccaa caccgactac 540
ccaggcccg c acagtttcga cgtgtccttc cagcagtcga gcaccgcaa gtcggccacc 600
tggacgtatt ccactgaact gaagaaactc tactgcaaaa ttgcaaagac atgccccatc 660
cagatcaagg tgatgacccc acctcctcag ggagctgtta tccgcgcat gctgtctac 720
aaaaaagctg agcacgtcac ggaggtgggtg aagcgggtgcc ccaaccatga gctgagccgt 780
gaattcaacg agggacagat tgcctctcct agtcatttga ttcgagtaga ggggaacagc 840
catgcccagt atgtagaaga tcccatcaca ggaagacaga gtgtgctggg accttatgag 900
ccaccccagg ttggcactga attcacgaca gtcttgtaca atttcatgtg taacagcagt 960
tgtgttggag ggatgaaccg ccgtccaatt ttaatcattg ttactctgga aaccagagat 1020
gggcaagtcc tgggcccagc ctgctttgag gcccgatct gtgcttgccc aggaagagac 1080
aggaaggcgg atgaagatag catcagaaag cagcaagttt cggacagtac aaagaacggg 1140
gatggtacga agcgcccggt tcgtcagaac acacatggta tccagatgac atccatcaag 1200
aaacgaagat cccagatga tgaactgtta tacttaccag tgagggggccg tgagacttat 1260
gaaatgctgt tgaagatcaa agagtccctg gaatcatgc agtaccttcc tcagcacaca 1320
attgaaacgt acaggcaaca gcaacagcag cagcaccagc acttacttca gaaacagacc 1380
tcaatacagt ctccatcttc atatggtaac agtccccac ctctgaacaa aatgaacagc 1440
atgaacaagc tgcttctgt gagccagctt atcaaccctc agcagcgcaa cgccctcact 1500
cctacaacca ttctgatgg catgggagcc aacattccca tgatgggcac ccacatgcca 1560
atggctggag acatgaatgg actcagcccc acccaggcac tccctcccc actctccatg 1620
ccatccacct cccactgcac acccccacct ccgtatccaa cagattgcag cattgtcggg 1680
ttcttagcga ggttgggctg ttcatcatgt ctggactatt tcacgaccca ggggctgacc 1740
accatctatc agattgagca ttactccatg gatgactgg caagtctgaa aatccctgag 1800
caatttcgac atgcgatctg gaagggcatc ctggaccacc ggcagctcca cgaattctcc 1860
tcccttctc atctcctgcy gacccaagc agtgcctcta cagtcaagtgt gggctccagt 1920
gagaccgagg gtgagcgtgt tattgatgct gtgcgattca ccctccgcca gacctctct 1980
ttcccacccc gagatgagtg gaatgacttc aactttgaca tggatgctcg ccgcaataag 2040
caacagcgca tcaaagagga gggggagtga gcctcaccat gtgagctctt cctatccctc 2100
tcctaactgc cagcccccta aaagcactcc tgcttaatct tcaaagcctt ctccctagct 2160
cctcccttcc ctcttgtctg atttcttagg ggaaggagaa gtaagaggct acctcttacc 2220
taacatctga cctggcatct aattctgatt ctggctttaa gccttcaaaa 2270

```

<210> 333

<211> 2816

<212> DNA

<213> Homo sapiens

<400> 333

```

tcgttgatat caaagacagt tgaaggaaat gaattttgaa acttcacggg gtgccaccct 60
acagtactgc cctgaccctt acatccagcg ttctgtagaa acccagctca tttctcttgg 120
aaagaaagtt attaccgatc caccatgtcc cagagcacac agacaaatga attcctcagt 180
ccagagggttt tccagcatat ctgggatttt ctggaacagc ctatatgttc agttcagccc 240
attgacttga actttgtgga tgaaccatca gaagatgggtg cgacaaacaa gattgagatt 300
agcatggact gtatccgcat gcaggactcg gacctgagtg accccatgtg gccacagtac 360
acgaacctgg ggctcctgaa cagcatggac cagcagattc agaacggctc ctcgctccacc 420
agtccctata acacagacca cgcgcagaac agcgtaacgg cgccctcgcc ctacgcacag 480
cccagctcca ccttcgatgc tctctctcca tcaccgcga tccctccaa caccgactac 540
ccaggcccg c acagtttcga cgtgtccttc cagcagtcga gcaccgcaa gtcggccacc 600
tggacgtatt ccactgaact gaagaaactc tactgcaaaa ttgcaaagac atgccccatc 660

```

```

cagatcaagg tgatgacccc acctcctcag ggagctgtta tccgcgccat gcctgtctac 720
aaaaaagctg agcacgtcac ggaggtgggtg aagcgggtgcc ccaaccatga gctgagccgt 780
gaattcaacg agggacagat tgccctcctt agtcatttga ttcgagtaga ggggaacagc 840
catgcccagt atgtagaaga tcccatcaca ggaagacaga gtgtgctggt accttatgag 900
ccaccccagg ttggcactga attcacgaca gtcttgtaca atttcatgtg taacagcagt 960
tgtgttggag ggatgaaccg ccgtccaatt ttaatcattg ttactctgga aaccagagat 1020
gggcaagtcc tgggcccagc ctgctttgag gcccggtatc gtgcttgccc aggaagagac 1080
aggaaggcgg atgaagatag catcagaaaag cagcaagttt cggacagtac aaagaacggg 1140
gatggtacga agcgcctcgt tcgtcagaac acacatggta tccagatgac atccatcaag 1200
aaacgaagat cccagatga tgaactgtta tacttaccag tgaggggccc tgagacttat 1260
gaaatgctgt tgaagatcaa agagtccctg gaactcatgc agtaccttcc tcagcacaca 1320
attgaaacgt acaggcaaca gcaacagcag cagcaccagc acttacttca gaaacatctc 1380
ctttcagcct gcttcaggaa tgagcttgtg gagccccgga gagaaactcc aaaacaatct 1440
gacgtcttct ttagacattc caagcccca aaccgatcag tgtaccata gagccctatc 1500
tctatatttt aagtgtgtgt gttgtatttc catgtgtata tgtgagtgtg tgtgtgtgta 1560
tgtgtgtgcg tgtgtatcta gccctcataa acaggacttg aagacacttt ggctcagaga 1620
cccaactgct caaaggcaca aagccactag tgagagaatc ttttgaaggg actcaaacct 1680
ttacaagaaa ggatgttttc tgcagatttt gtatccttag accggccatt ggtgggtgag 1740
gaaccactgt gtttgtctgt gagctttctg ttgtttcctg ggagggaggg gtcagggtggg 1800
gaaaggggca ttaagatggt tattggaacc cttttctgtc ttcttctgtt gtttttctaa 1860
aattcacagg gaagcttttg agcaggtctc aaacttaaga tgtcttttta agaaaaggag 1920
aaaaaagtgt ttattgtctg tgcataagta agttgtaggt gactgagaga ctgagtcaga 1980
cccttttaat gctggtcagt taataatatt gcaagtagta agaaacgaag gtgtcaagtg 2040
tactgtctgg cagcgagggt atcattacca aaagtaatca actttgtggg tggagagtgc 2100
tttgtagaaa cttgcattat ttgtgtcttc cctcatgtg taggtagaac atttcttaat 2160
gctgtgtacc tgcctctgcc actgtatggt ggcactctgt atgctaaagt ttttcttgta 2220
catgaaacc tggagacct actacaaaaa aactgttggt tggcccccac agcagggtgaa 2280
ctcattttgt gcttttaata gaaagacaaa tccacccag taatattgcc cttacgtagt 2340
tgtttaccat tattcaaagc tcaaaataga atttgaagcc ctctcacaaa atctgtgatt 2400
aatttgctta attagagctt ctatccctca agcctaccta ccataaaacc agccatatta 2460
ctgatactgt tcagtgcatt tagccaggag acttacgttt tgagtaagtg agatccaagc 2520
agacgtgtta aaatcagcac tcctggactg gaaattaaag attgaaaggg tagactactt 2580
ttcttttttt tactcaaaag tttagagaat ctctgtttct ttccatttta aaaacatatt 2640
ttaagataat agcataaaga ctttaaaaaat gttcctcccc tccatcttcc cacaccagc 2700
caccagcact gtattttctg tcaccaagac aatgatttct tgttattgag gctgttgctt 2760
ttgtggatgt gtgattttta ttttcaataa acttttgcac cttgggttaa aagaaa 2816

```

<210> 334

<211> 2082

<212> DNA

<213> Homo sapiens

<400> 334

```

agatgctaca gcgactgcac acccaggctg tatgatacag cctattgtct cggggtgca 60
aacctgtcca gcatgtgatg tgggtgggata ctgaattgaa taccgaatac tgtaggcaat 120
tgtaacacag tggtaagtct ttgtgtatct aaacatagct aaacacaaa aggtatagta 180
agaatatggt attataatct tatggaacta tcattgtata tgtggtttgt caaccagaat 240
gtagttatac agcacaggac tgtgcttatg atgtgccaaag cacagctctc agtactaact 300
cctttaatct tcatatcaac cctaggagggt aacttcttaa gtagattcat attgtaaggg 360
tctcgggggtg ggggggttgg caaaatcctg gagccagaag aaaggacagc agcattgatc 420
aatcttacag ctaacatggt gtacctggaa aacaatgccc agactcaatt tagtgagcca 480
cagtacacga acctggggct cctgaacagc atggaccagc agattcagaa cggctcctcg 540
tccaccagtc cctataacac agaccacgcg cagaacagcg tcacggcgcc ctgcacctac 600
gcacagccca gctccacctt cgatgctctc tctccatcac ccgccatccc ctccaacacc 660

```

