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Lin et al.

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(54) **GENES FOR DIAGNOSING COLORECTAL CANCER**

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(73) Assignee: **Kaohsiung Medical University**, Kaohsiung (TW)

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(22) Filed: **Feb. 26, 2004**

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(51) **Int. Cl.**

G01N 33/48	(2006.01)
C12Q 1/68	(2006.01)
A61B 5/055	(2006.01)
C12N 15/867	(2006.01)

(52) **U.S. Cl.** **436/64**; 435/6; 435/4; 424/9.351; 424/9.1

(58) **Field of Classification Search** 436/64; 435/6, 4; 424/9.351, 9

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

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2005/0287544 A1 * 12/2005 Bertucci et al. 435/6

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* cited by examiner

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(74) *Attorney, Agent, or Firm*—WPAT, P.C.; Anthony King

(57) **ABSTRACT**

This invention relates to provide the genes for diagnosing colorectal cancer, the gene sequences searching comprise the steps of: (1) deriving epithelium cells from normal intestines, polypus of intestines and colorectal cancer tissue; (2) collecting genes with highly differential gene expression by Suppression Subtractive Hybridization (SSH), and building library; (3) deriving colonies with relatively high signal intensities from cancer tissue; (4) collecting more clinically cancer tissues by Northern Hybridization, real-time Polymerase Chain Reaction (PCR) combined with analysis of bioinformation to affirm variation between differential gene expression; and (5) selecting the most suitable genes from said library, and using the gene sequence as reagent provides the effects of early diagnosis, specificity, highly sensitivity and safety.

1 Claim, 8 Drawing Sheets

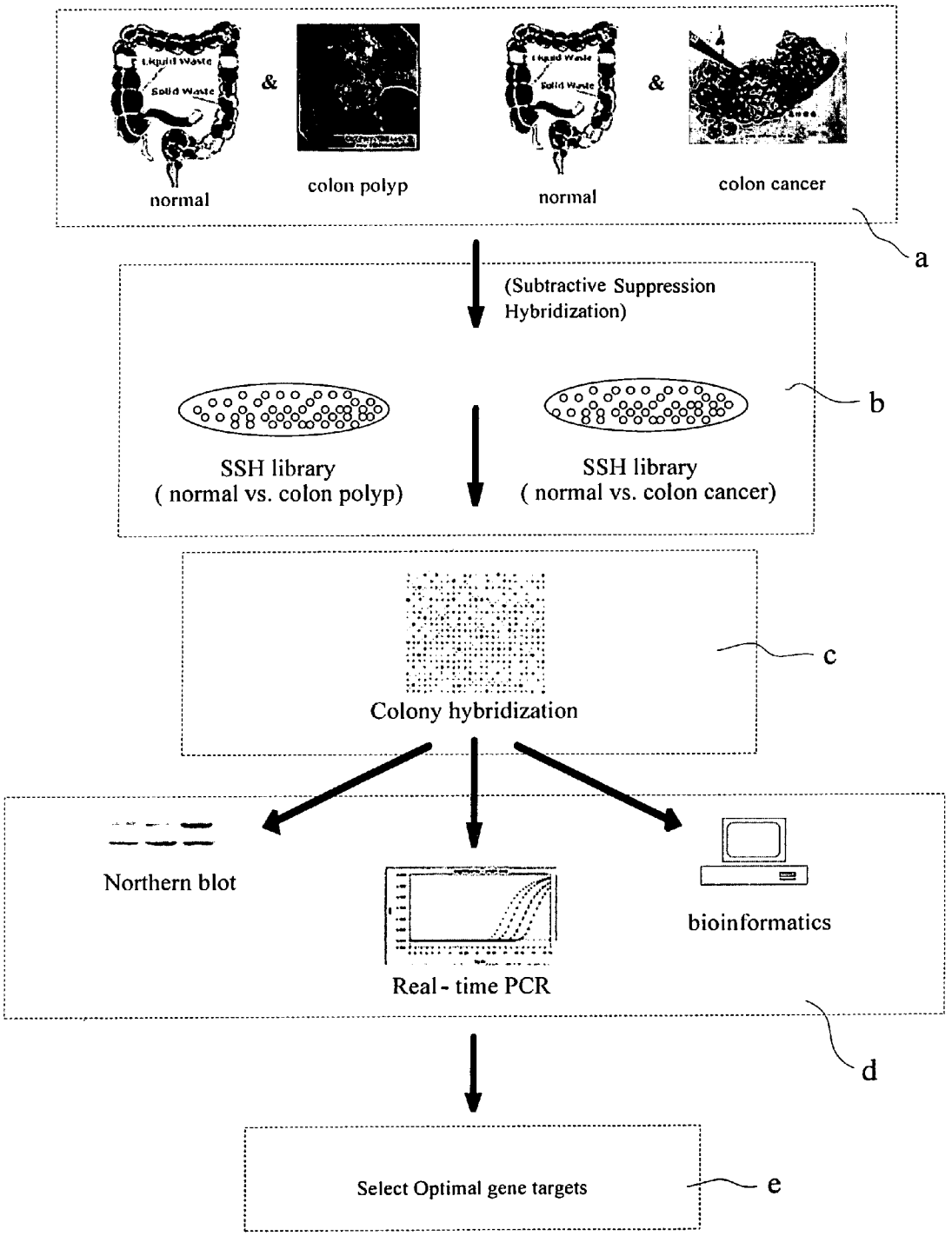

normal
&
colon polyp
normal
&
colon cancer
a
(Subtractive Suppression Hybridization)
b
SSH library
(normal vs. colon polyp)
SSH library
(normal vs. colon cancer)
c
Colony hybridization
Northern blot
Real - time PCR
bioinformatics
d
Select Optimal gene targets
e

FIG.1

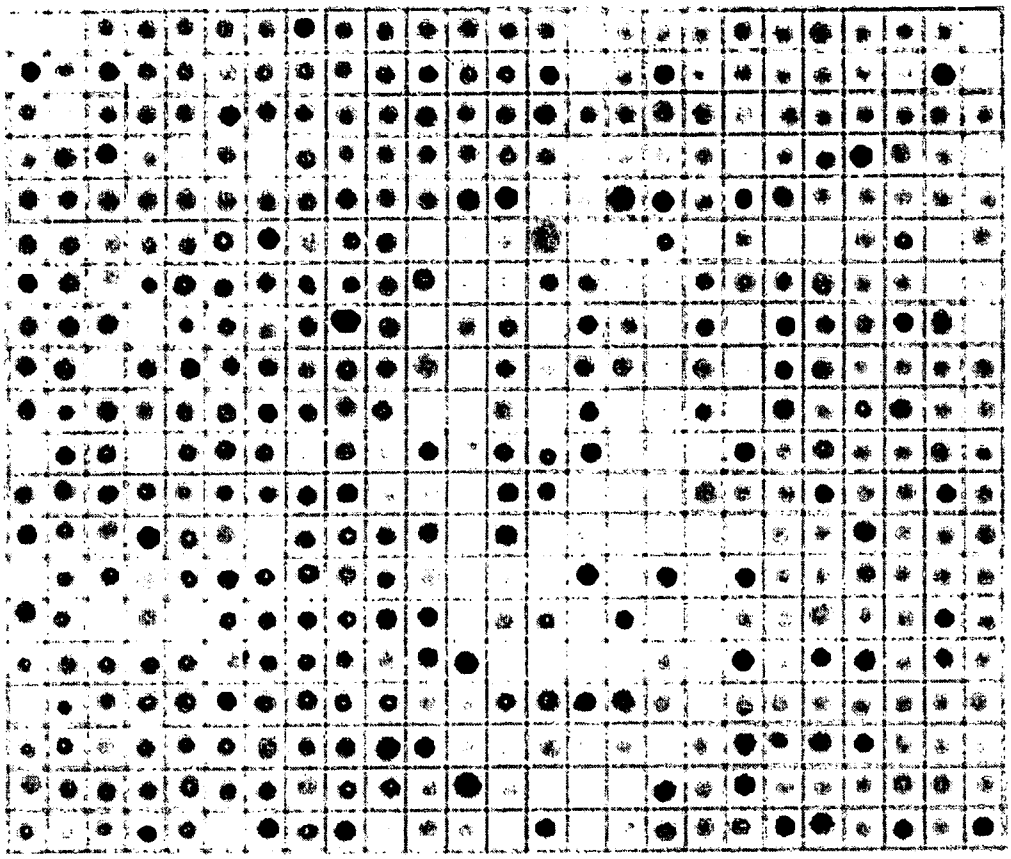


FIG. 2a

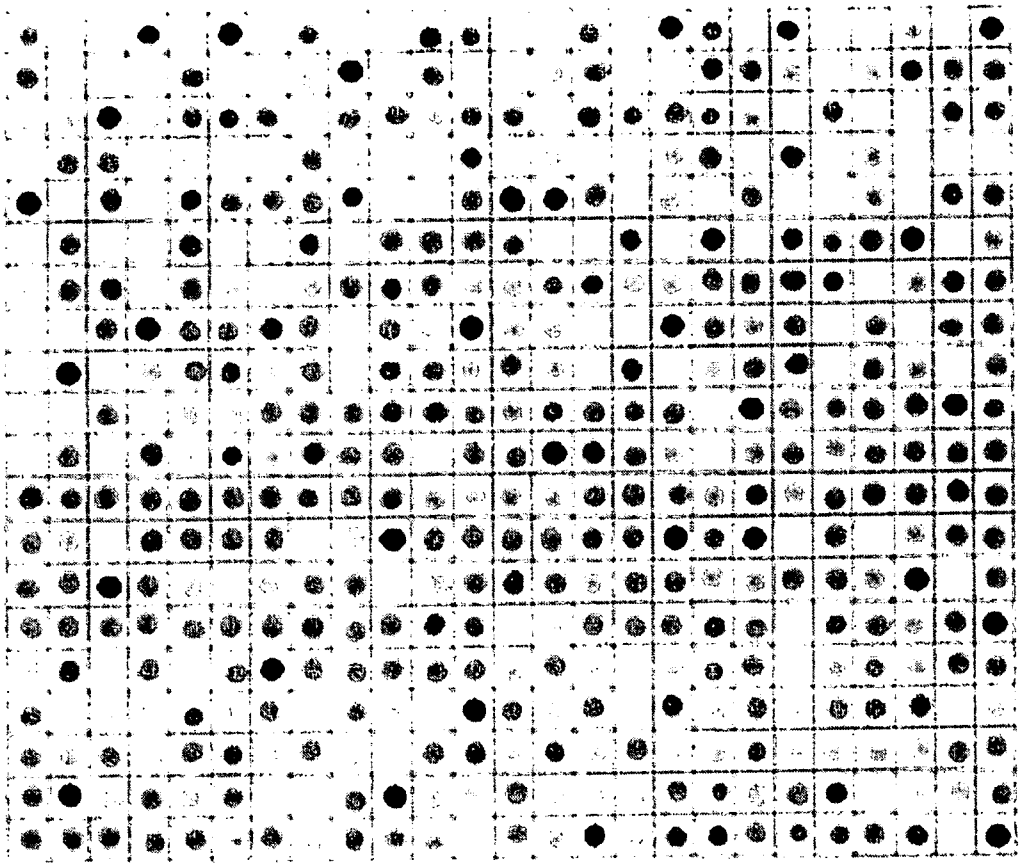
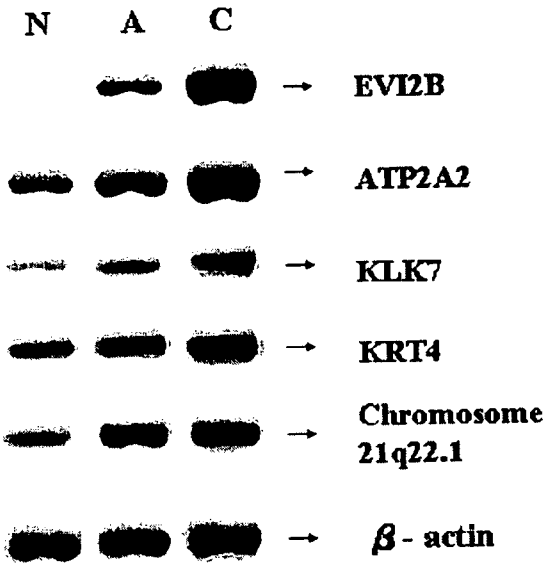


FIG. 2b


N
A
C
EVI2B
ATP2A2
KLK7
KRT4
Chromosome 21q22.1
β - actin

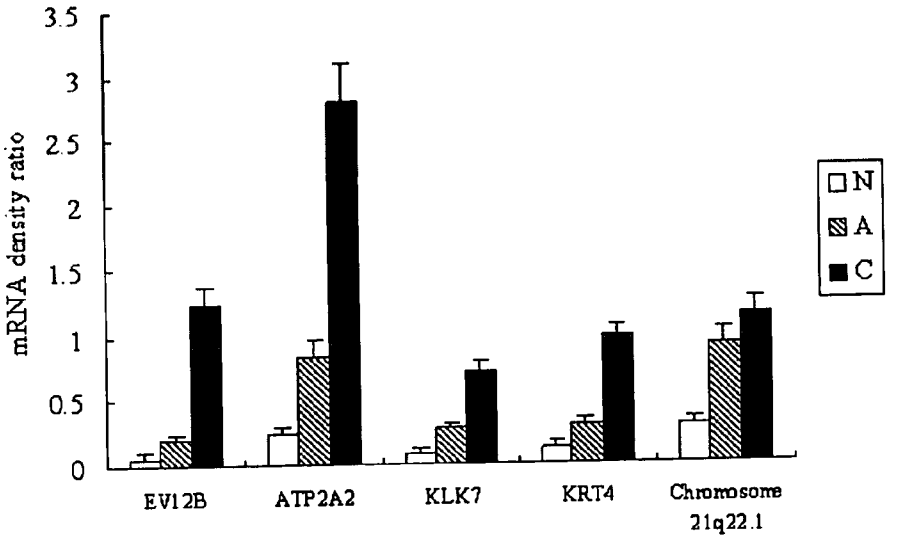
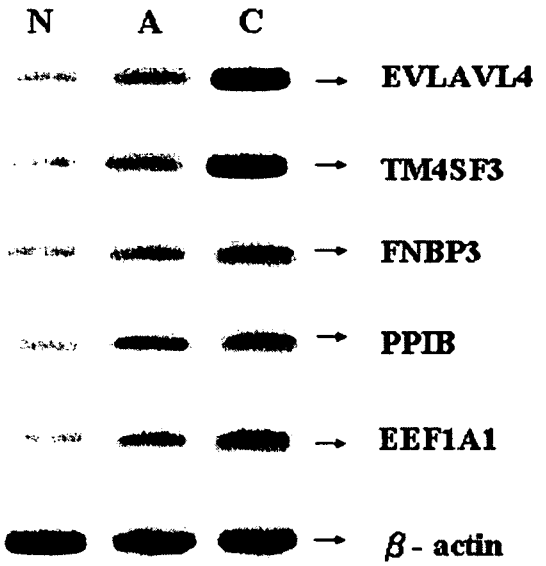

mRNA density ratio
3.5
3
2.5
2
1.5
1
0.5
0
N
A
C
EVI2B
ATP2A2
KLK7
KRT4
Chromosome 21q22.1

FIG.3a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A
C
EVLAVL4
TM4SF3
FNBP3
PPIB
EEF1A1
β - actin

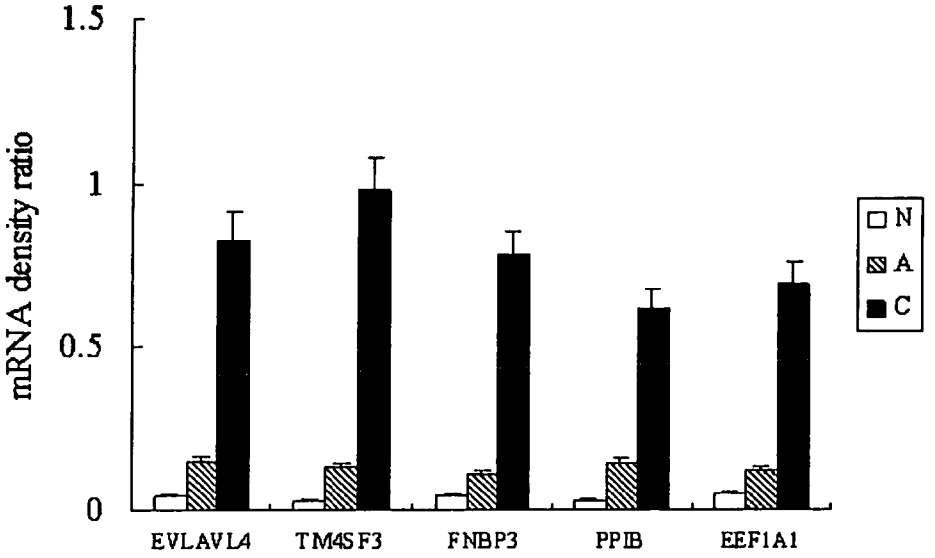

1.5
1
0.5
0
mRNA density ratio
N
A
C
EVLAVL4
TM4SF3
FNBP3
PPIB
EEF1A1

FIG. 3b

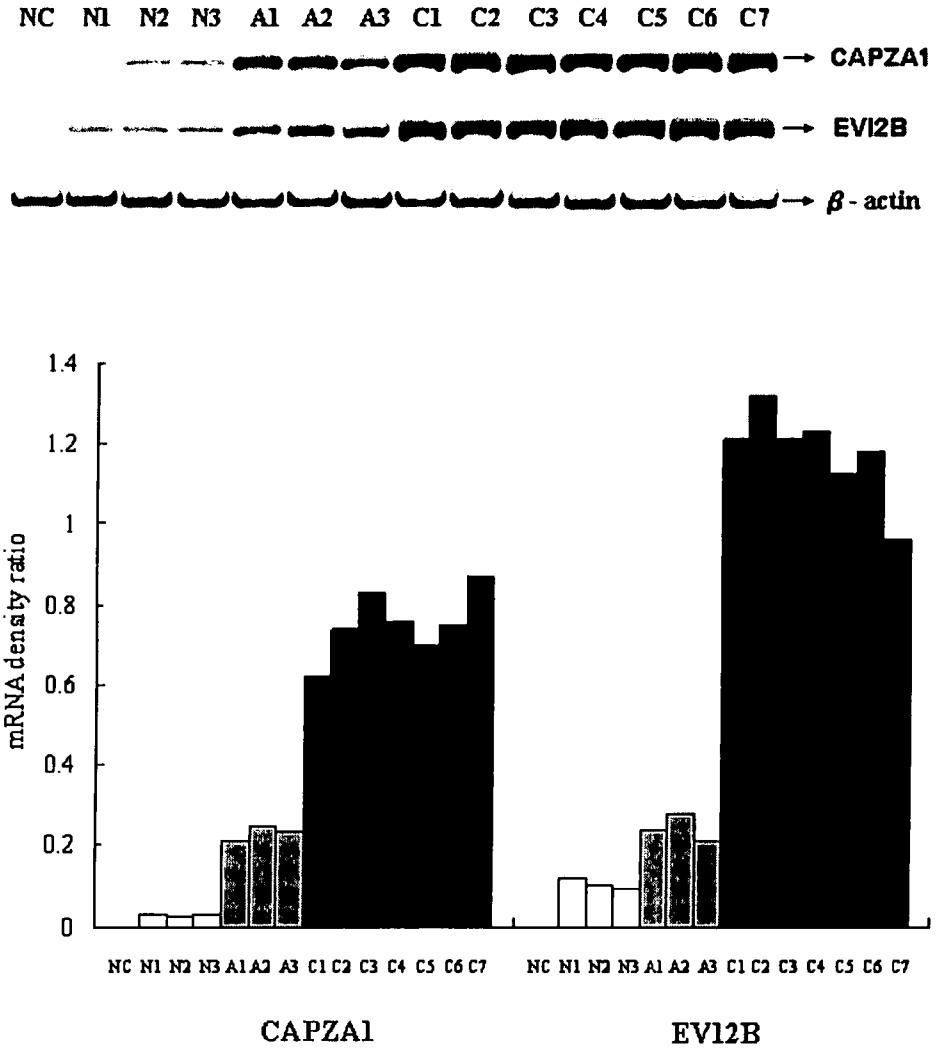
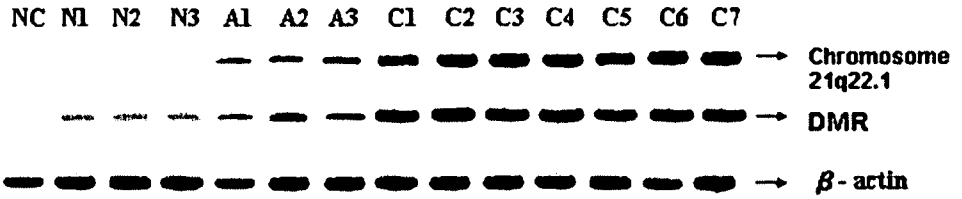

NC N1 N2 N3 A1 A2 A3 C1 C2 C3 C4 C5 C6 C7
CAPZA1
EVI2B
β - actin
mRNA density ratio
1.4
1.2
1
0.8
0.6
0.4
0.2
0
NC N1 N2 N3 A1 A2 A3 C1 C2 C3 C4 C5 C6 C7
NC N1 N2 N3 A1 A2 A3 C1 C2 C3 C4 C5 C6 C7
CAPZA1
EVI2B

FIG. 4a


NC N1 N2 N3 A1 A2 A3 C1 C2 C3 C4 C5 C6 C7
Chromosome 21q22.1
DMR
β-actin

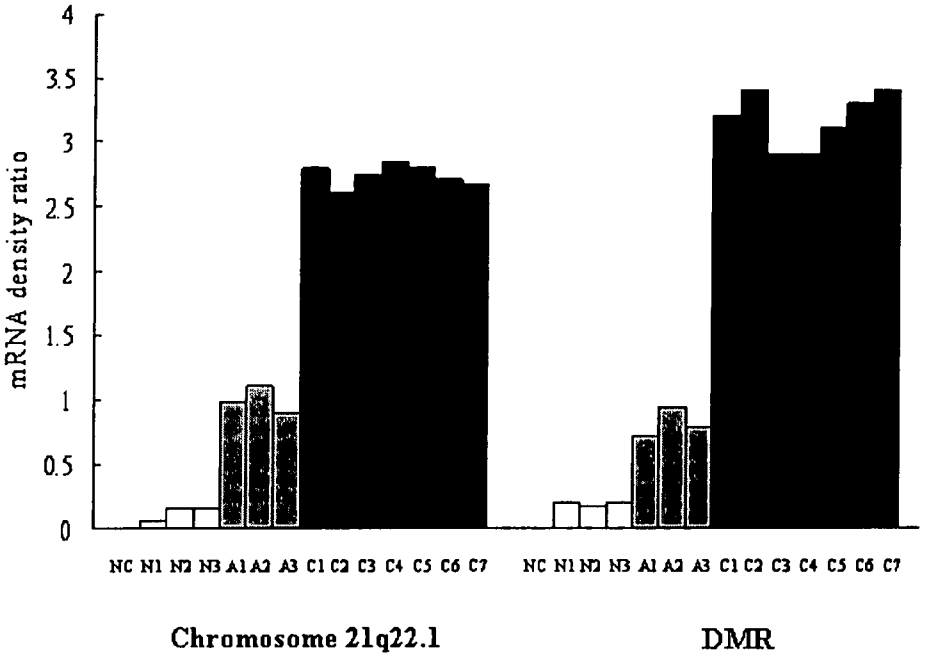

mRNA density ratio
4
3.5
3
2.5
2
1.5
1
0.5
0
NC N1 N2 N3 A1 A2 A3 C1 C2 C3 C4 C5 C6 C7
NC N1 N2 N3 A1 A2 A3 C1 C2 C3 C4 C5 C6 C7
Chromosome 21q22.1
DMR

FIG.4b

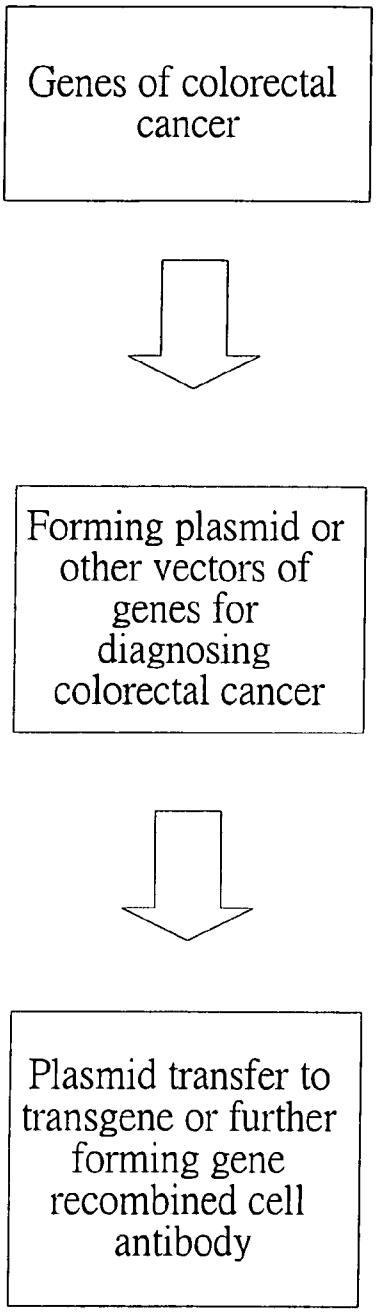

Genes of colorectal cancer
Forming plasmid or other vectors of genes for diagnosing colorectal cancer
Plasmid transfer to transgene or further forming gene recombined cell antibody

FIG. 5

GENES FOR DIAGNOSING COLORECTAL CANCER

REFERENCE CITED

1. WO005531

FIELD OF THE INVENTION

This invention relates to genes for diagnosing colorectal cancer, particularly provided a method of clinical diagnosis for colorectal cancer which enables the effects of early diagnosis, specificity, highly sensitivity and safety.

BACKGROUND OF THE INVENTION

Colorectal cancer is one of the most common malignant tumors of the world; it is the second most frequent cause of malignant tumor related mortality in developed countries. In developed countries, mortality rate caused by colorectal cancer seems have a progressively descending tendency in the past 20 years. There are motivations for early diagnosis and for improvement in methods of therapy and medicines. In Taiwan, the rate of suffering for colorectal cancer is rising constantly, furthermore, there is evidence of an age-descending tendency.

According to a 2002 survey by the Department of Health (DOH), the highest level of the executive branch in Taiwan, on the top ten related cancer of Taiwanese population, colorectal cancer (CRC) is the third leading cause of cancer-related death for male and female. About 6681 new cases of colorectal cancer were diagnosed according to statistical data by DOH in 1999, and 3649 patients died in Taiwan due to colorectal cancer according to statistical data by DOH in 2002. The average age of colorectal cancer patient is lower than other countries. In other words, twenty-year-old or thirty-year-old people suffer from the colorectal cancer in Taiwan. Therefore, we can't ignore the possibility of the colorectal cancer occurring in younger populations.

Although methods of diagnosis and surgical operation treatment have improved for colorectal cancer patients, when one makes a comparison between early diagnosis with later period diagnosis by surgical operation, treatment is able to probably overcome colorectal cancer in early diagnosis, but is not able to absolutely overcome colorectal cancer in later period diagnosis. Thus far metastasis are the main problem in the treatment for the colorectal cancer, therefore, a method with high sensitivity, high specificity and easy diagnosis that can detect arly and potentially curable CRC would be a novel target for CRC diagnosis and therapy.

The present invention is to provide functional genetic method, for diagnostic genes of colorectal cancer consist of 71 types of genes, that can be applied for early diagnosing possibility of recurrence and metastasis for colorectal patients. Simultaneously, tracing of 100 colorectal cancer cases have found a 92% genes variation in colorectal tissue. In the process of tracing 100 colorectal cancer cases simultaneously, mutation of genes is found in 92% colorectal cancer tissues. In the tracing process, although CEA of 16 patients remained in normal value range, the method can detect early tumor cells in blood by using genes variation testing.

In WO0055351, ROSEN CRAIG A et. al., entitled "Human Colon Cancer Associated Gene Sequences And Polypeptides", disclose colon cancer related polynucleotides and the polypeptides encoded by the polynucleotides herein collectively known as "colon cancer antigens", screening methods for identifying agonists and antagonists of colon

cancer antigens of the invention. But, the present invention is to provide SSH and cDNA microarray technology to identify candidate marker genes which are overexpressed continuously from colorectal proliferous polypus to colorectal oncogene, detecting overexpressed genes are selected from up regulation genes which related intently in colorectal cancer oncogene, and down regulation genes which related in colorectal cancer oncogene. The total 71 genes are used to diagnosing early colorectal cancer.

SUMMARY OF THE INVENTION

Therefore, the main purpose according to the present invention is to provide methods of clinical diagnosis for colorectal cancer for early diagnosis, specificity, highly sensitivity and safety.

For the purpose stated above, the method comprises the steps of: (1) deriving epithelium cells from normal intestines, polypus of intestines and colorectal cancer tissue; (2) collecting genes with highly differential gene expression by Suppression Subtractive Hybridization (SSH), and building library; (3) deriving colonies with relatively high signal intensities from cancer tissue; (4) collecting more clinically cancer tissues by Northern Hybridization, real-time Polymerase Chain Reaction (PCR) combined with analysis of bioinformation to affirm variation between differential gene expression; and (5) selecting the most suitable genes from said library. Moreover, the reagent uses the gene sequence as method of clinical diagnosis for colorectal cancer to the early diagnosis.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be better understood from the following detailed description of preferred embodiments of the invention, taken in conjunction with the accompanying drawings, in which.

Table 1 is a table showing the result of clinical examination of colorectal cancer biochip;

FIG. **1** is a view showing the procedure of deriving genes according to the present invention;

FIG. **2***a* and FIG. **2***b* are views showing the primary screening according to the present invention;

FIG. **3***a* and FIG. **3***b* are views showing affirmation to genes using Northern Blotting method according to the present invention;

FIGS. **4***a* and **4***b* are views showing quantity expression of cancer tissue according to the present invention; and

FIG. **5** is a diagram showing second preferred embodiments according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following descriptions of the preferred embodiments are provided to understand the methods and the procedures of the present invention. Please refer to FIG. **1**, showing the procedure of searching genes according to the present invention. Said procedure comprise the steps of: (1) deriving epithelium cells from normal intestines, polypus of intestines and colorectal cancer tissue; (2) collecting genes with highly differential gene expression by Suppression Subtractive Hybridization (SSH), and building library; (3) deriving colonies with relatively high signal intensities from cancer tissue; (4) collecting more clinically cancer tissues by Northern

Hybridization, real-time Polymerase Chain Reaction (PCR) combined with analysis of bioinformation to affirm variation between differential gene expression; and (5) selecting the most suitable genes from said library. Moreover, by using the gene sequence as a reagent, this enables clinical diagnosis for colorectal cancer to the effects of early diagnosis, specificity, highly sensitivity and safety.