```

gactacccag gccgcacag tttcgacgtg tccttcacag agtcgagcac cgccaagtcg 720
gccacctgga cgtattccac tgaactgaag aaactctact gccaaattgc aaagacatgc 780
cccatccaga tcaaggtgat gacccacact cctcagggag ctgttatccg cgccatgcct 840
gtctacaaaa aagctgagca cgtcacggag gtggtgaagc ggtgccccaa ccatgagctg 900
agccgtgaat tcaacgaggg acagattgcc cctcctagtc atttgattcg agtagagggg 960
aacagccatg ccagtatgt agaagatccc atcacaggaa gacagagtgt gctggtacct 1020
tatgagccac ccaggttgg cactgaattc acgacagtct tgtacaattt catgtgtaac 1080
agcagtttg tggagggat gaaccgccgt ccaattttta tcattgttac tctggaaacc 1140
agagatggg aagtcctgg cgcagcgtgc tttgaggccc ggatctgtgc ttgcccagga 1200
agagacagga aggcggatga agatagcatc agaaagcagc aagtttcgga cagtacaaag 1260
aacggtgatg gtacgaagcg ccgtctcgt cagaacacac atggtatcca gatgacatcc 1320
atcaagaaac gaagatcccc agatgatgaa ctgttatact taccagttag gggccgtgag 1380
acttatgaaa tgctgttgaa gatcaaagag tccctggaac tcatgcagta ccttcctcag 1440
cacacaattg aaacgtacag gcaacagcaa cagcagcagc accagcactt acttcagaaa 1500
cagtgaagtgt atcaacgtgt cattttagga ggcagtgtg acggtgactt tatttggatc 1560
agcaataggg tgattgatga gcaatgtgga acataatggg agatagcaga ttgtcataga 1620
ttcagatgac ctggtatggc aaccctcttt cagttgcaac cttttttacg tgtcttatta 1680
taaccttccc ttcagaattc cacttatgtt ctgaaattaa atacaaacca tttctggtga 1740
attacaaaga aactcacact aacagttctc ttctctatat gctggtcca tacacactaa 1800
cagtaagtac acactctatt tggtagtgat gtgtatattt gaaaacatga aatcttttct 1860
catcccaatg gattgtctta taaatctcct gggatgcaca ctatccactt ttgggaataa 1920
cactgtagac cagggatagc aaataggctt tactataata taaagtgact tgtttgaatg 1980
ctgtaatgag aagaattctg agacctagt catgataatt ggggaaatat ctgggtgcag 2040
aaggataagg tagcatcatg ttgccgtatt ttagcatctc tg 2082

```

<210> 335

<211> 4849

<212> DNA

<213> Homo sapiens

<400> 335

```

cgttgatatc aaagacagtt gaaggaaatg aattttgaaa cttcacgggtg tgccacccta 60
cagtactgcc ctgaccctta catccagcgt ttcgtagaaa cccagctca tttctcttgg 120
aaagaaagtt attaccgatc caccatgtcc cagagcacac agacaaatga attcctcagt 180
ccagaggttt tccagcatat ctgggatttt ctggaacagc ctatatgttc agttcagccc 240
attgacttga actttgtgga tgaaccatca gaagatgggtg cgacaaacaa gattgagatt 300
agcatggact gtatccgcat gcaggactcg gacctgagtg accccatgtg gccacagtac 360
acgaacctgg ggctcctgaa cagcatggac cagcagattc agaacggctc ctctgccacc 420
agtccctata acacagacca cgcgcagaac agcgtcacgg cgccctcgcc ctacgcacag 480
cccagctcca ccttcgatgc tctctctcca tcaccgcca tcccctccaa caccgactac 540
ccaggcccg acagtttcga cgtgtccttc cagcagtcga gcaccgcaa gtcgccacc 600
tggacgtatt cactgaact gaagaaactc tactgccaaa ttgcaaagac atgccccatc 660
cagatcaagg tgatgacccc acctcctcag ggagctgtta tccgcgccat gcctgtctac 720
aaaaaagctg agcacgtcac ggaggtgggtg aagcggtgcc ccaaccatga gctgagccgt 780
gaattcaacg agggacagat tgccctcct agtcatttga ttcgagtaga ggggaacagc 840
catgcccagt atgtagaaga tcccatcaca ggaagacaga gtgtgctggt accttatgag 900
ccacccagg tggcactga attcacgaca gtcttgtaac atttcatgtg taacagcagt 960
tgtgttggag ggatgaaccg ccgtccaatt ttaatcattg ttactctgga aaccagagat 1020
gggcaagtcc tgggcccagc ctgctttgag gcccgatct gtgcttgccc aggaagagac 1080
aggaaggcgg atgaagatag catcagaaag cagcaagttt cggacagtac aaagaacggg 1140
gatggtacga agcggcgtt tcgtcagaac acacatggta tccagatgac atccatcaag 1200
aaacgaagat cccagatga tgaactgtta tacttaccag tgaggggccg tgagacttat 1260
gaaatgctgt tgaagatcaa agagtccttg gaactcatgc agtaccttcc tcagcacaca 1320
attgaaacgt acaggcaaca gcaacagcag cagcaccagc acttacttca gaaacagacc 1380

```

```

tcaatacagt ctccatcttc atatggtaac agctccccac ctctgaacaa aatgaacagc 1440
atgaacaagc tgccttctgt gagccagctt atcaaccctc agcagcgcaa cgccctcact 1500
cctacaacca ttcttgatgg catgggagcc aacattccca tgatgggcac ccacatgcca 1560
atggctggag acatgaatgg actcagcccc acccaggcac tccctcccc actctccatg 1620
ccatccacct cccagtgcac acccccacct ccgtatccca cagattgcag cattgtcagt 1680
ttcttagcga ggttgggctg ttcatcatgt ctggactatt tcacgaccca ggggctgacc 1740
accatctatc agattgagca ttactccatg gatgatctgg caagtctgaa aatccctgag 1800
caatttcgac atgcgatctg gaagggcatc ctggaccacc ggcagctcca cgaattctcc 1860
tcccccttc atctcctgog gaccccaagc agtgccctca cagtcagtgt gggctccagt 1920
gagaccggg gtgagcgtgt tattgatgct gtgcgattca ccctccgcca gaccatctct 1980
ttcccacccc gagatgagtg gaatgacttc aactttgaca tggatgctcg ccgcaataag 2040
caacagcgca tcaaagagga gggggagtga gcctcaccat gtgagctctt cctatccctc 2100
tcctaactgc cagcycccta aaagcactcc tgcttaatct tcaaagcctt ctccctagct 2160
cctccccctc ctcttgtctg atttcttagg ggaaggagaa gtaaggagct acctcttacc 2220
taacatctga cctggcatct aattctgatt ctggctttaa gccttcaaaa ctatagcttg 2280
cagaactgta gctgccatgg ctaggtagaa gtgagcaaaa aagagttggg tgtctcctta 2340
agctgcagag atttctcatt gacttttata aagcatgttc acccttatag tctaagacta 2400
tatatataaa tgtataaata tacagtatag atttttgggt ggggggcatt gagtattgtt 2460
taaaatgtaa tttaaatgaa agaaaattga gttgcactta ttgaccattt ttaatttac 2520
ttgttttgga tggcttgtct atactccttc ccttaagggg tatcatgtat ggtgataggt 2580
atctagagct taatgtaca tgtgagtgc gatgatgtac agattcttct agttctttgg 2640
attctaaata catgccacat caaacctttg agtagatcca ttccattgc ttattatgta 2700
ggtaagactg tagatatgta ttcttttctc agtgttggta tattttatat tactgacatt 2760
tcttctagtg atgatggttc acggtggggg gatttaatcc agttataaga agaagttcat 2820
gtccaaacgt cctctttagt ttttggttgg gaatgaggaa aattcttaa aggcccatag 2880
cagccagttc aaaaacaccc gacgtcatgt atttgagcat atcagtaacc cccttaaatt 2940
taataccaga taacctatct tacaatattg attgggaaaa catttgctgc cattacagag 3000
gtattaaaac taaatttcac tactagattg actaaactca atacacattt gctactgttg 3060
taagaattct gattgatttg attgggatga atgccatcta tctagtctta acagtgaagt 3120
tttactgtct attaatattc agggtaataa ggaatcattc agaaatgttg agtctgtact 3180
aaacagtaag atatctcaat gaaccataaa ttcaactttg taaaaatctt ttgaagcata 3240
gataatattg tttggtaaat gtttcttttg tttggtaaat gtttctttta aagaccctcc 3300
tattctataa aactctgcat gtagaggctt gtttaccctt ctctctctaa ggtttacaat 3360
aggagtgggt atttgaaaaa tataaaatta tgagattggg tttcctgtgg cataaattgc 3420
atcactgtat cattttcttt tttaacgggt aagagtttca gtttggttga aagtaactgt 3480
gagaaccagc tttcccgctc atctccctta gggactaccc atagacatga aaggtcccca 3540
cagagcaaga gataagtctt tcatggctgc tgttgcttaa accacttaaa cgaagagttc 3600
ccttgaaact ttgggaaaac atgttaatga caatattcca gatctttcag aaatataaca 3660
catttttttg catgcatgca aatgagctct gaaatcttcc catgcattct ggtcaagggc 3720
tgtcattgca cataagcttc cattttaatt taaagtgc aaagggccag cgtggctcta 3780
aaaggtaatg tgtggattgc ctctgaaaag tgtgtatata ttttgtgtga aattgcatac 3840
tttgtatttt gattattttt ttttcttct tgggatagtg ggatttccag aaccacactt 3900
gaaacctttt tttatcgttt ttgtattttc atgaaaatac catttagtaa gaataccaca 3960
tcaaataaga aataatgcta caattttaag aggggagggg aggggaaagt tttttttatt 4020
atttttttta aattttgtat gttaaagaga atgagtcctt gatttcaaag ttttgttgta 4080
cttaaatggg aataagcact gtaaacttct gcaacaagca tgcagctttg caaaccctt 4140
aaggggaaga atgaaagctg ttccctgggc ctagtaagaa gacaaaactgc ttcccttact 4200
ttgctgaggg tttgaataaa cctaggactt ccgagctatg tcagtactat tcaggtaaca 4260
ctagggcctt ggaaattcct gtactgtgtc tcatggattt ggcactagcc aaagcgaggc 4320
accttactg gcttacctcc tcatggcagc ctactctcct tgagtgtatg agtagccagg 4380
gtaaggggta aaaggatagt aagcatagaa accactagaa agtgggctta atggagtct 4440
tgtggcctca gctcaatgca gttagctgaa gaattgaaaa gtttttgttt ggagacgttt 4500
ataaacagaa atggaaagca gagttttcat taaatccttt tacctttttt ttttcttggt 4560
aatcccttaa aataacagta tgtgggatat tgaatgttaa agggatattt ttttctatt 4620
atttttataa ttgtacaaaa ttaagcaaat gttaaaagt ttatatgctt tattaatgtt 4680

```

150