The genes for diagnosing colorectal cancer, the specific oligonucleotides sequence are selected from the group consisting of:

No	Hs ID	ACC No	Discription	Definition	Oligo sequence
1	Hs.107213	BC027178 (SEQUENCE LISTING 72)	FNBP3 Formin binding protein 3	*Homo sapiens*, formin binding protein 3, clone MGC: 16979 IMAGE: 4343048, mRNA, complete cds	CATCATAGGAA ACGTTCCCGCT CTCGATCGGGG TCAGATTCAGAT GATGATG (SEQUENCE LISTING 1)
2	Hs.123107	NM_002257 (SEQUENCE LISTING 73)	KLK1 Kallikrein 1, renal/pancreas/ salivary	*Homo sapiens* kallikrein 1, renal/pancreas/ salivary (KLK1), mRNA.	GCCTTCTGTCG CCGTCAGAGTG CTGTCTTATGTG AAGTGGATCGA GGACA (SEQUENCE LISTING 2)
3	Hs.1369	NM_000574 (SEQUENCE LISTING 74)	DAF Decay accelerating factor for complement (CD55, Cromer blood group system)	*Homo sapiens* decay accelerating factor for complement (CD55, Cromer blood group system) (DAF), mRNA	GGGCAGTCAAT GGTCAGATATT GAAGAGTTCTG CAATCGTAGCT GCGAGGTG (SEQUENCE LISTING 3)
4	Hs.151254	NM_005046 (SEQUENCE LISTING 75)	KLK7 Kallikrein 7 (chymotryptic, stratum corneum)	*Homo sapiens* kallikrein 7 (chymotryptic, stratum corneum) (KLK7), transcript vari-ant 1, mRNA.	TGGAACCACCT GTACTGTCTCC GGCTGGGGCAC TACCACGA (SEQUENCE LISTING 4)
5	Hs.1526	NM_001681 (SEQUENCE LISTING 76)	ATP2A2 ATPase, Ca++ transporting, cardiac muscle, slow twitch 2	*Homo sapiens* ATPase, Ca++ transporting, cardiac muscle, slow twitch 2 (ATP2A2), mRNA	CATCGGCATCT TCGGGCAGGAT GAGGACGTGAC GTCAAAAGCTTT CACAG (SEQUENCE LISTING 5)
6	Hs.184270	NM_006135 (SEQUENCE LISTING 77)	CAPZA1 Capping protein actin) filament) muscle Z-line, alpha 1	*Homo sapiens* capping protein (actin filament) muscle Z-line, alpha 1 (CAPZA1), mRNA.	TGACCACTTAC GGAAAGAAGCA AGTGACCCCCA GCCAGAAGAAG CAGATG (SEQUENCE LISTING 6)
7	Hs.2043	NM_001151 (SEQUENCE LISTING 78)	SLC25A4 Solute carrier family 25 (mitochondrial carrier adenine nucleotide translocator), member 4	*Homo sapiens* solute carrier family 25 (mitochondrial carrier; adenine nucleotide translocator), member 4 (SLC25A4), nuclear gene encoding mitochondrial protein, mRNA.	AGATCTTCAAGT CTGATGGCCTG AGGGGGCTCTA CCAGGGTTTCA ACGTC (SEQUENCE LISTING 7)
8	Hs.267871	NM_005177 (SEQUENCE LISTING 79)	ATP6V0A1 ATPase, H+ transporting, lysosomal V0	*Homo sapiens* ATPase, H+ transporting, lysosomal V0	GGACAGAAAGG AATTCAGTGTTT CCTGGTAGTGG TTGCACTACTGT

-continued

No	Hs ID	ACC No	Discription	Definition	Oligo sequence
			subunit a isoform 1	subunit a isoform 1 (ATP6V0A1), mRNA.	GTGTACCTTGG (SEQUENCE LISTING 8)
9	Hs.4935	D79998 (SEQUENCE LISTING 80)	KIAA0176 KIAA0176 protein	Human mRNA for KIAA0176 gene, partial cds	GGAAAGGATAC GGGACAATGAG AACAGAACTTCA CAAGGCCCCGT GAAGC (SEQUENCE LISTING 9)
10	Hs.5509	NM_006495 (SEQUENCE LISTING 81)	EVI2B Ecotropic viral integration site 2B	*Homo sapiens* ecotropic viral integration site 2B (EVI2B), mRNA.	GCCCCTGCCAC CAGTAGATTTTA TGAAAAACCAA GAAGATTCCAA CCTTGAGATCC AGTGTC (SEQUENCE LISTING 10)
11	Hs.5662	NM_006098 (SEQUENCE LISTING 82)	GNB2L1 Guanine nucleotide binding protein (G protein), beta polypeptide 2-like 1	*Homo sapiens* guanine nucleotide binding protein (G protein), beta polypeptide 2-like 1 (GNB2L1), mRNA.	ATGACTGAGCA GATGACCCTTC GTGGCACCCTC AAGGGCCACAA C (SEQUENCE LISTING 11)
12	Hs.75990	NM_005143 (SEQUENCE LISTING 83)	HP Haptoglobin	*Homo sapiens* haptoglobin (HP), mRNA.	AGGCTGTTGGA GATAAACTTCCT GAATGTGAAGC AGATGACGGCT GCCCG (SEQUENCE LISTING 12)
13	Hs.83384	NM_006272 (SEQUENCE LISTING 84)	S100B S100 calcium binding protein, beta (neural)	*Homo sapiens* S100 calcium binding protein, beta (neural) (S100B), mRNA	CCGAACTCAAG GAGCTCATCAA CAATGAGCTTTC CCATTTCTTAGA GGAAATCAAAG AGCAGGAG (SEQUENCE LISTING 13)
14	Hs.10029	NM_001814 (SEQUENCE LISTING 85)	CTSC Cathepsin C	*Homo sapiens* cathepsin C (CTSC), mRNA	CACCGGAAAGA AGGTGGGAACT GCCTCTGAGAA TGTGTATGTCAA CACAGC (SEQUENCE LISTING 14)
15	Hs. 103982	NM_005409 (SEQUENCE LISTING 86)	SCYB11 Small inducible cytokine subfamily B (Cys-X-Cys), member 11	*Homo sapiens* small inducible cytokine subfamily B (Cys-X-Cys), member 11 (SCYB11), mRNA.	GGGCATGGCTA TAGCCTTGGCT GTGATATTGTGT GCTACAGTTGTT CAAGGC (SEQUENCE LISTING 15)
16	Hs.12314	AL049397 (SEQUENCE LISTING 87)	*Homo sapiens* mRNA; cDNA DKFZp586C1019 (from clone DKFZp586C1019)	*Homo sapiens* mRNA; cDNA DKFZp586C1019 (from clone DKFZp586C1019)	CAACACCACAG ACAGCTGCAGG ACTCGATATCCA TGGCTTCTTTCC ATCAC (SEQUENCE LISTING 16)
17	Hs.150557	NM_001206 (SEQUENCE	BTEB1 Basic transcription	*Homo sapiens* basic	TTCCACCCCAG CATGATCAAGC

-continued

No	Hs ID	ACC No	Discription	Definition	Oligo sequence
		LISTING 88)	element binding protein 1	transcription element binding protein 1 (BTEB1), mRNA.	GATCGAAAAAG GCGCTGGCCAA CGCTTT (SEQUENCE LISTING 17)
18	Hs.169266	NM_000909 (SEQUENCE LISTING 89)	NPY1R Neuropeptide Y receptor Y1	*Homo sapiens* neuropeptide Y receptor Y1 (NPY1R), mRNA.	CCGGTCTCGGG ATGATGATTATG AAACAATAGCC ATGTCCACGAT GCACACAG (SEQUENCE LISTING 18)
19	Hs.1827	NM_002507 (SEQUENCE LISTING 90)	NGFR Nerve growth factor receptor (TNFR superfamily, member 16)	*Homo sapiens* nerve growth factor receptor (TNFR superfamily, member 16) (NGFR), mRNA.	CAAGCGGGAGG AGGTGGAGAAG CTTCTCAACGG CTCTGCG (SEQUENCE LISTING 19)
20	Hs.1869	NM_002633 (SEQUENCE LISTING 91)	PGM1 Phosphoglucomu-tase 1	*Homo sapiens* phosphoglucomu-tase 1 (PGM1), mRNA.	GCCAACGGGAT CGGTCGCTTGG TTATCGGACAG AATGGAATCCT CTCCA (SEQUENCE LISTING 20)
21	Hs.194148	NM_005433 (SEQUENCE LISTING 92)	YES1 V-yes-1 Yamaguchi sarcoma viral oncogene homolog 1	*Homo sapiens* v-yes-1 Yamaguchi sarcoma viral oncogene homolog 1(YES1), mRNA	CAAGTGTGAGC CATTATGGAGC AGAACCCACTA CAGTGTCACCA TGTCCG (SEQUENCE LISTING 21)
22	Hs.2352	X74210 (SEQUENCE LISTING 93)	ADCY2 Adenylate cyclase 2 (brain)	*H. sapiens* mRNA for adenylyl cyclase	TCGTCTGCTTTG CTGGACAGCTT CTGCAATGCAG CAAAAAAGCCT CTCCC (SEQUENCE LiSTING 22)
23	Hs.246885	NM_017958 (SEQUENCE LISTING 94)	FLJ20783 Hypothetical protein FLJ20783	*Homo sapiens* hypothetical protein FLJ20783 (FLJ20783), mRNA.	CCAAGATTCTA GGACAAACACA GCGTATGTGGG CTCTGCAGTCA TGACCG (SEQUENCE LISTING 23)
24	Hs.29665	NM_014944 (SEQUENCE LISTING 95)	CLSTN1 Calsyntenin 1	*Homo sapiens* calsyntenin 1 (CLSTN1), mRNA.	CACGAGCCCTT CTCTGTGACTG AGGATTACCCG CTCCATCCATC CAAGAT (SEQUENCE LISTING 24)
25	Hs.3235	NM_002272 (SEQUENCE LISTING 96)	KRT4 Keratin 4	*Homo sapiens* keratin 4 (KRT4), mRNA	TTCAGCTGTGG CTCGGCCATTG TAGGCGGTGGC AAGAGAGGT (SEQUENCE LISTING 25)
26	Hs.55209	AF327354 (SEQUENCE LISTING 97)	*Homo sapiens* DMR protein mRNA, complete cds	*Homo sapiens* DMR protein mRNA, complete cds	TAAAGTGGGCT CATTGTCATCCC CAAGCCAGGCC AGTTCTCCAGG TGGAA (SEQUENCE LISTING 26)

-continued

No	Hs ID	ACC No	Discription	Definition	Oligo sequence
27	Hs.585	NM_000384 (SEQUENCE LISTING 98)	APOB Apolipoprotein B (including Ag(x) antigen)	*Homo sapiens* apolipoprotein B (including Ag(x) antigen) (APOB), mRNA	GCCCAAGGCCA CAGGGGTCCTT TATGATTATGTC AACAAGTACCA CTGGG (SEQUENCE LISTING 27)
28	Hs.62187	AF022913 (SEQUENCE LISTING 99)	PIGK Phosphati-dylinositol glyan, class K	*Homo sapiens* GPI transamidase mRNA, complete cds	TCTTGTCCTTCG GCAGCGTGGCC GCTAGTCATATC GAGGATCAAGC AGAA (SEQUENCE LISTING 28)
29	Hs.63290	NM_012260 (SEQUENCE LISTING 100)	HPCL2 2-hydroxyphy-tanoyl-CoA lyase	*Homo sapien* 2-hydroxyphy-tanoyl-CoA lyase (HPCL2), mRNA	CATGAACTGCT GGCCCTTGCTT GTGATTGGTGG TTCCTCTGAAAG AAACCAAG (SEQUENCE LISTING 29)
30	Hs.699	NM_000942 (SEQUENCE LISTING 101)	PPIB Peptidylprolyl isomerase B (cyclophilin B)	*Homo sapiens* peptidylprolyl isomerase B (cyclophilin B) (PPIB), mRNA	AGCCGGGATAA ACCCCTGAAGG ATGTGATCATC GCAGACTGCGG CAAGAT (SEQUENCE LISTING 30)
31	Hs.74111	NM_007367 (SEQUENCE LISTING 102)	RALY RNA binding protein (autoantigen-ic, hnRNP-associated with lethal yellow)	*Homo sapiens* RNA binding protein (autoantigenic, hnRNP-associated with lethal yellow) (RALY) transcript vari-ant 2, mRNA	AGCGAGGAAGA GCTGGAACACA GCCAGGACACA GACGCGGATGA T (SEQUENCE LISTING 31)
32	Hs.75103	NM_003406 (SEQUENCE LISTING 103)	YWHAZ Tyrosine 3-monooxygen-ase/tryptophan 5-monooxygen-ase activation protein, zeta polypeptide	*Homo sapiens* tyrosine 3-monooxygenase/ /tryptophan 5-monooxygenase activation protein, zeta polypeptide (YWHAZ), mRNA	CGGAAGGTGCT GAGAAAAAACA GCAGATGGCTC GAGAATACAGA GAGAAAATTGA GACGG (SEQUENCE LISTING 32)
33	Hs.75117	NM_004515 (SEQUENCE LISTING 104)	ILF2 Interleukin enhancer binding factor 2, 45 kD	*Homo sapiens* interleukin enhancer binding factor 2, 45 kD (ILF2), mRNA	TGACTTCTATTT GTGTGAAATGG CCTTTCCCCGG GTCAAGCCAGC ACCTG (SEQUENCE LISTING 33)
34	Hs.75236	NM_021952 (SEQUENCE LISTING 105)	ELAVL4 ELAV (embryonic lethal, abnormal vision,	*Homo sapiens* ELAV (embryonic lethal, abnormal vision, Drosophila)-like	GCACCATGGAG CCTCAGGTGTC AAATGGTCCGA CATCCAATACAA GCAATG (SEQUENCE

-continued

No	Hs ID	ACC No	Discription	Definition	Oligo sequence
			Drosophila)-like 4 (Hu antigen D)	4 (Hu antigen D) (ELAVL4), mRNA	LISTING 34)
35	Hs.75258	NM_004893 (SEQUENCE LISTING 106)	H2AFY H2A histone family, member Y	*Homo sapiens* H2A histone family, member Y (H2AFY), transcript variant 2, mRNA	CACCGAAGCCA GGAAGCCCCGT TTGTAAGCGTG TGTTGTGGTGC TTTATT (SEQUENCE LISTING 35)
36	Hs.75498	NM_004591 (SEQUENCE LISTING 107)	SCYA20 Small inducible cytokine subfamily A (Cys—Cys), member 20	*Homo sapiens* small inducible cytokine subfamily A (Cys—Cys), member 20 (SCYA20), mRNA	GCTACTCCACC TCTGCGGCGAA TCAGAAGCAGC AAGCAACTTTGA CTGCT (SEQUENCE LISTING 36)
37	Hs.76913	NM_002790 (SEQUENCE LISTING 108)	PSMA5 Proteasome (prosome, macropain) subunit, alpha type, 5	*Homo sapiens* proteasome (prosome, macropain) subunit, alpha type, 5 (PSMA5), mRNA	GTTTCTTACCCG GTCTGAGTACG ACAGGGGCGTG AATACTTTTTCT CCCG (SEQUENCE LISTING 37)
38	Hs.79889	NM_012329 (SEQUENCE LISTING 109)	MMD Monocyte to macrophage differentiation-associated	*Homo sapiens* monocyte to macrophage differentiation-associated (MMD), mRNA	GCTATGAACAT GCTGCTAACTG TTACACACACG CATTCCTCATTG TTCCGGCC (SEQUENCE LiSTING 38)
39	Hs.82173	NM_005655 (SEQUENCE LISTING 110)	TIEG TGFB inducible early growth response	*Homo sapiens* TGFB inducible early growth response (TIEG) Mrna	TTTGTGGTACC CCAGCCCGTTG TGCAGAGTTCA AAGCCTCCGGT G (SEQUENCE LISTING 39)
40	Hs.84072	NM_004616 (SEQUENCE LISTING 111)	TM4SF3 Transmembrane 4 superfamily member 3	*Homo sapiens* transmembrane 4 superfamily member 3 (TM4SF3), mRNA	GCAATGACTCT CAAGCAATTTTT GGTTCTGAAGA TGTAGGCTCTA GCTCCTACGTT GCTGTG (SEQUENCE LISTING 40)
41	Hs.85146	NM_005239 (SEQUENCE LISTING 112)	ETS2 V-ets erythroblastosis virus E26 oncogene homolog 2 (avian)	*Homo sapiens* v-ets erythroblastosis virus E26 oncogene homolog 2 (avian) (ETS2), mRNA	CTCATGACTCC GCCAACTGTGA ATTGCCTTTGTT AACCCCGTGCA GCAAG (SEQUENCE LISTING 41)
42	Hs.85844	NM_002529 (SEQUENCE LISTING 113)	NTRK1 Neurotrophic tyrosine kinase, receptor, type	*Homo sapiens* neurotrophic tyrosine kinase, receptor, type 1 (NTRK1), mRNA	TTCATGGACAA CCCTTTCGAGTT CAACCCCGAGG ACCCCATCCCT GTCT

-continued

No	Hs ID	ACC No	Discription	Definition	Oligo sequence
			1		(SEQUENCE LISTING 42)
43	Hs.88219	NM_003454 (SEQUENCE LISTING 114)	ZNF200 Zinc finger protein 200	*Homo sapiens* zinc finger protein 200 (ZNF200), mRNA	CCCAGTCAGAA AGTCAAGGAGA CCTTGGTTATTA TGAAAGATGTG AGCTCAAGCCT TCAGAACAG (SEQUENCE LISTING 43)
44	Hs.9914	NM_006350 (SEQUENCE LISTING 115)	FST Follistatin	*Homo sapiens* follistatin (FST), transcript variant FST317, mRNA	CCCTGACAGTA AGTCGGATGAG CCTGTCTGTGC CAGTGACAATG CCACTT (SEQUENCE LISTING 44)
45	Hs.169319	NM_003419 (SEQUENCE LISTING 116)	ZNF345 Zinc finger protein 345	*Homo sapiens* zinc finger protein 345 (ZNF345), mRNA	CAGGGATCTCA GGAAGGACATT TCAGTGAAATG ATATTTACTCCT GAAGACATGCC CACTTTCAG (SEQUENCE LISTING 45)
46	Hs.72805	NM_030921 (SEQUENCE LISTING 117)	DC42 Hypothetical protein DC42	*Homo sapiens* hypothetical protein DC42 (DC42), mRNA	GGCATGGCAGC AAATGCCAACAT TTTGTGGAATAG CAGCAAATCTA CAAGAGACCCT GG (SEQUENCE LISTING 46)
47	HS.108301	NM_003297 (SEQUENCE LlSTING 118)	NR2C1 Nuclear receptor subfamily 2, group C, member 1	*Homo sapiens* nuclear receptor subfamily 2, group C, member 1 (NR2C1), mRNA	GACACCTACAG GTTATCCAGACT ACTACTCAGATT GCCAGCTTTAA GACTGATGAAT GCTACCATC (SEQUENCE LISTING 47)
48	Hs.177926	NM_030941 (SEQUENCE LISTING 119)	LOC81691 Exonuctease NEF-sp	*Homo sapiens* exonuclease NEF-sp (LOC81691), mRNA	CCCAGTGACGA CCAAACTCAAA GATGTACAGAG GCAGTTAAAAG CACTGCTTCCT C (SEQUENCE LISTING 48)
49	Hs.194746	NM_018896 (SEQUENCE LISTING 120)	CACNA1G Calcium channel, voltage-dependent, alpha 1G subunit	*Homo sapiens* calcium channel, voltage-dependent, alpha 1G subunit (CACNA1G), mRNA	ACGTCAGAGAT TGTGTCTGAAC CGTCCTGCTCT CTAGCTCTGAC GGATGA (SEQUENCE LISTING 49)
50	Hs.209061	NM_003831 (SEQUENCE LISTING 121)	SUDD SudD suppressor of bimD6	*Homo sapiens* sudD suppressor of	TCACGGCCTGG AGTTCTTGTTCC GGGACTGCAGG

-continued

No Hs ID	ACC No	Discription	Definition	Oligo sequence
		homolog (A. nidulans)	bimD6 homolog (A. nidulans) (SUDD), mRNA	AATGTCTCGCA GTT (SEQUENCE LISTING 50)
51 Hs.25087	NM_006070 (SEQUENCE LISTING 122)	TFG TRK-fused gene	*Homo sapiens* TRK-fused gene (TFG), mRNA	TAATCCTTATGC GCGTAACCGTC CTCCCTTTGGT CAGGGCTATAC CCAAC (SEQUENCE LISTING 51)
52 Hs.3017	NM_003284 (SEQUENCE LISTING 123)	TNP1 Transition protein 1 (during histone to protamine replacement)	*Homo sapiens* transition protein 1 (during histone to protamine replacement) (TNP1), mRNA	GATCAAAGCCA GAGAGGAGCCT ATGGAATGTGG ATCAAATGCCA GTTGTGACG (SEQUENCE LISTING 52)
53 Hs.283664	NM_032466 (SEQUENCE LISTING 124)	ASPH Aspartate beta-hydroxylase	*Homo sapiens* aspartate beta-hydroxylase (ASPH), transcript variant 3, mRNA	GAACCACAACA AGAGGATGATG AGTTTCTTATGG CGACTGATGTA GATGATAGATTT GAGACCCTGG (SEQUENCE LISTING 53)
54 Hs.283664	NM_032467 (SEQUENCE LISTING 125)	ASPH Aspartate beta-hydroxylase	*Homo sapiens* aspartate beta-hydroxylase (ASPH), transcript variant 4, mRNA	CTCAGGGAGAT GGATTTGCTCG TTGTTTTCTTCC CTCCTTCCCCTT CCTG (SEQUENCE LISTING 54)
55 Hs.171992	NM_002843 (SEQUENCE LISTING 126)	PTPRJ Protein tyrosine phosphatase, receptor type, J	*Homo sapiens* protein tyrosine phosphatase, receptor type, J (PTPRJ), mRNA	CCGTGGATGTG TATGGGATTGT GTATGACCTTC GAATGCATAGG CCTTTAATGGTG C (SEQUENCE LISTING 55)
56 Hs.155172	NM_003664 (SEQUENCE LISTING 127)	AP3B1	adaptor-related protein complex 3, beta 1 subunit	GCCCAGCTTAT CATAAACACTGA GAAAACTGTGA TTGGCTCTGTTC TGCTGCGGG (SEQUENCE LISTING 56)
57 Hs.183418	M37712 (SEQUENCE LISTING 128)	CDC2L2	cell dividion cycle2-like2	CGAGAAAATGA AAACCACCTCTT GGTTGTTCCAG AGTCACGGTTC GACCGAG (SEQUENCE LISTING 57)
58 Hs.244473	NM_031900 (SEQUENCE LISTING 129)	AGXT2	alanine-glyoxylate aminotransferase 2	TCCGGGATTGT TACTGTCAGTGT TGGCCATTGCC ACCCAAAGGTG

-continued

No	Hs ID	ACC No	Discription	Definition	Oligo sequence
					AATGC (SEQUENCE LISTING 58)
59	Hs.12835	NM_004842 (SEQUENCE LISTING 130)	AKAP7	A kinase (PRKA) anchor protein 7	GAGCCCGATGA CGCTGAACTAG TAAGGCTCAGT AAGAGGCTGGT GGAGAA (SEQUENCE LISTING 59)
60	Hs.1650	NM_000111 (SEQUENCE LISTING 131)	SLC26A3	solute carrier family 26, member 3	TCAGCCCCCTA TTACACCTGAC GTGGAGACTTT CCAAAACACCG TAGGAG (SEQUENCE LISTING 60)
61	Hs.29981	NM_000112 (SEQUENCE LISTING 132)	SLC26A2	solute carrier family 26 (sulfate transporter), member 2	CAGCAGGGATC CACACACTGAA AGAAGTTCGCA GAGATTATGAA GCCATTGGAAT CC (SEQUENCE LISTING 61)
62	Hs.2246	NM_001308 (SEQUENCE LISTING 133)	CPN1	carboxypeptidase N, polypeptide 1, 50 kD	TCAAGTAAGCC CTGTGAGGAGA GCTCCCAGCAG AAGGCACGGAG T (SEQUENCE LISTING 62)
63	Hs.267871	NM_005177 (SEQUENCE LISTING 134)	ATP6V0A1	ATPase, H+ transporting, lysosomal V0 subunit a isoform 1	AAATGCTTGATT GCAGAGGTCTG GTGCCCTGTCA CCGACCTTGAC TCCAT (SEQUENCE LISTING 63)
64	Hs.75445	NM_004684 (SEQUENCE LISTING 135)	SPARCL1	SPARC-like 1 (mast9, hevin)	CTGCGAGCATC TCTGGTGCCCA TGGAACACTGC ATAACCCGTTTC TTTGA (SEQUENCE LISTING 64)
65	Hs.39957	NM_016445 (SEQUENCE LISTING 136)	PLEK2	pleckstrin 2 (mouse) homolog	TGGCGTTCCCA CTGGGGTTAAA GGGAATGTCCA GGGAAACCTCT TCAAAG (SEQUENCE LISTING 65)
66	Hs.65029	NM_002048 (SEQUENCE LISTING 137)	GAS1	growth arrest-specific 1	CGACTACTACG ATGAGGACTAC GATGACGAGCA GCGCACCGG (SEQUENCE LISTING 66)
67	Hs.239926	NM_006745 (SEQUENCE	SC4MOL	sterol-C4-methyl oxidase-like	GCTGGTTCTCG GCATCATGATTT

-continued

No Hs ID	ACC No	Discription	Definition	Oligo sequence
	LISTING 138)			CCACCACATGA ACTTCATTGGAA ACTATGCTTCAA C (SEQUENCE LISTING 67)
68 Hs.59271	NM_006758 (SEQUENCE LISTING 139)	U2AF1	U2(RNU2) small nuclear RNA auxillary factor 1	TCTGTGACAAC CTGGGAGACCA CCTGGTGGGGA ACGTGTACGTC AAGTTT (SEQUENCE LISTING 68)
69 Hs.8867	NM_001554 (SEQUENCE LISTING 140)	CYR61	cysteine-rich, angiogenic inducer, 61	CAAAACGCAGC CCTGCGACCAC ACCAAGGGGCT GGAATGCAACT T (SEQUENCE LISTING 69)
70 Hs.50123	NM_003452 (SEQUENCE LISTING 141)	ZNF189	zinc finger protein 189	CAACAGCGCAG TCTTGTCAACCA TCAGATGATCC ATGCAGAGGTG AAAACCC (SEQUENCE LISTING 70)
71 Hs.82071	NM_006079 (SEQUENCE LISTING 142)	CITED2	Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 2	CACCAGATGAA CGGGACAAACC AGCACTTCCGA GATTGCAACCC CAAGCA (SEQUENCE LISTING 71)

From the above table, the HS ID of the 71 genes comprises:

Hs. 107213 Hs. 123107 Hs. 1369 Hs. 151254 Hs. 1526 Hs. 184270 Hs. 2043 Hs. 267871 Hs. 4935 Hs. 5509 Hs. 5662 Hs. 75990 Hs. 83384 Hs. 10029 Hs. 103982 Hs. 12314 Hs. 150557 Hs. 169266 Hs. 1827 Hs. 1869 Hs. 194148 Hs. 2352 Hs. 246885 Hs. 29665 Hs. 3235 Hs. 55209 Hs. 585 Hs. 62187 Hs. 63290 Hs. 699 Hs. 74111 Hs. 75103 Hs. 75117 Hs. 75236 Hs. 75258 Hs. 75498 Hs. 76913 Hs. 79889 Hs. 82173 Hs. 84072 Hs. 85146 Hs. 85844 Hs. 88219 Hs. 9914 Hs. 169319 Hs. 72805 Hs. 108301 Hs. 177926 Hs. 194746 Hs. 209061 Hs. 25087 Hs. 3017 Hs. 283664 Hs. 283664 Hs. 171992 Hs. 155172 Hs. 183418 Hs. 244473 Hs. 12835 Hs. 1650 Hs. 29981 Hs. 2246 Hs. 267871 Hs. 75445 Hs. 39957 Hs. 65029 Hs. 239926 Hs. 59271 Hs. 8867 Hs. 50123 Hs. 82071 etc.

We obtain said specific oligonucleotides sequences by using analysis of OMP (Oligonucleotide Modeling Platform, DNA Software, Inc., Ann Arbor, Mich.) DNA software, Said gene sequences can act as a reagent, a biochip and a medicine for detecting colorectal cancer shown in table 1.

According to the present invention, FIG. **2***a* and FIG. **2***b* are views showing the primary screening. FIG. **3***a* and FIG. **3***b* are views showing affirmation to genes using Northern Blotting method. FIGS. **4***a* and **4***b* are views showing quantity expression of cancer tissue we search over progressive distinctive new genes among the carcinoma process of colorectal cancer by using SSH method to build up CRA libraries and CRC libraries which make the comparison between adenoma, adenocarcinoma and normal tissue, that obtain over 5000 clones in per library; then randomly select about 3000 clones of cDNA from per library to dot on nylon membrane as pre-screen by using Colony Hybridization shown in FIG. **2***a* and FIG. **2***b*. The high expression colonies in colorectal cancer and adenoma are selected by the Colony Hybridization and then the nucleic acid of cDNA after purification spot on glass chip by using microarray testing.

The expression profiles of the cDNA chips were derived from a set of cDNA probes including adenoma, adenocarcinoma and the corresponding normal tissue from the same patient. Genes exhibiting at least three-fold greater intensities in the adenocarcinoma or adenoma than in corresponding normal tissue samples were considered significant. The significant up-regulated genes were then further confirmed by Northern blot (FIG. **3***a* and FIG. **3***b*) and subsequently sequenced. Northern analysis of each set of cDNA genes on the chip revealed that 36 genes were detected as up-regulated in adenoma compared to normal, and 54 genes were detected as up-regulated in carcinoma as compared to the normal control. A set of 23 genes with serial increase of genes expression from adenoma to carcinoma was identified.

Further, comparison is made by using EMBL/GenBank libraries of NCBI/BLAST program, there are 3 unknown functional genes among 23 identified genes including ectopic

viral integration site 2B (Genbank accession no.NM-006495) Homo sapiens chromosome 21q22.1 anonymous mRNA sequence (Genebank accession no.AF003738) and Homo sapiens DMR protein mRNA (Genbank accession no.AF327354), and another 20 functional genes. Among these 20 functional genes, 6 genes are CRC-related (such as TM4SF3), 14 genes are CRC-unrelated (such as ATP2A2). Moreover, we obtain cDNAs of three patients who suffer from adenoma and adenocarcinama simultaneously and four colorectal cancer patients to affirm variation of 23 identified genes, result shown that were at least 3-fold higher in mRNA expression level in the adenocarcinoma tissues compared with normal samples, and the level gradually increased from colorectal adenomas to adenocarcinomas shown in FIG. **4***a* and FIG. **4***b*.

Now, methods of clinical diagnosis for detecting colorectal cancer are fecal occult blood test, image test, tumor label and colonoscopy. In each of these methods, we can generalize purpose of the present invention according to disadvantage of these methods.

1. Early Diagnosis

If patient undergo colorectal cancer before tumor cells spread out, five-year survival rate can be achieved over 90%. A certain number of tumor cells are needed for traditional detection by using tumor label method. In the case of image test, normally, correctly affirmation can be made easier when tumor become large. It is high invasion and price to make low acceptance for the patient in the colonoscopy that can not suitable for early diagnosis. Because of the process of circulating of tumor cells, different expression certainly happen among the genes. In the process of proliferation of early tumor cells, the dying cells cause molecule of ribonucleic acid to release into blood circulation. And, early diagnosis can be offered by the detection of using the constructed oligonucleotide biochip which is discharged from small number of tumor cells in the peripheral blood.

2. Specificity and Sensitivity

Fecal occult blood test has shortcomings for high false positives and false negatives to low specificity and sensitivity of the method, therefore the method is merely a first screening tool and the tumor label method is also not high specificity and sensitivity. But, we use these genes to detect peripheral blood of 100 CRC patients, peripheral blood of 50 healthy people and 40 other cancer-related patients as controls shown in FIG. **1**, these genes can detect 88 colorectal cancer patients for remarkable sensitivity of 88% ($^{88}/_{100}$) and specificity of 90% ($^{90}/_{100}$) in the clinical analysis.