```

ttcaaaaggt attatacatg tgatacattt ttttaagcttc agttgcttgt cttctgggtac 4740
tttctgttat gggcttttgg ggagccagaa gccaatctac aatctctttt tgtttgccag 4800
gacatgcaat aaaattttaa aaataaataa aaactaatta agaaataaa 4849

```

<210> 336

<211> 1386

<212> DNA

<213> Homo sapiens

<400> 336

```

atgttgtagc tggaaaacaa tgcccagact caatttagtg agccacagta cacgaacctg 60
gggctcctga acagcatgga ccagcagatt cagaacggct cctcgtccac cagtccttat 120
aacacagacc acgcgcagaa cagcgtcacg gcgcctcgc cctacgcaca gccagctcc 180
accttcgatg ctctctctcc atcacccgcc atccccctca acaccgacta cccaggcccg 240
cacagtttcg acgtgtcctt ccagcagtcg agcaccgcca agtcggccac ctggacgtat 300
tccactgaac tgaagaaact ctactgccaa attgcaaaga catgccccat ccagatcaag 360
gtgatgaccc cactcctca gggagctgtt atccgcgcca tgctgtcta caaaaaagct 420
gagcacgtca cggagggtgt gaagcgggtc cccaaccatg agctgagccg tgaattcaac 480
gagggacaga ttgcccctcc tagtcatttg attcgagtag aggggaacag ccatgcccag 540
tatgtagaag atcccatcac aggaagacag agtgtgtctg taccttatga gccaccccag 600
gttggcactg aattcacgac agtcttgtag aatttcattg gtaacagcag ttgtgttgga 660
gggatgaacc gccgtccaat tttaatcatt gttactctgg aaaccagaga tgggcaagtc 720
ctgggcccag gctgctttga ggcccggatc tgtgcttgcc caggaagaga caggaaggcg 780
gatgaagata gcatcagaaa gcagcaagtt tcggacagta caaagaacgg tgatggtacg 840
aagcgcccg ttcgtcagaa cacacatggt atccagatga catccatcaa gaaacgaaga 900
tccccagatg atgaactgtt atacttacca gtgagggggt gtgagactta tgaaatgctg 960
ttgaagatca aagagtcctt ggaactcatg cagtactctt ctcagcacac aattgaaacg 1020
tacaggcaac agcaacagca gcagcaccag cactacttcc agaaacagac ctcaataacg 1080
tctccatctt catatggtaa cagctcccc a cctctgaaca aaatgaacag catgaacaag 1140
ctgccttctg tgagccagct tatcaaccct cagcagcgca acgcccctac tctacaacc 1200
attcctgatg gcatgggagc caacattccc atgatgggca cccacatgcc aatggctgga 1260
gacatgaatg gactcagccc caccagggca ctccctcccc cactctccat gccatccacc 1320
tcccactgca cccccccacc tccgtatccc acagattgca gcattgtcag gatctggcaa 1380
gtctga 1386

```

<210> 337

<211> 1551

<212> DNA

<213> Homo sapiens

<400> 337

```

atgtcccaga gcacacagac aaatgaattc ctcagtccag aggttttcca gcatactctg 60
gattttctgg aacagcctat atgttcagtt cagcccattg acttgaactt tgtggatgaa 120
ccatcagaag atggtgagac aaacaagatt gagattagca tggactgtat ccgcatgcag 180
gactcggacc tgagtgaccc catgtggcca cagtacacga acctggggct cctgaacagc 240
atggaccagc agattcagaa cggctcctcg tccaccagtc cctataacac agaccacgcg 300
cagaacagcg tcacggcgcc ctgcgccctac gcacagccca gctccacctt cgatgctctc 360
tctccatcac ccgccatccc ctccaacacc gactacccag gcccgcacag tttcgacgtg 420
tccttccagc agtcgagcac cgccaagtcg gccacctgga cgtattccac tgaactgaag 480
aaactctact gccaaattgc aaagacatgc cccatccaga tcaaggatgat gacccacact 540
cctcagggag ctgttatccg cgccatgcct gtctacaaaa aagctgagca cgtcacggag 600
gtggatgaag ggtgccccaa ccatgagctg agccgtgaat tcaacgaggg acagattgcc 660
cctcctagtc atttgattcg agtagagggg aacagccatg cccagtatgt agaagatccc 720

```

151

```

atcacaggaa gacagagtgt gctggtacct tatgagccac cccagggttg cactgaattc 780
acgacagtct tgtacaattt catgtgtaac agcagttgtg ttggagggat gaaccgccgt 840
ccaattttta tcattgttac tctggaaacc agagatgggc aagtcctggg ccgacgctgc 900
tttgaggccc ggatctgtgc ttgcccagga agagacagga aggcggatga agatagcatc 960
agaaagcagc aagtttcgga cagtacaaag aacggtgatg gtacgaagcg cccgtttcgt 1020
cagaacacac atggtatcca gatgacatcc atcaagaaac gaagatcccc agatgatgaa 1080
ctgttatact taccagttag gggccgtgag acttatgaaa tgctgttgaa gatcaaagag 1140
tccctggaac tcatgcagta ccttcctcag cacacaattg aaacgtacag gcaacagcaa 1200
cagcagcagc accagcactt acttcagaaa cagacctcaa tacagtctcc atcttcatat 1260
ggtaacagct cccacactct gaacaaaatg aacagcatga acaagctgcc ttctgtgagc 1320
cagcttatca accctcagca gcgcaacgcc ctcaactcta caaccattcc tgatggcatg 1380
ggagccaaca ttcccatgat gggcacccac atgccaatgg ctggagacat gaatggactc 1440
agccccaccc aggcactccc tccccactc tccatgccat ccacctccca ctgcacaccc 1500
ccacctcctg atcccacaga ttgcagcatt gtcaggatct ggcaagtctg a 1551

```

<210> 338

<211> 586

<212> PRT

<213> Homo sapiens

<400> 338

```

Met Leu Tyr Leu Glu Asn Asn Ala Gln Thr Gln Phe Ser Glu Pro Gln
      5                      10                      15

Tyr Thr Asn Leu Gly Leu Leu Asn Ser Met Asp Gln Gln Ile Arg Asn
      20                      25                      30

Gly Ser Ser Ser Thr Ser Pro Tyr Asn Thr Asp His Ala Gln Asn Ser
      35                      40                      45

Val Thr Ala Pro Ser Pro Tyr Ala Gln Pro Ser Pro Thr Phe Asp Ala
      50                      55                      60

Leu Ser Pro Ser Pro Ala Ile Pro Ser Asn Thr Asp Tyr Pro Gly Pro
      65                      70                      75                      80

His Ser Ser Asp Val Ser Phe Gln Gln Ser Ser Thr Ala Lys Ser Ala
      85                      90                      95

Thr Trp Thr Tyr Ser Thr Glu Leu Lys Lys Leu Tyr Cys Gln Ile Ala
      100                      105                      110

Lys Thr Cys Pro Ile Gln Ile Lys Val Met Thr Pro Pro Pro Gln Gly
      115                      120                      125

Ala Val Ile Arg Ala Met Pro Val Tyr Lys Lys Ala Glu His Val Thr
      130                      135                      140

Glu Val Val Lys Arg Cys Pro Asn His Glu Leu Ser Arg Glu Phe Asn
      145                      150                      155                      160

Glu Gly Gln Ile Ala Pro Pro Ser His Leu Ile Arg Val Glu Gly Asn
      165                      170                      175

Ser His Ala Gln Tyr Val Glu Asp Pro Ile Thr Gly Arg Gln Ser Val

```

152

	180		185		190
Leu Val Pro Tyr Glu Pro Pro Gln Val Gly Thr Glu Phe Thr Thr Val					
195		200		205	
Leu Tyr Asn Phe Met Cys Asn Ser Ser Cys Val Gly Gly Met Asn Arg					
210		215		220	
Arg Pro Ile Leu Ile Ile Val Thr Leu Glu Thr Arg Asp Gly Gln Val					
225		230		235	240
Leu Gly Arg Arg Cys Phe Glu Ala Arg Ile Cys Ala Cys Pro Gly Arg					
	245		250		255
Asp Arg Lys Ala Asp Glu Asp Ser Ile Arg Lys Gln Gln Val Ser Asp					
	260		265		270
Ser Thr Lys Asn Gly Asp Gly Thr Lys Arg Pro Phe Arg Gln Asn Thr					
	275		280		285
His Gly Ile Gln Met Thr Ser Ile Lys Lys Arg Arg Ser Pro Asp Asp					
	290		295		300
Glu Leu Leu Tyr Leu Pro Val Arg Gly Arg Glu Thr Tyr Glu Met Leu					
305		310		315	320
Leu Lys Ile Lys Glu Ser Leu Glu Leu Met Gln Tyr Leu Pro Gln His					
	325		330		335
Thr Ile Glu Thr Tyr Arg Gln Gln Gln Gln Gln Gln His Gln His Leu					
	340		345		350
Leu Gln Lys Gln Thr Ser Ile Gln Ser Pro Ser Ser Tyr Gly Asn Ser					
	355		360		365
Ser Pro Pro Leu Asn Lys Met Asn Ser Met Asn Lys Leu Pro Ser Val					
	370		375		380
Ser Gln Leu Ile Asn Pro Gln Gln Arg Asn Ala Leu Thr Pro Thr Thr					
385		390		395	400
Ile Pro Asp Gly Met Gly Ala Asn Ile Pro Met Met Gly Thr His Met					
	405		410		415
Pro Met Ala Gly Asp Met Asn Gly Leu Ser Pro Thr Gln Ala Leu Pro					
	420		425		430
Pro Pro Leu Ser Met Pro Ser Thr Ser His Cys Thr Pro Pro Pro Pro					
	435		440		445
Tyr Pro Thr Asp Cys Ser Ile Val Ser Phe Leu Ala Arg Leu Gly Cys					
	450		455		460
Ser Ser Cys Leu Asp Tyr Phe Thr Thr Gln Gly Leu Thr Thr Ile Tyr					
465		470		475	480

Gln Ile Glu His Tyr Ser Met Asp Asp Leu Ala Ser Leu Lys Ile Pro
 485 490 495

Glu Gln Phe Arg His Ala Ile Trp Lys Gly Ile Leu Asp His Arg Gln
 500 505 510

Leu His Glu Phe Ser Ser Pro Ser His Leu Leu Arg Thr Pro Ser Ser
 515 520 525

Ala Ser Thr Val Ser Val Gly Ser Ser Glu Thr Arg Gly Glu Arg Val
 530 535 540

Ile Asp Ala Val Arg Phe Thr Leu Arg Gln Thr Ile Ser Phe Pro Pro
 545 550 555 560

Arg Asp Glu Trp Asn Asp Phe Asn Phe Asp Met Asp Ala Arg Arg Asn
 565 570 575

Lys Gln Gln Arg Ile Lys Glu Glu Gly Glu
 580 585

<210> 339

<211> 641

<212> PRT

<213> Homo sapiens

<400> 339

Met Ser Gln Ser Thr Gln Thr Asn Glu Phe Leu Ser Pro Glu Val Phe
 5 10 15

Gln His Ile Trp Asp Phe Leu Glu Gln Pro Ile Cys Ser Val Gln Pro
 20 25 30

Ile Asp Leu Asn Phe Val Asp Glu Pro Ser Glu Asp Gly Ala Thr Asn
 35 40 45

Lys Ile Glu Ile Ser Met Asp Cys Ile Arg Met Gln Asp Ser Asp Leu
 50 55 60

Ser Asp Pro Met Trp Pro Gln Tyr Thr Asn Leu Gly Leu Leu Asn Ser
 65 70 75 80

Met Asp Gln Gln Ile Gln Asn Gly Ser Ser Ser Thr Ser Pro Tyr Asn
 85 90 95

Thr Asp His Ala Gln Asn Ser Val Thr Ala Pro Ser Pro Tyr Ala Gln
 100 105 110

Pro Ser Ser Thr Phe Asp Ala Leu Ser Pro Ser Pro Ala Ile Pro Ser
 115 120 125

Asn Thr Asp Tyr Pro Gly Pro His Ser Phe Asp Val Ser Phe Gln Gln
 130 135 140

Ser	Ser	Thr	Ala	Lys	Ser	Ala	Thr	Trp	Thr	Tyr	Ser	Thr	Glu	Leu	Lys
145					150					155					160
Lys	Leu	Tyr	Cys	Gln	Ile	Ala	Lys	Thr	Cys	Pro	Ile	Gln	Ile	Lys	Val
				165					170					175	
Met	Thr	Pro	Pro	Pro	Gln	Gly	Ala	Val	Ile	Arg	Ala	Met	Pro	Val	Tyr
			180					185					190		
Lys	Lys	Ala	Glu	His	Val	Thr	Glu	Val	Val	Lys	Arg	Cys	Pro	Asn	His
		195					200					205			
Glu	Leu	Ser	Arg	Glu	Phe	Asn	Glu	Gly	Gln	Ile	Ala	Pro	Pro	Ser	His
	210					215					220				
Leu	Ile	Arg	Val	Glu	Gly	Asn	Ser	His	Ala	Gln	Tyr	Val	Glu	Asp	Pro
225					230					235					240
Ile	Thr	Gly	Arg	Gln	Ser	Val	Leu	Val	Pro	Tyr	Glu	Pro	Pro	Gln	Val
				245					250					255	
Gly	Thr	Glu	Phe	Thr	Thr	Val	Leu	Tyr	Asn	Phe	Met	Cys	Asn	Ser	Ser
			260					265					270		
Cys	Val	Gly	Gly	Met	Asn	Arg	Arg	Pro	Ile	Leu	Ile	Ile	Val	Thr	Leu
		275					280					285			
Glu	Thr	Arg	Asp	Gly	Gln	Val	Leu	Gly	Arg	Arg	Cys	Phe	Glu	Ala	Arg
		290				295					300				
Ile	Cys	Ala	Cys	Pro	Gly	Arg	Asp	Arg	Lys	Ala	Asp	Glu	Asp	Ser	Ile
305					310					315					320
Arg	Lys	Gln	Gln	Val	Ser	Asp	Ser	Thr	Lys	Asn	Gly	Asp	Gly	Thr	Lys
				325					330					335	
Arg	Pro	Phe	Arg	Gln	Asn	Thr	His	Gly	Ile	Gln	Met	Thr	Ser	Ile	Lys
			340					345					350		
Lys	Arg	Arg	Ser	Pro	Asp	Asp	Glu	Leu	Leu	Tyr	Leu	Pro	Val	Arg	Gly
			355				360					365			
Arg	Glu	Thr	Tyr	Glu	Met	Leu	Leu	Lys	Ile	Lys	Glu	Ser	Leu	Glu	Leu
		370				375					380				
Met	Gln	Tyr	Leu	Pro	Gln	His	Thr	Ile	Glu	Thr	Tyr	Arg	Gln	Gln	Gln
385					390					395					400
Gln	Gln	Gln	His	Gln	His	Leu	Leu	Gln	Lys	Gln	Thr	Ser	Ile	Gln	Ser
				405					410					415	
Pro	Ser	Ser	Tyr	Gly	Asn	Ser	Ser	Pro	Pro	Leu	Asn	Lys	Met	Asn	Ser
			420					425					430		
Met	Asn	Lys	Leu	Pro	Ser	Val	Ser	Gln	Leu	Ile	Asn	Pro	Gln	Gln	Arg

155

435 440 445
 Asn Ala Leu Thr Pro Thr Thr Ile Pro Asp Gly Met Gly Ala Asn Ile
 450 455 460
 Pro Met Met Gly Thr His Met Pro Met Ala Gly Asp Met Asn Gly Leu
 465 470 475 480
 Ser Pro Thr Gln Ala Leu Pro Pro Pro Leu Ser Met Pro Ser Thr Ser
 485 490 495
 His Cys Thr Pro Pro Pro Pro Tyr Pro Thr Asp Cys Ser Ile Val Gly
 500 505 510
 Phe Leu Ala Arg Leu Gly Cys Ser Ser Cys Leu Asp Tyr Phe Thr Thr
 515 520 525
 Gln Gly Leu Thr Thr Ile Tyr Gln Ile Glu His Tyr Ser Met Asp Asp
 530 535 540
 Leu Ala Ser Leu Lys Ile Pro Glu Gln Phe Arg His Ala Ile Trp Lys
 545 550 555 560
 Gly Ile Leu Asp His Arg Gln Leu His Glu Phe Ser Ser Pro Ser His
 565 570 575
 Leu Leu Arg Thr Pro Ser Ser Ala Ser Thr Val Ser Val Gly Ser Ser
 580 585 590
 Glu Thr Arg Gly Glu Arg Val Ile Asp Ala Val Arg Phe Thr Leu Arg
 595 600 605
 Gln Thr Ile Ser Phe Pro Pro Arg Asp Glu Trp Asn Asp Phe Asn Phe
 610 615 620
 Asp Met Asp Ala Arg Arg Asn Lys Gln Gln Arg Ile Lys Glu Glu Gly
 625 630 635 640
 Glu

<210> 340

<211> 448

<212> PRT

<213> Homo sapiens

<400> 340

Met Ser Gln Ser Thr Gln Thr Asn Glu Phe Leu Ser Pro Glu Val Phe
 5 10 15
 Gln His Ile Trp Asp Phe Leu Glu Gln Pro Ile Cys Ser Val Gln Pro
 20 25 30
 Ile Asp Leu Asn Phe Val Asp Glu Pro Ser Glu Asp Gly Ala Thr Asn
 35 40 45

Lys Ile Glu Ile Ser Met Asp Cys Ile Arg Met Gln Asp Ser Asp Leu
 50 55 60
 Ser Asp Pro Met Trp Pro Gln Tyr Thr Asn Leu Gly Leu Leu Asn Ser
 65 70 75 80
 Met Asp Gln Gln Ile Gln Asn Gly Ser Ser Ser Thr Ser Pro Tyr Asn
 85 90 95
 Thr Asp His Ala Gln Asn Ser Val Thr Ala Pro Ser Pro Tyr Ala Gln
 100 105 110
 Pro Ser Ser Thr Phe Asp Ala Leu Ser Pro Ser Pro Ala Ile Pro Ser
 115 120 125
 Asn Thr Asp Tyr Pro Gly Pro His Ser Phe Asp Val Ser Phe Gln Gln
 130 135 140
 Ser Ser Thr Ala Lys Ser Ala Thr Trp Thr Tyr Ser Thr Glu Leu Lys
 145 150 155 160
 Lys Leu Tyr Cys Gln Ile Ala Lys Thr Cys Pro Ile Gln Ile Lys Val
 165 170 175
 Met Thr Pro Pro Pro Gln Gly Ala Val Ile Arg Ala Met Pro Val Tyr
 180 185 190
 Lys Lys Ala Glu His Val Thr Glu Val Val Lys Arg Cys Pro Asn His
 195 200 205
 Glu Leu Ser Arg Glu Phe Asn Glu Gly Gln Ile Ala Pro Pro Ser His
 210 215 220
 Leu Ile Arg Val Glu Gly Asn Ser His Ala Gln Tyr Val Glu Asp Pro
 225 230 235 240
 Ile Thr Gly Arg Gln Ser Val Leu Val Pro Tyr Glu Pro Pro Gln Val
 245 250 255
 Gly Thr Glu Phe Thr Thr Val Leu Tyr Asn Phe Met Cys Asn Ser Ser
 260 265 270
 Cys Val Gly Gly Met Asn Arg Arg Pro Ile Leu Ile Ile Val Thr Leu
 275 280 285
 Glu Thr Arg Asp Gly Gln Val Leu Gly Arg Arg Cys Phe Glu Ala Arg
 290 295 300