3. Safety

The colonoscopy has high invasion and price to make low acceptance for patient in the mass screening tool of early diagnosis. Because sample collection is convenience and low invasion, Peripheral blood test of patient is a diagnosis method of genes, that is suitable to mass screening clinical application.

Please refer to FIG. **5**, showing another preferred embodiment according to the present invention. We choose genes of colorectal cancer and vector that express simultaneously in eukaryotic and prokaryotic to form recombination genes, and then form eukaryotic transformant cell by using and further form prokaryotic transfectant cell, and then obtain secreted protein by using extract of genes having said recombination genes, and obtain antibody from said secreted protein immune animals for making of protein testing reagent, colorectal vaccine and colorectal protein medicine for colorectal cancer.

The present invention may be embodied in other specific forms without departing from the spirit of the essential attributes thereof; therefore, the illustrated embodiment should be considered in all respects as illustrative and not restrictive, reference being made to the appended claims rather than to the foregoing description to indicate the scope of the invention.

TABLE 1

Assessment of clinical testing result for colorectal cancer biochip

No.	Age	Sex	diagnosis	Stage	result
1	43	F	Colon cancer	C1	P
2	35	F	Colon cancer	B2	P
3	68	M	Colon adenoma		P
4	56	F	Colon cancer	C2	P
5	32	F	Colon cancer	B1	N
6	65	M	Colon cancer	B2	P
7	46	M	Colon cancer	C1	P
8	67	M	Colon cancer	C1	P
9	58	F	Colon cancer	C1	P
10	45	M	Colon cancer	B2	P
11	62	F	Colon adenoma		P
12	64	F	Colon cancer	C2	P
13	58	F	Colon cancer	A	N
14	76	M	Colon cancer	C1	P
15	38	M	Colon cancer	B2	P
16	67	M	Colon cancer	C1	P
17	86	F	Colon adenoma		P
18	47	F	Colon cancer	C2	P
19	56	M	Colon cancer	B1	P
20	67	F	Colon cancer	B2	P
21	43	F	Colon adenoma		P
22	65	M	Colon cancer	A	P
23	43	F	Colon cancer	C2	P
24	54	M	Colon cancer	B1	P
25	34	F	Colon cancer	B2	P
26	76	F	Colon adenoma		P
27	66	M	Colon cancer	B2	P
28	78	F	Colon cancer	B1	P
29	57	M	Colon cancer	B2	P
30	74	M	Colon adenoma		P
31	65	F	Colon cancer	B1	P
32	64	F	Colon cancer	B2	P
33	62	M	Colon cancer	B1	P
34	46	M	Colon cancer	B2	P
35	54	F	Colon cancer	B1	P
36	58	F	Colon cancer	B1	P
37	64	F	Colon adenoma		P
38	56	M	Colon cancer	B1	P
39	67	M	Colon cancer	B2	P
40	48	F	Colon cancer	B1	P
41	55	M	Colon cancer	B1	P
42	64	F	Colon adenoma		P
43	58	F	Colon cancer	C1	P
44	65	M	Colon cancer	C1	P
45	66	M	Colon cancer	C2	P
46	43	M	Colon cancer	C1	P
47	26	F	Colon cancer	C2	P
48	54	M	Colon cancer	C1	P
49	59	F	Colon cancer	C2	P
50	71	F	Colon adenoma		N
51	37	M	Colon cancer	C1	P
52	47	F	Colon cancer	C1	P
53	62	M	Colon cancer	C2	P
54	47	M	Colon adenoma		P
55	55	F	Colon cancer	B2	P
56	48	M	Colon cancer	B1	P
57	66	F	Colon cancer	B2	P
58	64	M	Colon cancer	B1	N
59	30	M	Colon cancer	B1	P
60	56	F	Colon cancer	B2	P
61	46	M	Colon cancer	B1	P
62	67	F	Colon cancer	B2	P
63	35	M	Colon cancer	B1	P
64	45	F	Colon cancer	B1	P
65	86	F	Colon cancer	B2	P

TABLE 1-continued

Assessment of clinical testing result for colorectal cancer biochip					
No.	Age	Sex	diagnosis	Stage	result
66	54	M	Colon cancer	B1	P
67	57	M	Colon cancer	C1	P
68	76	F	Colon cancer	C2	P
69	46	M	Colon cancer	C1	P
70	68	M	Colon cancer	B2	P
71	45	F	Colon cancer	B1	P
72	87	M	Colon cancer	B1	P
73	53	M	Colon cancer	C1	P
74	58	F	Colon cancer	A	P
75	54	M	Colon cancer	B1	P
76	67	F	Colon cancer	C2	P
77	56	F	Colon cancer	A	N
78	35	M	Colon adenoma		P
79	79	F	Colon cancer	B2	P
80	82	M	Colon cancer	C2	P
81	76	M	Colon cancer	C2	P
82	54	F	Colon cancer	C1	P
83	42	M	Colon cancer	B1	P
84	68	M	Colon cancer	B1	P
85	27	M	Colon cancer	B2	P
86	67	F	Colon cancer	B2	P
87	46	M	Colon adenoma		N
88	76	F	Colon cancer	B1	P
89	44	MF	Colon cancer	B1	P
90	56	F	Colon cancer	B2	P
91	65	M	Colon cancer	C2	P
92	57	F	Colon cancer	C1	P
93	67	M	Colon cancer	B1	P
94	78	F	Colon adenoma		P
95	56	F	Colon cancer	C1	P
96	56	M	Colon cancer	C1	P
97	45	F	Colon cancer	B1	P
98	63	F	Colon cancer	B2	P

TABLE 1-continued

Assessment of clinical testing result for colorectal cancer biochip					
No.	Age	Sex	diagnosis	Stage	result
99	62	M	Colon cancer	C2	P
100	54	F	Colon cancer	C1	P

Controls				
NO	Age	Sex	Diagnosis	result
1	76	F	Breast cancer	N
2	35	F	Breast cancer	N
3	74	F	Breast cancer	P
4	57	F	Gastric cancer	N
5	87	F	Breast cancer	N
6	55	M	Gastic cancer	N
7	35	M	NPC	N
8	78	F	Breast cancer	N
9	65	M	NPC	N
10	55	F	Breast cancer	N
11	54	M	NPC	N
12	67	F	normal	N
13	86	M	Gastic cancer	P
14	53	F	NPC	N
15	58	F	normal	N
16	78	F	Breast cancer	N
17	45	M	normal	N
18	78	F	normal	N
19	87	F	normal	N
20	45	M	normal	N

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<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 22

tcgtctgctt tgctggacag cttctgcaat gcagcaaaaa agcctctccc 50

<210> SEQ ID NO 23
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 23

ccaagattct aggacaaaca cagcgtatgt gggctctgca gtcatgaccg 50

<210> SEQ ID NO 24
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 24

cacgagccct tctctgtgac tgaggattac ccgctccatc catccaagat 50

<210> SEQ ID NO 25
<211> LENGTH: 42
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 25

ttcagctgtg gctcggccat tgtaggcggt ggcaagagag gt 42

<210> SEQ ID NO 26
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 26

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<210> SEQ ID NO 27
<211> LENGTH: 50
<212> TYPE: DNA

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<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 27

gcccaaggcc acaggggtcc tttatgatta tgtcaacaag taccactggg 50

<210> SEQ ID NO 28
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 28

tcttgtcctt cggcagcgtg gccgctagtc atatcgagga tcaagcagaa 50

<210> SEQ ID NO 29
<211> LENGTH: 53
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 29

catgaactgc tggcccttgc ttgtgattgg tggttcctct gaaagaaacc aag 53

<210> SEQ ID NO 30
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 30

agccgggata aacccctgaa ggatgtgatc atcgcagact gcggcaagat 50

<210> SEQ ID NO 31
<211> LENGTH: 45
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 31

agcgaggaag agctggaaca cagccaggac acagacgcgg atgat 45

<210> SEQ ID NO 32
<211> LENGTH: 54
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 32

cggaaggtgc tgagaaaaaa cagcagatgg ctcgagaata cagagagaaa attg 54

<210> SEQ ID NO 33
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 33

tgacttctat ttgtgtgaaa tggcctttcc ccgggtcaag ccagcacctg 50

<210> SEQ ID NO 34
<211> LENGTH: 51
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 34

gcaccatgga gcctcaggtg tcaaatggtc cgacatccaa tacaagcaat g 51

<210> SEQ ID NO 35
<211> LENGTH: 50

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<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 35

caccgaagcc aggaagcccc gtttgtaagc gtgtgttgtg gtgctttatt 50

<210> SEQ ID NO 36
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 36

gctactccac ctctgcggcg aatcagaagc agcaagcaac tttgactgct 50

<210> SEQ ID NO 37
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 37

gtttcttacc cggtctgagt acgacagggg cgtgaatact ttttctcccg 50

<210> SEQ ID NO 38
<211> LENGTH: 53
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 38

gctatgaaca tgctgctaac tgttacacac acgcattcct cattgttccg gcc 53

<210> SEQ ID NO 39
<211> LENGTH: 45
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 39

tttgtggtac cccagcccgt tgtgcagagt tcaaagcctc cggtg 45

<210> SEQ ID NO 40
<211> LENGTH: 62
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 40

gcaatgactc tcaagcaatt tttggttctg aagatgtagg ctctagctcc tacgttgctg 60

tg 62

<210> SEQ ID NO 41
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 41

ctcatgactc cgccaactgt gaattgcctt tgttaacccc gtgcagcaag 50

<210> SEQ ID NO 42
<211> LENGTH: 49
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 42

ttcatggaca accctttcga gttcaacccc gaggacccca tccctgtct 49

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<210> SEQ ID NO 43
<211> LENGTH: 65
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 43

cccagtcaga aagtcaagga gaccttggtt attatgaaag atgtgagctc aagccttcag 60

aacag 65

<210> SEQ ID NO 44
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 44

ccctgacagt aagtcggatg agcctgtctg tgccagtgac aatgccactt 50

<210> SEQ ID NO 45
<211> LENGTH: 65
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 45

cagggatctc aggaaggaca tttcagtgaa atgatattta ctcctgaaga catgcccact 60

ttcag 65

<210> SEQ ID NO 46
<211> LENGTH: 59
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 46

ggcatggcag caaatgccaa cattttgtgg aatagcagca aatctacaag agaccctgg 59

<210> SEQ ID NO 47
<211> LENGTH: 66
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 47

gacacctaca ggttatccag actactactc agattgccag ctttaagact gatgaatgct 60

accatc 66

<210> SEQ ID NO 48
<211> LENGTH: 56
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 48

cccagtgacg accaaactca aagatgtaca gaggcagtta aaagcactgc ttcctc 56

<210> SEQ ID NO 49
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 49

acgtcagaga ttgtgtctga accgtcctgc tctctagctc tgacggatga 50

<210> SEQ ID NO 50
<211> LENGTH: 48

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<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 50

tcacggcctg gagttcttgt tccgggactg caggaatgtc tcgcagtt 48

<210> SEQ ID NO 51
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 51

taatccttat gcgcgtaacc gtcctccctt tggtcagggc tatacccaac 50

<210> SEQ ID NO 52
<211> LENGTH: 53
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 52

gatcaaagcc agagaggagc ctatggaatg tggatcaaat gccagttgtg acg 53

<210> SEQ ID NO 53
<211> LENGTH: 67
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 53

gaaccacaac aagaggatga tgagtttctt atggcgactg atgtagatga tagatttgag 60

accctgg 67

<210> SEQ ID NO 54
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 54

ctcagggaga tggatttgct cgttgttttc ttccctcctt ccccttcctg 50

<210> SEQ ID NO 55
<211> LENGTH: 57
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 55

ccgtggatgt gtatgggatt gtgtatgacc ttcgaatgca taggccttta atggtgc 57

<210> SEQ ID NO 56
<211> LENGTH: 55
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 56

gcccagctta tcataaacac tgagaaaact gtgattggct ctgttctgct gcggg 55

<210> SEQ ID NO 57
<211> LENGTH: 52
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 57

cgagaaaatg aaaaccacct cttggttgtt ccagagtcac ggttcgaccg ag 52

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<210> SEQ ID NO 58
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 58

tccgggattg ttactgtcag tgttggccat tgccacccaa aggtgaatgc 50

<210> SEQ ID NO 59
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 59

gagcccgatg acgctgaact agtaaggctc agtaagaggc tggtggagaa 50

<210> SEQ ID NO 60
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 60

tcagcccccct attacacctg acgtggagac tttccaaaac accgtaggag 50

<210> SEQ ID NO 61
<211> LENGTH: 57
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 61

cagcagggat ccacacactg aaagaagttc gcagagatta tgaagccatt ggaatcc 57

<210> SEQ ID NO 62
<211> LENGTH: 45
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 62

tcaagtaagc cctgtgagga gagctcccag cagaaggcac ggagt 45

<210> SEQ ID NO 63
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 63

aaatgcttga ttgcagaggt ctggtgccct gtcaccgacc ttgactccat 50

<210> SEQ ID NO 64
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 64

ctgcgagcat ctctggtgcc catggaacac tgcataaccc gtttctttga 50

<210> SEQ ID NO 65
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 65

tggcgttccc actggggtta aagggaatgt ccagggaaac ctcttcaaag 50

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<210> SEQ ID NO 66
<211> LENGTH: 42
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 66

cgactactac gatgaggact acgatgacga gcagcgcacc gg 42

<210> SEQ ID NO 67
<211> LENGTH: 59
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 67

gctggttctc ggcatcatga tttccaccac atgaacttca ttggaaacta tgcttcaac 59

<210> SEQ ID NO 68
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 68

tctgtgacaa cctgggagac cacctggtgg ggaacgtgta cgtcaagttt 50

<210> SEQ ID NO 69
<211> LENGTH: 45
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 69

caaaacgcag ccctgcgacc acaccaaggg gctggaatgc aactt 45

<210> SEQ ID NO 70
<211> LENGTH: 52
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 70

caacagcgca gtcttgtcaa ccatcagatg atccatgcag aggtgaaaac cc 52

<210> SEQ ID NO 71
<211> LENGTH: 50
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 71

caccagatga acgggacaaa ccagcacttc cgagattgca accccaagca 50

<210> SEQ ID NO 72
<211> LENGTH: 1424
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 72

gatgaaacga aaagaatctg catttaagag tatgttaaaa caagctgctc ctccgataga 60

attggatgct gtctgggaag atatccgtga gagatttgta aaagagccag catttgagga 120

cataactcta gaatctgaaa gaaaacgaat atttaaagat tttatgcatg tgcttgagca 180

tgaatgtcag catcatcatt caaagaacaa gaaacattct aagaaatcta aaaaacatca 240

taggaaacgt tcccgctctc gatcggggtc agattcagat gatgatgata gccattcaaa 300

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gaaaaaaaga cagcgatcag agtctcgttc tgcttcagaa cattcttcta gtgcagagtc    360

tgagagaagt tataaaaagt caaaaaagca taagaagaaa agtaagaaga ggagacataa    420

atctgactct ccagaatccg atgctgagcg agagaaggat aaaaaagaaa aagatcggga    480

aagtgaaaaa gacagaacta gacaaagatc agaatcaaaa cacaaatcgc ctaagaaaaa    540

gactggaaag gattctggta attgggatac ttctggcagc gaactgagtg aaggggaatt    600

ggaaaagcgc agaagaaccc ttttggagca actggatgat gatcaataaa ttataccaaa    660

tatatgttta cagtatgatt taaagtctga ttcagaccag ggactctatt ttaagttcaa    720

ctgaaataac actgggtttt aattatatca caggaaaaaa aaagtgcatt taagtattgt    780

tatcgtggac tttataaaag caaaggaaat tgaaagtaac ttttgattct gtatcaagaa    840

tcatattttc atacagtcat aactgtcttt ctgtgaccct ttcacagggc actgtaggat    900

ggattaaagg tggcaattta ctgataactg cagatgtctc tactttgttc taaaatctaa    960

gtcataaggt gatttgattt actttataga agctggattt tgaagatcta atgaaaaatt   1020

ttttgataat atagtagtac aaaaaaagca ccagcaactg ataaaaattg ctttttttgtg   1080

cgctacccaa ctggttaaag ccaatgtgat cttttatggt gaaactccta agaaacaggt   1140

ggttttgctg gaaacttggt agacccttaa ttatagtggt gctaatgagc actactgtaa   1200

tataaagcca ccattatttt ttatcaaaca tctgaataca ttttacaaag gctattgtga   1260

gggcattatt ttgagcatct attttgaggt gatgtttaaa aaaactttaa catcaaatca   1320

aattgtaaat taatttaaat atattgcctt aaggacctac taaagaatgt gccaccagac   1380

tttaagtgat agttgcaata tccttgtcta aaaaaaaaaa aaaa                    1424
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<210> SEQ ID NO 73
<211> LENGTH: 874
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 73