 Ile Cys Ala Cys Pro Gly Arg Asp Arg Lys Ala Asp Glu Asp Ser Ile
 305 310 315 320
 Arg Lys Gln Gln Val Ser Asp Ser Thr Lys Asn Gly Asp Gly Thr Lys
 325 330 335

Arg Pro Phe Arg Gln Asn Thr His Gly Ile Gln Met Thr Ser Ile Lys
 340 345 350

Lys Arg Arg Ser Pro Asp Asp Glu Leu Leu Tyr Leu Pro Val Arg Gly
 355 360 365

Arg Glu Thr Tyr Glu Met Leu Leu Lys Ile Lys Glu Ser Leu Glu Leu
 370 375 380

Met Gln Tyr Leu Pro Gln His Thr Ile Glu Thr Tyr Arg Gln Gln Gln
 385 390 395 400

Gln Gln Gln His Gln His Leu Leu Gln Lys His Leu Leu Ser Ala Cys
 405 410 415

Phe Arg Asn Glu Leu Val Glu Pro Arg Arg Glu Thr Pro Lys Gln Ser
 420 425 430

Asp Val Phe Phe Arg His Ser Lys Pro Pro Asn Arg Ser Val Tyr Pro
 435 440 445

<210> 341

<211> 356

<212> PRT

<213> Homo sapiens

<400> 341

Met Leu Tyr Leu Glu Asn Asn Ala Gln Thr Gln Phe Ser Glu Pro Gln
 5 10 15

Tyr Thr Asn Leu Gly Leu Leu Asn Ser Met Asp Gln Gln Ile Gln Asn
 20 25 30

Gly Ser Ser Ser Thr Ser Pro Tyr Asn Thr Asp His Ala Gln Asn Ser
 35 40 45

Val Thr Ala Pro Ser Pro Tyr Ala Gln Pro Ser Ser Thr Phe Asp Ala
 50 55 60

Leu Ser Pro Ser Pro Ala Ile Pro Ser Asn Thr Asp Tyr Pro Gly Pro
 65 70 75 80

His Ser Phe Asp Val Ser Phe Gln Gln Ser Ser Thr Ala Lys Ser Ala
 85 90 95

Thr Trp Thr Tyr Ser Thr Glu Leu Lys Lys Leu Tyr Cys Gln Ile Ala
 100 105 110

Lys Thr Cys Pro Ile Gln Ile Lys Val Met Thr Pro Pro Pro Gln Gly
 115 120 125

Ala Val Ile Arg Ala Met Pro Val Tyr Lys Lys Ala Glu His Val Thr
 130 135 140

Glu Val Val Lys Arg Cys Pro Asn His Glu Leu Ser Arg Glu Phe Asn

158

145		150		155		160
Glu Gly Gln Ile Ala Pro Pro Ser His Leu Ile Arg Val Glu Gly Asn						
		165		170		175
Ser His Ala Gln Tyr Val Glu Asp Pro Ile Thr Gly Arg Gln Ser Val						
		180		185		190
Leu Val Pro Tyr Glu Pro Pro Gln Val Gly Thr Glu Phe Thr Thr Val						
		195		200		205
Leu Tyr Asn Phe Met Cys Asn Ser Ser Cys Val Gly Gly Met Asn Arg						
		210		215		220
Arg Pro Ile Leu Ile Ile Val Thr Leu Glu Thr Arg Asp Gly Gln Val						
		225		230		235
Leu Gly Arg Arg Cys Phe Glu Ala Arg Ile Cys Ala Cys Pro Gly Arg						
		245		250		255
Asp Arg Lys Ala Asp Glu Asp Ser Ile Arg Lys Gln Gln Val Ser Asp						
		260		265		270
Ser Thr Lys Asn Gly Asp Gly Thr Lys Arg Pro Ser Arg Gln Asn Thr						
		275		280		285
His Gly Ile Gln Met Thr Ser Ile Lys Lys Arg Arg Ser Pro Asp Asp						
		290		295		300
Glu Leu Leu Tyr Leu Pro Val Arg Gly Arg Glu Thr Tyr Glu Met Leu						
		305		310		315
Leu Lys Ile Lys Glu Ser Leu Glu Leu Met Gln Tyr Leu Pro Gln His						
		325		330		335
Thr Ile Glu Thr Tyr Arg Gln Gln Gln Gln Gln Gln His Gln His Leu						
		340		345		350
Leu Gln Lys Gln						
		355				
<210> 342						
<211> 680						
<212> PRT						
<213> Homo sapiens						
<400> 342						
Met Asn Phe Glu Thr Ser Arg Cys Ala Thr Leu Gln Tyr Cys Pro Asp						
		5		10		15
Pro Tyr Ile Gln Arg Phe Val Glu Thr Pro Ala His Phe Ser Trp Lys						
		20		25		30
Glu Ser Tyr Tyr Arg Ser Thr Met Ser Gln Ser Thr Gln Thr Asn Glu						
		35		40		45

Phe Leu Ser Pro Glu Val Phe Gln His Ile Trp Asp Phe Leu Glu Gln
 50 55 60
 Pro Ile Cys Ser Val Gln Pro Ile Asp Leu Asn Phe Val Asp Glu Pro
 65 70 75 80
 Ser Glu Asp Gly Ala Thr Asn Lys Ile Glu Ile Ser Met Asp Cys Ile
 85 90 95
 Arg Met Gln Asp Ser Asp Leu Ser Asp Pro Met Trp Pro Gln Tyr Thr
 100 105 110
 Asn Leu Gly Leu Leu Asn Ser Met Asp Gln Gln Ile Gln Asn Gly Ser
 115 120 125
 Ser Ser Thr Ser Pro Tyr Asn Thr Asp His Ala Gln Asn Ser Val Thr
 130 135 140
 Ala Pro Ser Pro Tyr Ala Gln Pro Ser Ser Thr Phe Asp Ala Leu Ser
 145 150 155 160
 Pro Ser Pro Ala Ile Pro Ser Asn Thr Asp Tyr Pro Gly Pro His Ser
 165 170 175
 Phe Asp Val Ser Phe Gln Gln Ser Ser Thr Ala Lys Ser Ala Thr Trp
 180 185 190
 Thr Tyr Ser Thr Glu Leu Lys Lys Leu Tyr Cys Gln Ile Ala Lys Thr
 195 200 205
 Cys Pro Ile Gln Ile Lys Val Met Thr Pro Pro Pro Gln Gly Ala Val
 210 215 220
 Ile Arg Ala Met Pro Val Tyr Lys Lys Ala Glu His Val Thr Glu Val
 225 230 235 240
 Val Lys Arg Cys Pro Asn His Glu Leu Ser Arg Glu Phe Asn Glu Gly
 245 250 255
 Gln Ile Ala Pro Pro Ser His Leu Ile Arg Val Glu Gly Asn Ser His
 260 265 270
 Ala Gln Tyr Val Glu Asp Pro Ile Thr Gly Arg Gln Ser Val Leu Val
 275 280 285
 Pro Tyr Glu Pro Pro Gln Val Gly Thr Glu Phe Thr Thr Val Leu Tyr
 290 295 300
 Asn Phe Met Cys Asn Ser Ser Cys Val Gly Gly Met Asn Arg Arg Pro
 305 310 315 320
 Ile Leu Ile Ile Val Thr Leu Glu Thr Arg Asp Gly Gln Val Leu Gly
 325 330 335

Arg Arg Cys Phe Glu Ala Arg Ile Cys Ala Cys Pro Gly Arg Asp Arg
 340 345 350
 Lys Ala Asp Glu Asp Ser Ile Arg Lys Gln Gln Val Ser Asp Ser Thr
 355 360 365
 Lys Asn Gly Asp Gly Thr Lys Arg Pro Phe Arg Gln Asn Thr His Gly
 370 375 380
 Ile Gln Met Thr Ser Ile Lys Lys Arg Arg Ser Pro Asp Asp Glu Leu
 385 390 395 400
 Leu Tyr Leu Pro Val Arg Gly Arg Glu Thr Tyr Glu Met Leu Leu Lys
 405 410 415
 Ile Lys Glu Ser Leu Glu Leu Met Gln Tyr Leu Pro Gln His Thr Ile
 420 425 430
 Glu Thr Tyr Arg Gln Gln Gln Gln Gln Gln His Gln His Leu Leu Gln
 435 440 445
 Lys Gln Thr Ser Ile Gln Ser Pro Ser Ser Tyr Gly Asn Ser Ser Pro
 450 455 460
 Pro Leu Asn Lys Met Asn Ser Met Asn Lys Leu Pro Ser Val Ser Gln
 465 470 475 480
 Leu Ile Asn Pro Gln Gln Arg Asn Ala Leu Thr Pro Thr Thr Ile Pro
 485 490 495
 Asp Gly Met Gly Ala Asn Ile Pro Met Met Gly Thr His Met Pro Met
 500 505 510
 Ala Gly Asp Met Asn Gly Leu Ser Pro Thr Gln Ala Leu Pro Pro Pro
 515 520 525
 Leu Ser Met Pro Ser Thr Ser Gln Cys Thr Pro Pro Pro Pro Tyr Pro
 530 535 540
 Thr Asp Cys Ser Ile Val Ser Phe Leu Ala Arg Leu Gly Cys Ser Ser
 545 550 555 560
 Cys Leu Asp Tyr Phe Thr Thr Gln Gly Leu Thr Thr Ile Tyr Gln Ile
 565 570 575
 Glu His Tyr Ser Met Asp Asp Leu Ala Ser Leu Lys Ile Pro Glu Gln
 580 585 590
 Phe Arg His Ala Ile Trp Lys Gly Ile Leu Asp His Arg Gln Leu His
 595 600 605
 Glu Phe Ser Ser Pro Ser His Leu Leu Arg Thr Pro Ser Ser Ala Ser
 610 615 620
 Thr Val Ser Val Gly Ser Ser Glu Thr Arg Gly Glu Arg Val Ile Asp

625 630 635 640
 Ala Val Arg Phe Thr Leu Arg Gln Thr Ile Ser Phe Pro Pro Arg Asp
 645 650 655
 Glu Trp Asn Asp Phe Asn Phe Asp Met Asp Ala Arg Arg Asn Lys Gln
 660 665 670
 Gln Arg Ile Lys Glu Glu Gly Glu
 675 680

 <210> 343
 <211> 461
 <212> PRT
 <213> Homo sapiens

 <400> 343
 Met Leu Tyr Leu Glu Asn Asn Ala Gln Thr Gln Phe Ser Glu Pro Gln
 5 10 15
 Tyr Thr Asn Leu Gly Leu Leu Asn Ser Met Asp Gln Gln Ile Gln Asn
 20 25 30
 Gly Ser Ser Ser Thr Ser Pro Tyr Asn Thr Asp His Ala Gln Asn Ser
 35 40 45
 Val Thr Ala Pro Ser Pro Tyr Ala Gln Pro Ser Ser Thr Phe Asp Ala
 50 55 60
 Leu Ser Pro Ser Pro Ala Ile Pro Ser Asn Thr Asp Tyr Pro Gly Pro
 65 70 75 80
 His Ser Phe Asp Val Ser Phe Gln Gln Ser Ser Thr Ala Lys Ser Ala
 85 90 95
 Thr Trp Thr Tyr Ser Thr Glu Leu Lys Lys Leu Tyr Cys Gln Ile Ala
 100 105 110
 Lys Thr Cys Pro Ile Gln Ile Lys Val Met Thr Pro Pro Pro Gln Gly
 115 120 125
 Ala Val Ile Arg Ala Met Pro Val Tyr Lys Lys Ala Glu His Val Thr
 130 135 140
 Glu Val Val Lys Arg Cys Pro Asn His Glu Leu Ser Arg Glu Phe Asn
 145 150 155 160
 Glu Gly Gln Ile Ala Pro Pro Ser His Leu Ile Arg Val Glu Gly Asn
 165 170 175
 Ser His Ala Gln Tyr Val Glu Asp Pro Ile Thr Gly Arg Gln Ser Val
 180 185 190
 Leu Val Pro Tyr Glu Pro Pro Gln Val Gly Thr Glu Phe Thr Thr Val
 195 200 205