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ctcgccctgt ccctgggggg gactggtgct gcgcccccga ttcagtcccg gattgtggga    120

ggctgggagt gtgagcagca ttcccagccc tggcaggcgg ctctgtacca tttcagcact    180

ttccagtgtg ggggcatcct ggtgcaccgc cagtgggtgc tcacagctgc tcattgcatc    240

agcgacaatt accagctctg gctgggtcgc cacaacttgt ttgacgacga aaacacagcc    300

cagtttgttc atgtcagtga gagcttccca caccctggct tcaacatgag cctcctggag    360

aaccacaccc gccaagcaga cgaggactac agccacgacc tcatgctgct ccgcctgaca    420

gagcctgctg ataccatcac agatgctgtg aaggtcgtgg agttgcccac cgaggaaccc    480

gaagtgggga gcacctgttt ggcttccggc tggggcagca tcgaaccaga gaatttctca    540

tttccagatg atctccagtg tgtggacctc aaaatcctgc ctaatgatga gtgcaaaaaa    600

gcccacgtcc agaaggtgac agacttcatg ctgtgtgtcg gacacctgga aggtggcaaa    660

gacacctgtg tgggtgattc agggggcccg ctgatgtgtg atggtgtgct ccaaggtgtc    720

acatcatggg gctacgtccc ttgtggcacc cccaataagc cttctgtcgc cgtcagagtg    780

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gtcccctacc cccagtaaaa tcaaatgtgc atcc                                874
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<210> SEQ ID NO 74
<211> LENGTH: 2308

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<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 74

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ccacccgtct tgtttgtccc acccttggtg acgcagagcc ccagcccaga ccccgcccaa 120

agcactcatt taactggtat tgcggagcca cgaggcttct gcttactgca actcgctccg 180

gccgctgggc gtagctgcga ctcggcggag tcccggcggc gcgtccttgt tctaacccgg 240

cgcgccatga ccgtcgcgcg gccgagcgtg cccgcggcgc tgcccctcct cggggagctg 300

ccccggctgc tgctgctggt gctgttgtgc ctgccggccg tgtggggtga ctgtggcctt 360

cccccagatg tacctaatgc ccagccagct ttggaaggcc gtacaagttt tcccgaggat 420

actgtaataa cgtacaaatg tgaagaaagc tttgtgaaaa ttcctggcga gaaggactca 480

gtgatctgcc ttaagggcag tcaatggtca gatattgaag agttctgcaa tcgtagctgc 540

gaggtgccaa caaggctaaa ttctgcatcc ctcaaacagc cttatatcac tcagaattat 600

tttccagtcg gtactgttgt ggaatatgag tgccgtccag gttacagaag agaaccttct 660

ctatcaccaa aactaacttg ccttcagaat ttaaaatggt ccacagcagt cgaattttgt 720

aaaaagaaat catgccctaa tccgggagaa atacgaaatg gtcagattga tgtaccaggt 780

ggcatattat ttggtgcaac catctccttc tcatgtaaca cagggtacaa attatttggc 840

tcgacttcta gtttttgtct tatttcaggc agctctgtcc agtggagtga cccgttgcca 900

gagtgcagag aaatttattg tccagcacca ccacaaattg acaatggaat aattcaaggg 960

gaacgtgacc attatggata tagacagtct gtaacgtatg catgtaataa aggattcacc 1020

atgattggag agcactctat ttattgtact gtgaataatg atgaaggaga gtggagtggc 1080

ccaccacctg aatgcagagg aaaatctcta acttccaagg tcccaccaac agttcagaaa 1140

cctaccacag taaatgttcc aactacagaa gtctcaccaa cttctcagaa aaccaccaca 1200

aaaaccacca caccaaatgc tcaagcaaca cggagtacac ctgtttccag gacaaccaag 1260

cattttcatg aaacaacccc aaataaagga agtggaacca cttcaggtac tacccgtctt 1320

ctatctgggc acacgtgttt cacgttgaca ggtttgcttg ggacgctagt aaccatgggc 1380

ttgctgactt agccaaagaa gagttaagaa gaaaatacac acaagtatac agactgttcc 1440

tagtttctta gacttatctg catattggat aaaataaatg caattgtgct cttcatttag 1500

gatgctttca ttgtctttaa gatgtgttag gaatgtcaac agagcaagga gaaaaaaggc 1560

agtcctggaa tcacattctt agcacaccta cacctcttga aaatagaaca acttgcagaa 1620

ttgagagtga ttcctttcct aaaagtgtaa gaaagcatag agatttgttc gtatttagaa 1680

tgggatcacg aggaaaagag aaggaaagtg atttttttcc acaagatctg taatgttatt 1740

tccacttata aaggaaataa aaaatgaaaa acattatttg gatatcaaaa gcaaataaaa 1800

acccaattca gtctcttcta agcaaaattg ctaaagagag atgaaccaca ttataaagta 1860

atctttggct gtaaggcatt ttcatctttc cttcgggttg gcaaaatatt ttaaaggtaa 1920

aacatgctgg tgaaccaggg gtgttgatgg tgataaggga ggaatataga atgaaagact 1980

gaatcttcct ttgttgcaca aatagagttt ggaaaaagcc tgtgaaaggt gtcttctttg 2040

acttaatgtc tttaaaagta tccagagata ctacaatatt aacataagaa aagattatat 2100

attatttctg aatcgagatg tccatagtca aatttgtaaa tcttattctt ttgtaatatt 2160

tatttatatt tatttatgac agtgaacatt ctgattttac atgtaaaaca agaaaagttg 2220

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aagaagatat gtgaagaaaa atgtattttt cctaaataga aataaatgat cccatttttt   2280

ggtaaaaaaa aaaaaaaaaa aaaaaaaa                                      2308


<210> SEQ ID NO 75
<211> LENGTH: 1927
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 75

tgccagccca agtcggaact tggatcacat cagatcctct cgagctccag caggagaggc     60

ccttcctcgc ctggcagccc ctgagcggct cagcagggca ccatggcaag atcccttctc    120

ctgcccctgc agatcttact gctatcctta gccttggaaa ctgcaggaga agaagcccag    180

ggtgacaaga ttattgatgg cgccccatgt gcaagaggct cccacccatg gcaggtggcc    240

ctgctcagtg gcaatcagct ccactgcgga ggcgtcctgg tcaatgagcg ctgggtgctc    300

actgccgccc actgcaagat gaatgagtac accgtgcacc tgggcagtga tacgctgggc    360

gacaggagag ctcagaggat caaggcctcg aagtcattcc gccaccccgg ctactccaca    420

cagacccatg ttaatgacct catgctcgtg aagctcaata gccaggccag gctgtcatcc    480

atggtgaaga aagtcaggct gccctcccgc tgcgaacccc ctggaaccac ctgtactgtc    540

tccggctggg gcactaccac gagcccagat gtgacctttc cctctgacct catgtgcgtg    600

gatgtcaagc tcatctcccc ccaggactgc acgaaggttt acaaggactt actggaaaat    660

tccatgctgt gcgctggcat ccccgactcc aagaaaaacg cctgcaatgg tgactcaggg    720

ggaccgttgg tgtgcagagg taccctgcaa ggtctggtgt cctggggaac tttcccttgc    780

ggccaaccca atgacccagg agtctacact caagtgtgca agttcaccaa gtggataaat    840

gacaccatga aaaagcatcg ctaacgccac actgagttaa ttaactgtgt gcttccaaca    900

gaaaatgcac aggagtgagg acgccgatga cctatgaagt caaatttgac tttacctttc    960

ctcaaagata tatttaaacc aacctcatgc cctgttgata aaccaatcaa attggtaaag   1020

acctaaaacc aaaacaaata aagaaacaca aaaccctcag tgctggagaa gagtcagtga   1080

gaccagcact ctcaaacact ggaactggac gttcgtacag tctttacgga agacacttgg   1140

tcaacgtaca ccgagaccct tattcaccac ctttgaccca gtaactctaa tcttaggaag   1200

aacctactga aacaaaaaaa atccaaaatg tagaacaaga cttgaattta ccatgatatt   1260

atttatcaca gaaatgaagt gaaaccatca aacatgttcc aaaagtacca gatggcttaa   1320

ataatagtct ggcttggcac aacgatgttt tttttctttg agacagagtc tctgttgctt   1380

gggctgcaat gcagtgatgc aatcttggct cactgcaacc tccgcctcct gggttcaagt   1440

gattctcgtg cttcagcctc ccaagtacct gggactacag gtgtgcacca ccacaccagg   1500

ctaatttttt gtgtattttt actagagaca gggtttcacc atgttggcca gcgtggtctt   1560

gaacgcctga cctcagatga tccacccacc ttggcctccc aaagtgctgg gattacaggc   1620

atgagccacc acggccagcc cacaatgata ttacaaacct attaaaaatg atacttagac   1680

agaattgtca gtattattca agaacattta ggctatagga tgttaaatga caaaaggaag   1740

gacaaaaata tatatgtatg tgaccctacc cataaaaaat gaaatattca cagaatcaga   1800

tctgaaaaca catgtcccag actgcatact ggggtcgtca tgaggtgtct ccttccttct   1860

gtgtactttt ccttgaatgt gcacttttat aacatgaaaa ataaaggtgg ggaaaaaagt   1920

ctgaaga                                                             1927
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<210> SEQ ID NO 76
<211> LENGTH: 3942
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 76

gggtgattca gcgcccggcg aggcggaagc ggccgcaaga ggaggagggg agagcccgtc 60

cgcgcctggg ctcccggggt ggcacgagcc cgcggccgga gtgcgaggcg gaggcgagga 120

ggccgcgggg acgggaggcg aggccggccg ggcccccgaa gccatggaga acgcgcacac 180

caagacggtg gaggaggtgc tgggccactt cggcgtcaac gagagtacgg ggctgagcct 240

ggaacaggtc aagaagctta aggagagatg gggctccaac gagttaccgg ctgaagaagg 300

aaaaaccttg ctggaacttg tgattgagca gtttgaagac ttgctagtta ggattttatt 360

actggcagca tgtatatctt ttgttttggc ttggtttgaa gaaggtgaag aaacaattac 420

agcctttgta gaacctttg taattttact catattagta gccaatgcaa ttgtgggtgt 480

atggcaggaa agaaatgctg aaaatgccat cgaagccctt aaggaatatg agcctgaaat 540

gggcaaagtg tatcgacagg acagaaagag tgtgcagcgg attaaagcta aagacatagt 600

tcctggtgat attgtagaaa ttgctgttgg tgacaaagtt cctgctgata taaggttaac 660

ttccatcaaa tctaccacac taagagttga ccagtcaatt ctcacaggtg aatctgtctc 720

tgtcatcaag cacactgatc ccgtccctga cccacgagct gtcaaccaag ataaaaagaa 780

catgctgttt tctggtacaa acattgctgc tgggaaagct atgggagtgg tggtagcaac 840

tggagttaac accgaaattg gcaagatccg ggatgaaatg gtggcaacag aacaggagag 900

aacacccctt cagcaaaaac tagatgaatt tggggaacag ctttccaaag tcatctccct 960

tatttgcatt gcagtctgga tcataaatat tgggcacttc aatgacccgg ttcatggagg 1020

gtcctggatc agaggtgcta tttactactt taaaattgca gtggccctgg ctgtagcagc 1080

cattcctgaa ggtctgcctg cagtcatcac cacctgcctg gctcttggaa ctcgcagaat 1140

ggcaaagaaa aatgccattg ttcgaagcct cccgtctgtg gaaacccttg gttgtacttc 1200

tgttatctgc tcagacaaga ctggtacact tacaacaaac cagatgtcag tctgcaggat 1260

gttcattctg gacagagtgg aaggtgatac ttgttccctt aatgagttta ccataactgg 1320

atcaacttat gcacctattg gagaagtgca taaagatgat aaaccagtga attgtcacca 1380

gtatgatggt ctggtagaat tagcaacaat ttgtgctctt tgtaatgact ctgctttgga 1440

ttacaatgag gcaaagggtg tgtatgaaaa agttggagaa gctacagaga ctgctctcac 1500

ttgcctagta gagaagatga atgtatttga taccgaattg aagggtcttt ctaaaataga 1560

acgtgcaaat gcctgcaact cagtcattaa acagctgatg aaaaaggaat tcactctaga 1620

gttttcacgt gacagaaagt caatgtcggt ttactgtaca ccaaataaac caagcaggac 1680

atcaatgagc aagatgtttg tgaagggtgc tcctgaaggt gtcattgaca ggtgcaccca 1740

cattcgagtt ggaagtacta aggttcctat gacctctgga gtcaaacaga agatcatgtc 1800

tgtcattcga gagtggggta gtggcagcga cacactgcga tgcctggccc tggccactca 1860

tgacaaccca ctgagaagag aagaaatgca ccttgaggac tctgccaact ttattaaata 1920

tgagaccaat ctgaccttcg ttggctgcgt gggcatgctg gatcctccga gaatcgaggt 1980

ggcctcctcc gtgaagctgt gccggcaagc aggcatccgg gtcatcatga tcactgggga 2040

caacaagggc actgctgtgg ccatctgtcg ccgcatcggc atcttcgggc aggatgagga 2100

cgtgacgtca aaagctttca caggccggga gtttgatgaa ctcaacccct ccgcccagcg 2160

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agacgcctgc ctgaacgccc gctgttttgc tcgagttgaa ccctcccaca agtctaaaat   2220
cgtagaattt cttcagtctt ttgatgagat tacagctatg actggcgatg gcgtgaacga   2280
tgctcctgct ctgaagaaag ccgagattgg cattgctatg ggctctggca ctgcggtggc   2340
taaaaccgcc tctgagatgg tcctggcgga tgacaacttc tccaccattg tggctgccgt   2400
tgaggagggg cgggcaatct acaacaacat gaaacagttc atccgctacc tcatctcgtc   2460
caacgtcggg gaagttgtct gtattttcct gacagcagcc cttggatttc ccgaggcttt   2520
gattcctgtt cagctgctct gggtcaatct ggtgacagat ggcctgcctg ccactgcact   2580
ggggttcaac cctcctgatc tggacatcat gaataaacct ccccggaacc caaaggaacc   2640
attgatcagc gggtggctct ttttccgtta cttggctatt ggctgttacg tcggcgctgc   2700
taccgtgggt gctgctgcat ggtggttcat tgctgctgac ggtggtccaa gagtgtcctt   2760
ctaccagctg agtcatttcc tacagtgtaa agaggacaac ccggactttg aaggcgtgga   2820
ttgtgcaatc tttgaatccc catacccgat gacaatggcg ctctctgttc tagtaactat   2880
agaaatgtgt aacgccctca acagcttgtc cgaaaaccag tccttgctga ggatgccccc   2940
ctgggagaac atctggctcg tgggctccat ctgcctgtcc atgtcactcc acttcctgat   3000
cctctatgtc gaacccttgc cactcatctt ccagatcaca ccgctgaacg tgacccagtg   3060
gctgatggtg ctgaaaatct ccttgcccgt gattctcatg gatgagacgc tcaagtttgt   3120
ggcccgcaac tacctggaac ctgcaatact ggagtaaccg cttcctaaac cattttgcag   3180
aaatgtaagg gtgttcggtt gcgtgcatgt gcgtttttag caacacatct accaaccctg   3240
tgcatgactg atgttgggga aaaagaaaag taaaaaactt cccaactcac tttgtgttat   3300
gtggaggaaa tgtgtattac caatggggtt gttagctttt aaatcaaaat actgattaca   3360
gatgtacaat ttagcttaat cagaaagcct ctccagagaa gtttggtttc tttgctgcaa   3420
gaggaatgag gctctgtaac cttatctaag aacttggaag ccgtcagcca agtcgccaca   3480
tttctctgca aaatgtcata gcttatataa atgtacagta ttcaattgta atgcatgcct   3540
tcggttgtaa gtagccagat ccctctccag tgacattgga acatgctact ttttaattgg   3600
ccctgtacag tttgcttatt tataaattca ttaaaaacac tacaggtgtt gaatggttaa   3660
aatgtaggcc tccagttcat tttcagttat tttctgagtg tgcagacagc tatttcgcac   3720
tgtattaaat gtaacttatt taatgaaatc agaagcagta gacagatgtt ggtgcaatac   3780
aaatattgtg atgcatttat cttaataaaa tgctaaatgt caatttatca ctgcgcatgt   3840
ttgactttag actgtaaata gagatcagtt tgtttctttc tgtgctggta acaatgagcg   3900
tcgcacagac atggtttcag gtaaataaat ctattctatg at                      3942
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<210> SEQ ID NO 77
<211> LENGTH: 2385
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 77

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atggccgact tcgatgatcg tgtgtcggat gaggagaagg tacgcatagc tgctaaattc     60
atcactcatg cacccccagg ggaatttaat gaagtattca atgacgttcg gctactactt    120
aataatgaca atctcctcag ggaaggggca gcacatgcat ttgcccagta taacatggat    180
cagttcacgc ctgtgaagat agaaggatat gaagatcagg tcttaattac agagcacggt    240
gacctgggta atagcagatt tttagatcca agaaacaaaa tttcctttaa atttgaccac    300
ttacggaaag aagcaagtga cccccagcca gaagaagcag atggaggtct gaagtcttgg    360
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agagaatcct gtgacagtgc tttaagagcc tatgtgaaag accattattc caacggcttc    420
tgtactgttt atgctaaaac tatcgatggg caacagacta ttattgcatg tattgaaagc    480
caccagtttc agcctaaaaa cttctggaat ggtcgttgga gatcagagtg gaagttcacc    540
atcacaccac ctacagccca ggtggttggc gtgcttaaga ttcaggttca ctattatgaa    600
gatggcaatg ttcagttggt tagtcataaa gatgtacagg attcactaac tgtttcgaat    660
gaagcccaaa ctgccaagga gtttattaaa atcatagaga atgcagaaaa tgagtatcag    720
acagcaatta gtgaaaacta tcaaacaatg tcagatacca cattcaaggc cttgcgccgc    780
cagcttccag ttacccgcac caaaatcgac tggaacaaga tactcagcta caagattggc    840
aaagaaatgc agaatgctta aaggctgaat gtaggattct tcagtatgtg gaaagacaag    900
gattcaacgt gtggtcatat gataaataag tgatttataa acaagagtga tattttgcta    960
gggctttcaa agttaaccgg ttttctagcc tcatggaata ctgttgaacc tatagcgttg   1020
tcttgattct tttgtgttct ctgccttgta attttctgtt actgctatat ctacgtgtaa   1080
atctttttt cttttttttt tttttttttt ttctttttg gttaattctg ccacatttaa   1140
tgttggtgag agagtgatct atcctaatga catttactgt ttaaaaaagt ttcctagcca   1200
tgaagccctg ctactgattt agacaaggta ttatggtcat tactttgtac ccctatcctt   1260
ccaagcactt ctggtacttc agtcgttttt actgatccac caacacctaa agaggctatg   1320
ctacagtctc tagctaaatg gaagacacat tcatccttct ccctctgact gctttgatca   1380
tcatttattg catcgtcata tcatatttat cgcatctcat aactaacttt ctaaagtttg   1440
gattgggact tttcaggtcc tttttggagg gcaaaggaag ttccagcttc tctggggaac   1500
ttgtttttaa atccaaagac ttgaaccaca ttccctgcac atgaacatgt ttgcttttat   1560
cccttctctc attggctcct tcccatctta gtaccattgt agttatacat ctgcattttt   1620
tagaagcatt ttacccattt atttttttaa acattcaaga actgctgacg tactgtggat   1680
gtagagtata aaacttgaaa aatgcagatg ttgaaggaat aataggtatc ttgtgcttta   1740
atactttatg gcaggattgt actataagca aatgaattaa acagctatgt aaatcataaa   1800
gaaaaactaa aaatgaacca aagtgaaagg ataacttcca ggcagtatct ttctattgta   1860
acctgttatt taaggaaata ctagtgattt cttctaaata ggatgtaaac ttctttcaaa   1920
ttactcttcc tcagtctgcc tgccaagaac tcaagtgtaa ctgtgataaa ataacctttc   1980
ccaggtatat tcggcaggta tgtgtgtaat ctcagaatac acaggtgaca tagatatgat   2040
atgacaactg gtaatggtgg attcatttac attgtttaca cttctatgac caggccttaa   2100
gggaaggtca gtttttaaa aaaccaagta gtgtcttcct acctatctcc agatacatgt   2160
caaaaagaaa aggtgtttgt gctccgtttt gtttctgctc agtaatatag tcaagcaagt   2220
ttgttccagg tgacccattg agctgtgtat gcatttttgt ttatttcaat aaaatatatt   2280
tgtattattt gtccttcata ctatccatcc ataccacact atcttctgta tcaggtagtc   2340
taatagaaat atacctgttt tgttctaaaa aaaaaaaaaa aaaaa                   2385
```

<210> SEQ ID NO 78
<211> LENGTH: 1320
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 78

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ccccctagcg tcgcgcaggg tcggggactg cgcgcggtgc caggccgggc gtgggcgaga     60
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gcacgaacgg gctgctgcgg gctgagagcg tcgagctgtc accatgggtg atcacgcttg    120
gagcttccta aaggacttcc tggccggggc ggtcgccgct gccgtctcca agaccgcggt    180
cgcccccatc gagagggtca aactgctgct gcaggtccag catgccagca aacagatcag    240
tgctgagaag cagtacaaag ggatcattga ttgtgtggtg agaatcccta aggagcaggg    300
cttcctctcc ttctggaggg gtaacctggc caacgtgatc cgttacttcc ccacccaagc    360
tctcaacttc gccttcaagg acaagtacaa gcagctcttc ttagggggtg tggatcggca    420
taagcagttc tggcgctact ttgctggtaa cctggcgtcc ggtggggccg ctggggccac    480
ctccctttgc tttgtctacc cgctggactt tgctaggacc aggttggctg ctgatgtggg    540
caggcgcgcc cagcgtgagt tccatggtct gggcgactgt atcatcaaga tcttcaagtc    600
tgatggcctg agggggctct accagggttt caacgtctct gtccaaggca tcattatcta    660
tagagctgcc tacttcggag tctatgatac tgccaagggg atgctgcctg accccaagaa    720
cgtgcacatt tttgtgagct ggatgattgc ccagagtgtg acggcagtcg cagggctgct    780
gtcctacccc tttgacactg ttcgtcgtag aatgatgatg cagtccggcc ggaaaggggc    840
cgatattatg tacacgggga cagttgactg ctggaggaag attgcaaaag acgaaggagc    900
caaggccttc ttcaaaggtg cctggtccaa tgtgctgaga ggcatgggcg gtgcttttgt    960
attggtgttg tatgatgaga tcaaaaaata tgtctaatgt aattaaaaca caagttcaca   1020
gatttacatg aacttgatct acaagttcac agatccattg tgtggtttaa tagactattc   1080
ctaggggaag taaaaagatc tgggataaaa ccagactgaa aggaatacct cagaagagat   1140
gcttcattga gtgttcatta aaccacacat gtattttgta tttattttac atttaaattc   1200
ccacagcaaa tagaaataat ttatcatact tgtacaatta actgaagaat tgataataac   1260
tgaatgtgaa acatcaataa agaccactta atgcacaaaa aaaaaaaaaa aaaaaaaaaa   1320
```

<210> SEQ ID NO 79
<211> LENGTH: 4139
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 79

```
ggcggcgcag gggcggggct ttacggacgc aagcacgtcg aagcgctgct cctggagccg     60
cggagggtgc gggtttggct gcggtggttt ctgtggcggt tgctgtggcg gagtttggag    120
gttggagaga aatccaggta ctcactagac tggtaccttc tgccaccatg ggggagcttt    180
tccggagtga agaaatgaca ctggcccagc tttttctaca gtcagaggct gcttattgtt    240
gtgtcagtga attaggagaa cttggaaagg ttcagtttcg tgacttaaat ccagatgtga    300
atgttttcca acggaaattt gtgaatgaag ttagaagatg tgaagaaatg gatcgaaagc    360
ttcgatttgt tgagaaagag ataagaaaag ctaacattcc gattatggac accggtgaaa    420
acccagaggt tcccttcccc cgggacatga ttgacttaga ggccaatttt gagaagattg    480
aaaatgaact gaaggaaatc aacacaaacc aggaagctct gaagagaaac ttcctggaac    540
tgaccgaatt aaaatttata cttcgcaaaa ctcagcaatt ttttgatgag atggcggatc    600
cagacttgtt ggaagagtcc tcatccctct tggagccaag tgagatggga agaggcactc    660
ctttaagact tggcttcgtg gctggtgtca ttaaccggga gcgcatccct acttttgagc    720
gcatgctttg gcgggtatgc cggggaaatg tgttcctgcg acaggctgaa atcgagaacc    780
ccctggagga tcctgtgact ggcgactacg tgcacaagtc tgtgtttatc attttcttcc    840
aaggcgatca gctgaaaaac agagtcaaga aaatctgtga agggttccga gcctcactct    900
```

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```
atccctgtcc tgagacacca caggagagga aggaaatggc ttctggagtg aataccagga    960
ttgatgatct ccaaatggtt ctgaatcaaa cggaggatca ccgccagagg gttctgcagg   1020
cagctgctaa gaacatccgt gtctggttca tcaaagtgcg gaagatgaag gccatctatc   1080
acaccctgaa cctgtgcaac atagatgtga ctcagaaatg cttgattgca gaggtctggt   1140
gccctgtcac cgaccttgac tccatccagt ttgcactcag aaggggcacg gaacacagtg   1200
gttccactgt accttccatt ttgaacagga tgcagacaaa ccagactccc ccaacctata   1260
acaaaaccaa caagtttacc tatggctttc agaacatagt agatgcttat ggaattggaa   1320
cttaccgaga gataaatcca gctccgtata ctattatcac gttccctttt ctatttgctg   1380
tgatgtttgg agacttcggt catggcattt taatgaccct ttttgctgtg tggatggtac   1440
tgagggagag ccggatcctt tcccagaaga atgagaatga gatgtttagc actgtgttca   1500
gtggtcgata cattatttta ttgatgggtg tgttctccat gtacactggc ctcatctaca   1560
atgattgctt ttccaagtct cttaatatct ttgggtcatc ctggagtgta cggccgatgt   1620
ttacttataa ttggactgaa gagacgcttc gggggaaccc tgttctacag ctgaacccag   1680
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tcatccatat gctgtttgga gtcagcctga gtctgttcaa ccatatctat ttcaagaagc   1860
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caccaagcct tctgatccat ttcataaaca tgttcctctt ttcctaccca gagtctggtt   2040
attcaatgtt gtattctgga cagaaaggaa ttcagtgttt cctggtagtg gttgcactac   2100
tgtgtgtacc ttggatgctg ctgtttaaac cattggtcct tcgccgtcag tatttgagga   2160
gaaagcattt gggaactctc aactttggtg ggatcagggt gggcaacgga ccgacagagg   2220
aggatgctga gattattcag catgaccagc tctccaccca ctcagaggac gcagacgagt   2280
ttgactttgg ggacaccatg gtccaccagg ccatccacac catcgagtac tgcctgggct   2340
gcatctccaa cactgcctcc tacttgcggc tctgggccct cagcctcgct catgcgcagc   2400
tgtctgaggt gctttggacc atggtgatcc acatcggcct gagcgtgaag agcttggcgg   2460
gaggtttggt gctgttcttc ttcttcactg cctttgccac cctgaccgtg gccatcctcc   2520
tgatcatgga gggcctctcg gcctttctcc acgcactgcg cttacactgg gttgagttcc   2580
agaataaatt ctacagcggg accggtttca agttcttacc cttctccttc gagcatattc   2640
gggaagggaa gtttgaagag tgagtccctg tgagggccgt gtgccccatg ctaccctccc   2700
cgcctccctc cacagtgatc agctgtgcct ctctgcctgt tggttgtgat ctgtgggcac   2760
cagctcattc gtgtcaccct gtctgtgagt catttagata gaatagtcct ccttgggtct   2820
cccaccaccc ctagctttgt gtgtagtgta gtgattttct ggctgtcact catactcact   2880
gggcaccagc cttgccctct tagcctccat ccatccagac agcccttccc acctcctggt   2940
ggtgagccag tctgcattcc cacgccatcc caaagccctt tcatcttccc cgtgcattgt   3000
agatggaagg agcacccatg ccattcaccc atctagactt tgagttccct gcatctgcca   3060
ccgtagtttc tagcaggagt agtgggggga gtaatacaga ttcttcccta gaaggggaca   3120
ctggtaacat gtcccactct tggattagca ggggtgggtc caggaagatg atatttgcgt   3180
cttttgccca ccccccctggc attcagctgg acccaactag gccatcatga gtggcttctc   3240
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cctgtcatcc ccaggggtca taggatatct acaccgcctt tctgacccca ccctgcactc   3300

ccatcctttc ctctctcccc gttcatgccc tgcactacat agcacagccg ggatgcttgg   3360

aacagaggcc ttggctgctc cgcagtgcac agggcttccc tctctcgggg ttggcttctt   3420

cccaggcctt gcatgggccc tgcccacaag cacaccctca ggccgagggt gcagactgat   3480

gctcttccct gatggagacc ctgagatctt ccccaccccc aatcatgatg tcttcagtgt   3540

gggactgggg tcctcttggt tctgcctgca gcctgcctgg ctccgcccct agtgcccccct   3600

cctcaccaca ctggccccag gtctcaggag gggtgtcctg ggcagggaag gtcagtgtca   3660

ctgatggttt gctgtttgga agccattggc agggctgccg tgcatgtggc tgtgagggct   3720

gcacagtcct gccaaggggc ttcctccttg tcaccccgaa ccttgtaatc gtgtgctggc   3780

gtggcagccc tggctaagtt aatccccacc gctttcagtg gtagaaagaa ttccctgagt   3840

gggccaggct ggtgccctcc tcctaccctg gcttttctga gtgagctgcc tggagccctc   3900

atcccctctc ccaggctggg ctggccctgg gcggggccac tgtgtgctgg cccactgtga   3960

cctgacccga ccttgtgcag ccccccctgcc ctggtgtcct gggttttcgt gatgatcttt   4020

gctctgtttc cagtggggtt tgaagcagag ttcagggaac cctgcccaag gtcctcctgt   4080

tcagacattc ctatgttgaa taaagtatgt ttgacttccc cggaaaaaaa aaaaaaaaa    4139
```

<210> SEQ ID NO 80
<211> LENGTH: 3635
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 80

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agtggggtgg gcgacggggg tggcccagtc cgcgggcccc ccagcccacg cccggctggc    120

cccacgcccc gcgggcacgg ccgcccggct gccgccgtcg cgcagcgatt ggagccgggt    180

cccggaccac ccgagcgggc agggggcggc ggcgcggccc gctgggtcag gctgaacgtg    240

ggaggcacct acttcgtgac caccagacag accttaggcc gggagcccaa gtcatttctc    300

tgccgcctct gctgccagga ggacccggag ctggactcag acaaggatga gacaggagcc    360

tatctgattg acagggaccc cacctacttt ggtcctatcc tcaactacct ccgccacggg    420

aaactcatca tcactaagga gttggcagaa gaaggtgtgc tggaggaagc ggagttttac    480

aacatcgcgt cccttgtgcg gctggttaag gaaaggatac gggacaatga gaacagaact    540

tcacaaggcc ccgtgaagca cgtgtacaga gtcctgcagt gtcaggaaga agagctcacg    600

cagatggtgt ccacgatgtc cgacggctgg aaattcgaac agctcatcag catcggatct    660

tcctataact acggcaatga ggatcaggca gaattcctct gtgttgtctc cagagaacta    720

aataattcta ccaatggcat cgtcatagag ccgagcgaaa aggcgaagat tcttcaggag    780

agaggatcgc ggatgtaaac taagaccccg aaaactccag accttcagga gagcagtcag    840

cagagcccct ctgtgaagtg aaaccttact cctgtccagt gaccgagcca ctgcaaagca    900

cagctgatcc tggccccctg tgaagaagtg ttctggtcaa aactaaagga actccctccc    960

cacctgcagg actccgaaga cagtgcgact tctggctgca gaataccttt tcagaaacct   1020

gctttcattt gcttagccag tattagaaca gatctttaca acagcagctg ggctgggttc   1080

ccagtcggag cctttcgggg atctgggggga tgagggcgga aggcctagct ccttggaaat   1140

ggcctgtact ttaaggacgc tggagccaag aggattgttc ccgtgccgtg ccatggtttc   1200

accctatgtg tgccacaatg gacgttagca gctgcttcgg aacaccgtcc ctcctatgca   1260
```