```

Leu Tyr Asn Phe Met Cys Asn Ser Ser Cys Val Gly Gly Met Asn Arg
 210                      215                      220

Arg Pro Ile Leu Ile Ile Val Thr Leu Glu Thr Arg Asp Gly Gln Val
225                      230                      235                      240

Leu Gly Arg Arg Cys Phe Glu Ala Arg Ile Cys Ala Cys Pro Gly Arg
                      245                      250                      255

Asp Arg Lys Ala Asp Glu Asp Ser Ile Arg Lys Gln Gln Val Ser Asp
                      260                      265                      270

Ser Thr Lys Asn Gly Asp Gly Thr Lys Arg Pro Phe Arg Gln Asn Thr
                      275                      280                      285

His Gly Ile Gln Met Thr Ser Ile Lys Lys Arg Arg Ser Pro Asp Asp
 290                      295                      300

Glu Leu Leu Tyr Leu Pro Val Arg Gly Arg Glu Thr Tyr Glu Met Leu
305                      310                      315                      320

Leu Lys Ile Lys Glu Ser Leu Glu Leu Met Gln Tyr Leu Pro Gln His
                      325                      330                      335

Thr Ile Glu Thr Tyr Arg Gln Gln Gln Gln Gln Gln His Gln His Leu
 340                      345                      350

Leu Gln Lys Gln Thr Ser Ile Gln Ser Pro Ser Ser Tyr Gly Asn Ser
 355                      360                      365

Ser Pro Pro Leu Asn Lys Met Asn Ser Met Asn Lys Leu Pro Ser Val
 370                      375                      380

Ser Gln Leu Ile Asn Pro Gln Gln Arg Asn Ala Leu Thr Pro Thr Thr
385                      390                      395                      400

Ile Pro Asp Gly Met Gly Ala Asn Ile Pro Met Met Gly Thr His Met
 405                      410                      415

Pro Met Ala Gly Asp Met Asn Gly Leu Ser Pro Thr Gln Ala Leu Pro
 420                      425                      430

Pro Pro Leu Ser Met Pro Ser Thr Ser His Cys Thr Pro Pro Pro Pro
 435                      440                      445

Tyr Pro Thr Asp Cys Ser Ile Val Arg Ile Trp Gln Val
 450                      455                      460

```

<210> 344

<211> 516

<212> PRT

<213> Homo sapiens

<400> 344

163

Met	Ser	Gln	Ser	Thr	Gln	Thr	Asn	Glu	Phe	Leu	Ser	Pro	Glu	Val	Phe	5	10	15	
Gln	His	Ile	Trp	Asp	Phe	Leu	Glu	Gln	Pro	Ile	Cys	Ser	Val	Gln	Pro	20	25	30	
Ile	Asp	Leu	Asn	Phe	Val	Asp	Glu	Pro	Ser	Glu	Asp	Gly	Ala	Thr	Asn	35	40	45	
Lys	Ile	Glu	Ile	Ser	Met	Asp	Cys	Ile	Arg	Met	Gln	Asp	Ser	Asp	Leu	50	55	60	
Ser	Asp	Pro	Met	Trp	Pro	Gln	Tyr	Thr	Asn	Leu	Gly	Leu	Leu	Asn	Ser	65	70	75	80
Met	Asp	Gln	Gln	Ile	Gln	Asn	Gly	Ser	Ser	Ser	Thr	Ser	Pro	Tyr	Asn	85	90	95	
Thr	Asp	His	Ala	Gln	Asn	Ser	Val	Thr	Ala	Pro	Ser	Pro	Tyr	Ala	Gln	100	105	110	
Pro	Ser	Ser	Thr	Phe	Asp	Ala	Leu	Ser	Pro	Ser	Pro	Ala	Ile	Pro	Ser	115	120	125	
Asn	Thr	Asp	Tyr	Pro	Gly	Pro	His	Ser	Phe	Asp	Val	Ser	Phe	Gln	Gln	130	135	140	
Ser	Ser	Thr	Ala	Lys	Ser	Ala	Thr	Trp	Thr	Tyr	Ser	Thr	Glu	Leu	Lys	145	150	155	160
Lys	Leu	Tyr	Cys	Gln	Ile	Ala	Lys	Thr	Cys	Pro	Ile	Gln	Ile	Lys	Val	165	170	175	
Met	Thr	Pro	Pro	Pro	Gln	Gly	Ala	Val	Ile	Arg	Ala	Met	Pro	Val	Tyr	180	185	190	
Lys	Lys	Ala	Glu	His	Val	Thr	Glu	Val	Val	Lys	Arg	Cys	Pro	Asn	His	195	200	205	
Glu	Leu	Ser	Arg	Glu	Phe	Asn	Glu	Gly	Gln	Ile	Ala	Pro	Pro	Ser	His	210	215	220	
Leu	Ile	Arg	Val	Glu	Gly	Asn	Ser	His	Ala	Gln	Tyr	Val	Glu	Asp	Pro	225	230	235	240
Ile	Thr	Gly	Arg	Gln	Ser	Val	Leu	Val	Pro	Tyr	Glu	Pro	Pro	Gln	Val	245	250	255	
Gly	Thr	Glu	Phe	Thr	Thr	Val	Leu	Tyr	Asn	Phe	Met	Cys	Asn	Ser	Ser	260	265	270	
Cys	Val	Gly	Gly	Met	Asn	Arg	Arg	Pro	Ile	Leu	Ile	Ile	Val	Thr	Leu	275	280	285	
Glu	Thr	Arg	Asp	Gly	Gln	Val	Leu	Gly	Arg	Arg	Cys	Phe	Glu	Ala	Arg				

290 295 300
 Ile Cys Ala Cys Pro Gly Arg Asp Arg Lys Ala Asp Glu Asp Ser Ile
 305 310 315 320
 Arg Lys Gln Gln Val Ser Asp Ser Thr Lys Asn Gly Asp Gly Thr Lys
 325 330 335
 Arg Pro Phe Arg Gln Asn Thr His Gly Ile Gln Met Thr Ser Ile Lys
 340 345 350
 Lys Arg Arg Ser Pro Asp Asp Glu Leu Leu Tyr Leu Pro Val Arg Gly
 355 360 365
 Arg Glu Thr Tyr Glu Met Leu Leu Lys Ile Lys Glu Ser Leu Glu Leu
 370 375 380
 Met Gln Tyr Leu Pro Gln His Thr Ile Glu Thr Tyr Arg Gln Gln Gln
 385 390 395 400
 Gln Gln Gln His Gln His Leu Leu Gln Lys Gln Thr Ser Ile Gln Ser
 405 410 415
 Pro Ser Ser Tyr Gly Asn Ser Ser Pro Pro Leu Asn Lys Met Asn Ser
 420 425 430
 Met Asn Lys Leu Pro Ser Val Ser Gln Leu Ile Asn Pro Gln Gln Arg
 435 440 445
 Asn Ala Leu Thr Pro Thr Thr Ile Pro Asp Gly Met Gly Ala Asn Ile
 450 455 460
 Pro Met Met Gly Thr His Met Pro Met Ala Gly Asp Met Asn Gly Leu
 465 470 475 480
 Ser Pro Thr Gln Ala Leu Pro Pro Pro Leu Ser Met Pro Ser Thr Ser
 485 490 495
 His Cys Thr Pro Pro Pro Pro Tyr Pro Thr Asp Cys Ser Ile Val Arg
 500 505 510
 Ile Trp Gln Val
 515

<210> 345

<211> 1800

<212> DNA

<213> Homo sapiens

<400> 345

gccgctcatt gccactgcag tgactaaagc tgggaagacg ctggtcagtt cacctgcccc 60
 actggttgtt ttttaaacaa attctgatac aggcgacatc ctactgacc gagcaaagat 120
 tgacattcgt atcatcactg tgcaccattg gcttctaggc actccagtgg ggtaggagaa 180

```

ggaggtctga aaccctcgca gagggatctt gccctcattc tttgggtctg aaacactggc 240
agtcgttgga aacaggactc agggataaac cagcgcaatg gattggggga cgctgcacac 300
tttcatcggg ggtgtcaaca aacactccac cagcatcggg aaggtgtgga tcacagtcac 360
ctttattttc cgagtcacga tcctagtggg ggctgcccag gaagtgtggg gtgacgagca 420
agaggacttc gtctgcaaca cactgcaacc gggatgcaaa aatgtgtgct atgaccactt 480
tttcccgggtg tcccacatcc ggctgtgggc cctccagctg atcttcgtct ccaccccagc 540
gctgctgggtg gccatgcatg tggcctacta caggcacgaa accactcgca agttcaggcg 600
aggagagaag aggaatgatt tcaaagacat agaggacatt aaaaagcaca aggttcggat 660
agaggggtcg ctgtgggtgga cgtacaccag cagcatcttt ttccgaatca tctttgaagc 720
agcctttatg tatgtgtttt acttccttta caatgggtac cacctgccct gggtgttgaa 780
atgtgggatt gacccctgcc ccaacctgtg tgactgcttt atttctaggc caacagagaa 840
gaccgtgttt accattttta tgatttctgc gtctgtgatt tgcattgctg ttaacgtggc 900
agagttgtgc tacctgctgc tgaaagtgtg ttttaggaga tcaaagagag cacagacgca 960
aaaaaatcac cccaatcatg ccctaaagga gagtaagcag aatgaaatga atgagctgat 1020
ttcagatagt ggtcaaaatg caatcacagg tttcccaagc taaacatttc aaggtaaaat 1080
gtagctgcgt cataaggaga cttctgtctt ctccagaagg caataccaac ctgaaagttc 1140
cttctgtagc ctgaagagtt tgtaaatgac tttcataata aatagacact tgagttaact 1200
ttttgtagga tacttgctcc attcatacac aacgtaatca aatatgtggt ccatctctga 1260
aaacaagaga ctgcttgaca aaggagcatt gcagtcactt tgacagggtc cttttaagtg 1320
gactctctga caaagtgggt actttctgaa aatttatata actgttggtg ataaggaaca 1380
tttatccagg aattgatacg tttattagga aaagatattt ttataggctt ggatgttttt 1440
agttccgact ttgaatttat ataaagtatt tttataatga ctggctcttc ttacctggaa 1500
aaacatgcga tgtagttttt agaattacac cacaagtatc taaatttcca acttacaaag 1560
ggtcctatct tgtaaatatt gttttgcatt gtctgttggc aaatttgtga actgtcatga 1620
tacgcttaag gtgggaaagt gttcattgca caatatattt ttactgcttt ctgaatgtag 1680
acggaacagt gtggaagcag aaggcttttt taactcatcc gtttgccgca tcgttgacga 1740
ccactgggag atgtggatgt ggttgccctc ttttgctcgt ccccggtggt taacctttct 1800

```

<210> 346

<211> 261

<212> PRT

<213> Homo sapiens

<400> 346

```

Met Asp Trp Gly Thr Leu His Thr Phe Ile Gly Gly Val Asn Lys His
          5                      10                      15

```

```

Ser Thr Ser Ile Gly Lys Val Trp Ile Thr Val Ile Phe Ile Phe Arg
          20                      25                      30

```

```

Val Met Ile Leu Val Val Ala Ala Gln Glu Val Trp Gly Asp Glu Gln
          35                      40                      45

```

```

Glu Asp Phe Val Cys Asn Thr Leu Gln Pro Gly Cys Lys Asn Val Cys
          50                      55                      60

```

```

Tyr Asp His Phe Phe Pro Val Ser His Ile Arg Leu Trp Ala Leu Gln
          65                      70                      75                      80

```

```

Leu Ile Phe Val Ser Thr Pro Ala Leu Leu Val Ala Met His Val Ala
          85                      90                      95

```

```

Tyr Tyr Arg His Glu Thr Thr Arg Lys Phe Arg Arg Gly Glu Lys Arg
          100                     105                     110

```

166

Asn Asp Phe Lys Asp Ile Glu Asp Ile Lys Lys His Lys Val Arg Ile
 115 120 125
 Glu Gly Ser Leu Trp Trp Thr Tyr Thr Ser Ser Ile Phe Phe Arg Ile
 130 135 140
 Ile Phe Glu Ala Ala Phe Met Tyr Val Phe Tyr Phe Leu Tyr Asn Gly
 145 150 155 160
 Tyr His Leu Pro Trp Val Leu Lys Cys Gly Ile Asp Pro Cys Pro Asn
 165 170 175
 Leu Val Asp Cys Phe Ile Ser Arg Pro Thr Glu Lys Thr Val Phe Thr
 180 185 190
 Ile Phe Met Ile Ser Ala Ser Val Ile Cys Met Leu Leu Asn Val Ala
 195 200 205
 Glu Leu Cys Tyr Leu Leu Leu Lys Val Cys Phe Arg Arg Ser Lys Arg
 210 215 220
 Ala Gln Thr Gln Lys Asn His Pro Asn His Ala Leu Lys Glu Ser Lys
 225 230 235 240
 Gln Asn Glu Met Asn Glu Leu Ile Ser Asp Ser Gly Gln Asn Ala Ile
 245 250 255
 Thr Gly Phe Pro Ser
 260

<210> 347

<211> 1740

<212> DNA

<213> Homo sapiens

<400> 347

atgaacaaac tgtatatcgg aaacctcagc gagaacgccg cccctcgga cctagaaagt 60
 atcttcaagg acgccaagat cccggtgtcg ggacccttcc tggatgaagac tggctacgcg 120
 ttcgtggact gcccgacga gagctgggccc ctcaaggcca tcgaggcgct ttcaggtaaa 180
 atagaactgc acgggaaacc catagaagtt gagcactcgg tcccaaaaag gcaaaggatt 240
 cggaaacttc agatacgaat tatccgcct catttacagt gggagggtgct ggatagttta 300
 ctagtccagt atggagtggg ggagagctgt gagcaagtga aactgactc ggaaactgca 360
 gttgtaaatg taacctattc cagtaaggac caagctagac aagcactaga caaactgaat 420
 ggatttcagt tagagaattt caccttgaaa gtagcctata tccctgatga aacggccgcc 480
 cagcaaaacc ccttgacgca gcccgcaggt cgcggggggc ttgggcagag gggctcctca 540
 aggcaggggt ctccaggatc cgtatccaag cagaaaccat gtgatttgcc tctgcgcctg 600
 ctggttccca cccaatttgt tggagccatc ataggaaaag aagggtgccac cattcggaac 660
 atcaccaaac agaccagtc taaaatcgat gtccaccgta aagaaaatgc gggggctgct 720
 gagaagtcca ttactatcct ctctactcct gaaggcacct ctgcggcttg taagtctatt 780
 ctggagatta tgcataagga agctcaagat ataaaattca cagaagagat ccccttgaag 840
 attttagctc ataataactt tgttgagcgt cttattggta aagaaggaag aaatcttaaa 900
 aaaattgagc aagacacaga cactaaaatc acgatatctc cattgcagga attgacgctg 960

tataatccag aacgcactat tacagttaaa ggcaatgttg agacatgtgc caaagctgag 1020
gaggagatca tgaagaaaat cagggagtct tatgaaaatg atattgcttc tatgaatctt 1080
caagcacatt taattcctgg attaaatctg aacgccttgg gtctgttccc acccacttca 1140
gggatgccac ctcccacctc agggccccct tcagccatga ctctcccta cccgcagttt 1200
gagcaatcag aaacggagac tggtcatctg tttatcccag ctctatcagt cggtgccatc 1260
atcggcaagc agggccagca catcaagcag ctttctcgct ttgctggagc ttcaattaag 1320
attgctccag cggaagcacc agatgctaaa gtgaggatgg tgattatcac tggaccacca 1380
gaggctcagt tcaaggctca gggaagaatt tatggaaaaa ttaaagaaga aaactttgtt 1440
agtcctaaag aagaggtgaa acttgaagct catatcagag tgccatcctt tgctgctggc 1500
agagttattg gaaaaggagg caaacggtg aatgaacttc agaatttgtc aagtgcagaa 1560
gttggtgtcc ctctgaccca gacacctgat gagaatgacc aagtggttgt caaaataact 1620
ggtcacttct atgcttgcca ggttgcccag agaaaaattc aggaaattct gactcaggta 1680
aagcagcacc aacaacagaa ggctctgcaa agtgaccac ctcagtcaag acggaagtaa 1740

<210> 348

<211> 579

<212> PRT

<213> Homo sapiens

<400> 348

Met Asn Lys Leu Tyr Ile Gly Asn Leu Ser Glu Asn Ala Ala Pro Ser
5 10 15

Asp Leu Glu Ser Ile Phe Lys Asp Ala Lys Ile Pro Val Ser Gly Pro
20 25 30

Phe Leu Val Lys Thr Gly Tyr Ala Phe Val Asp Cys Pro Asp Glu Ser
35 40 45

Trp Ala Leu Lys Ala Ile Glu Ala Leu Ser Gly Lys Ile Glu Leu His
50 55 60

Gly Lys Pro Ile Glu Val Glu His Ser Val Pro Lys Arg Gln Arg Ile
65 70 75 80

Arg Lys Leu Gln Ile Arg Asn Ile Pro Pro His Leu Gln Trp Glu Val
85 90 95

Leu Asp Ser Leu Leu Val Gln Tyr Gly Val Val Glu Ser Cys Glu Gln
100 105 110

Val Asn Thr Asp Ser Glu Thr Ala Val Val Asn Val Thr Tyr Ser Ser
115 120 125

Lys Asp Gln Ala Arg Gln Ala Leu Asp Lys Leu Asn Gly Phe Gln Leu
130 135 140

Glu Asn Phe Thr Leu Lys Val Ala Tyr Ile Pro Asp Glu Thr Ala Ala
145 150 155 160

Gln Gln Asn Pro Leu Gln Gln Pro Arg Gly Arg Arg Gly Leu Gly Gln
165 170 175

Arg Gly Ser Ser Arg Gln Gly Ser Pro Gly Ser Val Ser Lys Gln Lys

168

180	185	190
Pro Cys Asp Leu Pro Leu Arg Leu Leu Val Pro Thr Gln Phe Val Gly		
195	200	205
Ala Ile Ile Gly Lys Glu Gly Ala Thr Ile Arg Asn Ile Thr Lys Gln		
210	215	220
Thr Gln Ser Lys Ile Asp Val His Arg Lys Glu Asn Ala Gly Ala Ala		
225	230	235
Glu Lys Ser Ile Thr Ile Leu Ser Thr Pro Glu Gly Thr Ser Ala Ala		
	245	250
		255
Cys Lys Ser Ile Leu Glu Ile Met His Lys Glu Ala Gln Asp Ile Lys		
	260	265
		270
Phe Thr Glu Glu Ile Pro Leu Lys Ile Leu Ala His Asn Asn Phe Val		
	275	280
		285
Gly Arg Leu Ile Gly Lys Glu Gly Arg Asn Leu Lys Lys Ile Glu Gln		
	290	295
		300
Asp Thr Asp Thr Lys Ile Thr Ile Ser Pro Leu Gln Glu Leu Thr Leu		
305	310	315
		320
Tyr Asn Pro Glu Arg Thr Ile Thr Val Lys Gly Asn Val Glu Thr Cys		
	325	330
		335
Ala Lys Ala Glu Glu Glu Ile Met Lys Lys Ile Arg Glu Ser Tyr Glu		
	340	345
		350
Asn Asp Ile Ala Ser Met Asn Leu Gln Ala His Leu Ile Pro Gly Leu		
	355	360
		365
Asn Leu Asn Ala Leu Gly Leu Phe Pro Pro Thr Ser Gly Met Pro Pro		
	370	375
		380
Pro Thr Ser Gly Pro Pro Ser Ala Met Thr Pro Pro Tyr Pro Gln Phe		
385	390	395
		400
Glu Gln Ser Glu Thr Glu Thr Val His Leu Phe Ile Pro Ala Leu Ser		
	405	410
		415
Val Gly Ala Ile Ile Gly Lys Gln Gly Gln His Ile Lys Gln Leu Ser		
	420	425
		430
Arg Phe Ala Gly Ala Ser Ile Lys Ile Ala Pro Ala Glu Ala Pro Asp		
	435	440
		445
Ala Lys Val Arg Met Val Ile Ile Thr Gly Pro Pro Glu Ala Gln Phe		
	450	455
		460
Lys Ala Gln Gly Arg Ile Tyr Gly Lys Ile Lys Glu Glu Asn Phe Val		
465	470	475
		480

Ser Pro Lys Glu Glu Val Lys Leu Glu Ala His Ile Arg Val Pro Ser
485 490 495

Phe Ala Ala Gly Arg Val Ile Gly Lys Gly Gly Lys Thr Val Asn Glu
500 505 510

Leu Gln Asn Leu Ser Ser Ala Glu Val Val Val Pro Arg Asp Gln Thr
515 520 525

Pro Asp Glu Asn Asp Gln Val Val Val Lys Ile Thr Gly His Phe Tyr
530 535 540

Ala Cys Gln Val Ala Gln Arg Lys Ile Gln Glu Ile Leu Thr Gln Val
545 550 555 560

Lys Gln His Gln Gln Gln Lys Ala Leu Gln Ser Gly Pro Pro Gln Ser
565 570 575

Arg Arg Lys

<210> 349

<211> 207

<212> DNA

<213> Homo sapiens

<400> 349

```

atgtggcagc ccctcttctt caagtggctc ttgtcctggt gccctgggag ttctcaaatt 60
gctgcagcag cctccacca gcttgaggat gacatcaata cacagaggaa gaagagtcag 120
gaaaagatga gagaagttac agactctcct gggcgacccc gagagcttac cattcctcag 180
acttcttcac atggtgctaa cagattt                                     207

```

<210> 350

<211> 69

<212> PRT

<213> Homo sapiens

<400> 350

Met Trp Gln Pro Leu Phe Phe Lys Trp Leu Leu Ser Cys Cys Pro Gly
5 10 15

Ser Ser Gln Ile Ala Ala Ala Ala Ser Thr Gln Pro Glu Asp Asp Ile
20 25 30

Asn Thr Gln Arg Lys Lys Ser Gln Glu Lys Met Arg Glu Val Thr Asp
35 40 45

Ser Pro Gly Arg Pro Arg Glu Leu Thr Ile Pro Gln Thr Ser Ser His
50 55 60

Gly Ala Asn Arg Phe
65

专利名称(译)	用于治疗 and 诊断肺癌的化合物和方法		
公开(公告)号	EP1169347A2	公开(公告)日	2002-01-09
申请号	EP2000920102	申请日	2000-04-03
[标]申请(专利权)人(译)	科里克萨有限公司		
申请(专利权)人(译)	Corixa公司CORPORATION		
当前申请(专利权)人(译)	Corixa公司CORPORATION		
[标]发明人	WANG TONGTONG FAN LIQUN		
发明人	WANG, TONGTONG FAN, LIQUN		
IPC分类号	G01N33/53 A61K31/712 A61K31/7125 A61K35/14 A61K35/76 A61K38/00 A61K38/17 A61K39/00 A61K39/395 A61K48/00 A61P35/00 C07K14/00 C07K14/47 C07K14/82 C07K16/30 C07K16/32 C07K19/00 C12N1/15 C12N1/19 C12N1/21 C12N5/06 C12N5/10 C12N15/09 C12N15/10 C12N15/11 C12N15/12 C12N15/62 C12P21/02 C12Q1/02 C12Q1/68 G01N33/566 G01N33/574		
CPC分类号	A61K38/00 A61K39/00 A61K2039/5154 A61P35/00 C07K14/47 C07K2319/00		
优先权	09/285479 1999-04-02 US 09/466396 1999-12-17 US 09/476496 1999-12-30 US 09/480884 2000-01-10 US 09/510376 2000-02-22 US		
其他公开文献	EP1169347B1		
外部链接	Espacenet		

摘要(译)

提供了用于治疗 and 诊断肺癌的化合物和方法。本发明化合物包括含有至少一部分肺肿瘤蛋白的多肽。还提供了用于肺癌免疫疗法的疫苗和药物组合物，其包含此类多肽或编码这些多肽的DNA分子，以及用于制备本发明多肽的DNA分子。