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```
ccctccaaga cctgcagcag atgcaaaggg ttctagctgc agtttgtcga attgaggttt   1320
taggtaaagc atagagttgc cagagtaccc cgcattccca tgaatagagc ctccaaggaa   1380
agggaggatg gggtgtcctt tgttgtggtt ggaggttggt gatcattgct ctggatttgg   1440
ggctcccggc tgccaccaca tgcagctttg cctcagcttt ctccagcagc cgggaccctc   1500
tggagagctt gttttccctc caagaagagg tttgagacag gcggcatcct gcactgagtc   1560
agacaagtgg gagctgtagg aactgcacct gcagcctctt cttactcccc attgaccctg   1620
tcttccttcc ctggcttttt caactggacc aaagatgaag gcacttatgg accctttgat   1680
ggcttggagt ggggaaggct gtttctttga aagttgccaa atgtgttacg ttgtgtctca   1740
gagagagtta tttctgtgac tctcttggaa atgccttgac tgaatgtgca atatttgtgt   1800
ctcttggttt ctaaccttgg cggacctgct cccctctgta ctgtccccag tggtatgtat   1860
gtatgtgcta ggcagtctgg ggaccccctg tgtctctgac cacccccctg acccccgcca   1920
ttactttctt ttctggagtg ccatgctggc gaggatccgg atgcggcagc accctctttc   1980
gggctgcatc cacagagttt gtgtccacac tttctctccg agcatgtggg tctcgctgag   2040
cagtcatgga atgcggtaga gccaggggac cctgtctgcc ccgaataact ttcagtagta   2100
tggcagatgg cacagagaaa gggaaggggc tctggggact tctccttcta tgaaagccgc   2160
ctcgagccag gtgctcctgg gcaccttcag aagtgatgtc ctgtgtgctc cacagctcac   2220
ctgcttgcca aggtacgtct gggtagtagt ttctggaaat gactgcagac tgtgccaaat   2280
gtcttttgag cttctgacct gaccatgccc agatggcata acttttccct aggaccctca   2340
gtctccttgt ttctctgtat ctgtagcata gcatagaacc cggtatacag gggtttctgc   2400
tgacacatca acgtctaaac acctatgcgc cacattttac agctgtaaag tgttagatga   2460
actgccgtcc tcagtaaaag cagccacccc ttcaagagtc acaggcatcc atccagtcgt   2520
atctttcaga gaaaaaaaaa gttagatgta gccaaggaaa gtagtgatca cgggaaggac   2580
tgctctgagc cgggtaggat ggaggacttt ggaagaggcg ctccttggcc aggtccaatg   2640
agtaacatca gactgacaga ggaaaagcag cttggtttgc ggccttgtgc ccagtctcgt   2700
tgaggcgctt gtccctgtct gctttcctgg ggcatgcctg atcagcgtgg gctggagctc   2760
ctagaccaac cccagctttc tcaccaggtt cagcaaggag gcctgggggt cagacaccaa   2820
tgttgagcac ctcctgaggg cgccgtttcc ttcattcctc ttagattcca tagttgccgc   2880
catgaaaaga ctgctcttga gccccaaggc acaggcacgt gctctgggaa atagacagga   2940
gtggtatttc cgccctctcg gagggctggt gttcaccaag tttccctcct cgctgcaacc   3000
caatgacacc tgtattgttc cagcgctcca ggactctggg ttcttaagat ttctgggagc   3060
gttgttcacc cacccccttt aggaaccagg ctggtgttct tgcttgaaag cgttgtgccc   3120
tctgagtgtc tggctgatca catcagagag gtctgcgtgg cagtttgggg ctgtcacgtg   3180
accagtgacc cacactctct gctgcccagt actgccaagt ggggagggtc ctgccttttt   3240
ctctgcccca ggtctgggac gcaggtgatg ccagccaggc ccaggagtgc ccagcatccc   3300
ccaactgatg acacagtagc actgattctg tcttttcctc agaatctggc ctttttccat   3360
ggcaatgagg tggggcccag cctcctctaa agtgactttg tttctgcaca gttgtaactg   3420
ctcttgggga tgtcagtgag gctgggagca gggagccacg ggatgctgag agaggaggcc   3480
cgagaggaca ccccaccctc cagcgtggcc tttgatccag acttagggac gaggctgtca   3540
ctggtgggca ccctctgttc ctgtttgtgt gtttgaatag tctgaaatgc tgtgactttt   3600
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tttgtgtgaa taaagatatg aaacttctga atctc                                3635


<210> SEQ ID NO 81
<211> LENGTH: 1983
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 81

gaattgaacc acccattttc ctttcttagc caaatcacca aaatgtccag ttagaacaag      60

aatttagcat tctgcaaaag aagttaacag ctgagataac gaggaaatat tctgaaatgg     120

atcccaaata tttcatctta attttgtttt gtggacacct gaacaataca ttttttcaa      180

agacagagac aattacaaca gagaagcagt cacagcctac cttattcaca tcatcaatgt     240

cacaggtatt ggctaattct caaaacacaa cagggaatcc tttgggtcaa ccaacacaat     300

tcagcgacac tttttctgga caatcaatat cacctgccaa agtcactgct ggacaaccaa     360

caccagctgt ctatacctct tctgaaaaac cagaagcaca tacttctgct ggacaaccac     420

ttgcctacaa caccaaacaa ccaacaccaa tagccaacac ctcctcccag caagccgtgt     480

tcacctctgc cagacaacta ccatctgccc gtacttctac cacacaacca ccaaagtcat     540

ttgtctatac ttttactcaa caatcatcat ctgtccagat cccttctaga aaacaaataa     600

ctgttcataa tccatccaca caaccaacat caactgtcaa aaattcacct aggagtacac     660

caggatttat cttagatact accagtaaca aacaaacccc acaaaaaaac aattataatt     720

caatagctgc catactaatt ggtgtacttc tgacttctat gttggtagct ataatcatca     780

ttgtactttg gaaatgctta aggaaaccag ttttaaatga tcaaaattgg gcaggtagat     840

ctccatttgc tgatggagaa acccctgaca tttgtatgga taacatcaga gaaaatgaaa     900

tatccacaaa acgtacatca atcatttcac ttacaccctg gaaaccaagc aaaagcacac     960

ttttagcaga tgacttagaa attaagttgt ttgaatcaag tgaaaacatt gaagactcca    1020

acaaccccaa aacagagaaa ataaaagatc aagtaaatgg tacatcagaa gatagtgctg    1080

atggttcaac agttggaact gctgtttctt cttcagatga tgcaggtctg cctccaccac    1140

ctccccttct ggatttggaa ggacaggaaa gtaaccaatc tgacaaaccc acaatgacaa    1200

ttgtatctcc tcttccaaat gattctacta gtctccctcc atctctggac tgtctcaatc    1260

aagactgtgg agatcataaa tctgagataa tacaatcatt tccaccgctt gactcactta    1320

acttgcccct gccaccagta gattttatga aaaaccaaga agattccaac cttgagatcc    1380

agtgtcagga gttctctatt cctcccaact ctgatcaaga tcttaatgaa tccctgccac    1440

ctccacctgc agaactgtta taaatattac aacttgcttt ttagctgatc ttccatcctc    1500

aaatgactct tttttcttta tatgttaaca tatataaaat ggcaactgat agtcaatttt    1560

gatttttatt caggaactat ctgaaatctg ctcagagcct atgtgcatag atgaaacttt    1620

tttttaaaaa aagttattta acagtaatct atttactaat tatagtacct atctttaaag    1680

tatagtacat tttacatatg taaatggtat gtttcaataa tttaagaact ctgaaacaat    1740

ctacatatac ttattaccca gtacagtttt ttttcccctg aaaagctgtg tataaaatta    1800

tggtgaataa acttttatgt ttccatttca aagaccaggg tggagaggaa taagagacta    1860

agtatatgct tcaagtttta aattaatacc tcaagtatta aataaatatt ccaagtttgt    1920

gggaatggga gattaaaatg catgtttgag agtaaaaaaa aaaaaaaaaa aaaaaaaaaa    1980

aaa                                                                  1983
```

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<210> SEQ ID NO 82
<211> LENGTH: 1093
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 82

ctgcaaggcg gcggcaggag aggttgtggt gctagtttct ctaagccatc cagtgccatc 60

ctcgtcgctg cagcgacacc gctctcgccg ccgccatgac tgagcagatg acccttcgtg 120

gcaccctcaa gggccacaac ggctgggtaa cccagatcgc tactaccccg cagttcccgg 180

acatgatcct ctccgcctct cgagataaga ccatcatcat gtggaaactg accagggatg 240

agaccaacta tggaattcca cagcgtgctc tgcggggtca ctcccacttt gttagtgatg 300

tggttatctc ctcagatggc cagtttgccc tctcaggctc ctgggatgga accctgcgcc 360

tctgggatct cacaacgggc accaccacga ggcgatttgt gggccatacc aaggatgtgc 420

tgagtgtggc cttctcctct gacaaccggc agattgtctc tggatctcga gataaaacca 480

tcaagctatg gaataccctg ggtgtgtgca aatacactgt ccaggatgag agccactcag 540

agtgggtgtc ttgtgtccgc ttctcgccca acagcagcaa ccctatcatc gtctcctgtg 600

gctgggacaa gctggtcaag gtatggaacc tggctaactg caagctgaag accaaccaca 660

ttggccacac aggctatctg aacacggtga ctgtctctcc agatggatcc ctctgtgctt 720

ctggaggcaa ggatggccag gccatgttat gggatctcaa cgaaggcaaa cacctttaca 780

cgctagatgg tggggacatc atcaacgccc tgtgcttcag ccctaaccgc tactggctgt 840

gtgctgccac aggccccagc atcaagatct gggatttaga gggaaagatc attgtagatg 900

aactgaagca agaagttatc agtaccagca gcaaggcaga accaccccag tgcacttccc 960

tggcctggtc tgctgatggc cagactctgt ttgctggcta cacggacaac ctggtgcgag 1020

tgtggcaggt gaccattggc acacgctaga agtttatggc agagctttac aaataaaaaa 1080

aaaatggctt ttc 1093

<210> SEQ ID NO 83
<211> LENGTH: 1412
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 83

ctcttccaga ggcaagacca accaagatga gtgccttggg agctgtcatt gccctcctgc 60

tctggggaca gctttttgca gtggactcag gcaatgatgt cacggatatc gcagatgacg 120

gctgcccgaa gccccccgag attgcacatg gctatgtgga gcactcggtt cgctaccagt 180

gtaagaacta ctacaaactg cgcacagaag gagatggagt atacacctta aatgataaga 240

agcagtggat aaataaggct gttggagata aacttcctga atgtgaagca gatgacggct 300

gcccgaagcc ccccgagatt gcacatggct atgtggagca ctcggttcgc taccagtgta 360

agaactacta caaactgcgc acagaaggag atggagtgta caccttaaac aatgagaagc 420

agtggataaa taaggctgtt ggagataaac ttcctgaatg tgaagcagta tgtgggaagc 480

ccaagaatcc ggcaaaccca gtgcagcgga tcctgggtgg acacctggat gccaaaggca 540

gctttccctg gcaggctaag atggtttccc accataatct caccacaggt gccacgctga 600

tcaatgaaca atggctgctg accacggcta aaaatctctt cctgaaccat tcagaaaatg 660

caacagcgaa agacattgcc cccactttaa cactctatgt ggggaaaaag cagcttgtag 720

agattgagaa ggttgttcta caccctaact actcccaagt agatattggg ctcatcaaac 780

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tcaaacagaa ggtgtctgtt aatgagagag tgatgcccat ctgcctacca tccaaggatt    840

atgcagaagt agggcgtgtg ggttatgttt ctggctgggg gcgaaatgcc aattttaaat    900

ttactgacca tctgaagtat gtcatgctgc ctgtggctga ccaagaccaa tgcataaggc    960

attatgaagg cagcacagtc cccgaaaaga agacaccgaa gagccctgta ggggtgcagc   1020

ccatactgaa tgaacacacc ttctgtgctg gcatgtctaa gtaccaagaa gacacctgct   1080

atggcgatgc gggcagtgcc tttgccgttc acgacctgga ggaggacacc tggtatgcga   1140

ctgggatctt aagctttgat aagagctgtg ctgtggctga gtatggtgtg tatgtgaagg   1200

tgacttccat ccaggactgg gttcagaaga ccatagctga gaactaatgc aaggctggcc   1260

ggaagccctt gcctgaaagc aagatttcag cctggaagag ggcaaagtgg acgggagtgg   1320

acaggagtgg atgcgataag atgtggtttg aagctgatgg gtgccagccc tgcattgctg   1380

agtcaatcaa taaagagctt tcttttgacc ca                                 1412
```

<210> SEQ ID NO 84
<211> LENGTH: 1095
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 84

```
tgccgcccag gacccgcagc agagacgacg cctgcagcaa ggagaccagg aaggggtgag     60

acaaggaaga ggatgtctga gctggagaag gccatggtgg ccctcatcga cgttttccac    120

caatattctg gaagggaggg agacaagcac aagctgaaga aatccgaact caaggagctc    180

atcaacaatg agctttccca tttcttagag gaaatcaaag agcaggaggt tgtggacaaa    240

gtcatggaaa cactggacaa tgatggagac ggcgaatgtg acttccagga attcatggcc    300

tttgttgcca tggttactac tgcctgccac gagttctttg aacatgagtg agattagaaa    360

gcagccaaac ctttcctgta acagagacgg tcatgcaaga aagcagacag caagggcttg    420

cagcctagta ggagctgagc tttccagccg tgttgtagct aattaggaag cttgatttgc    480

tttgtgattg aaaaattgaa aacctctttc caaaggctgt tttaacggcc tgcatcattc    540

tttctgctat attaggcctg tgtgtaagct gactggcccc agggactctt gttaacagta    600

acttaggagt caggtctcag tgataaagcg tgcaccgtgc agcccgccat ggccgtgtag    660

accctaaccc ggagggaacc ctgactacag aaattacccc ggggcaccct taaaacttcc    720

actaccttta aaaaacaaag ccttatccag cattatttga aaacactgct gttctttaaa    780

tgcgttcctc atccatgcag ataacagctg gttggccggt gtggccctgc aagggcgtgg    840

tggcttcggc ctgcttcccg ggatgcgcct gatcaccagg tgaacgctca gcgctggcag    900

cgtcctggaa aaagcaactc catcagaact cgcaatccga gccagctctg ggggctccag    960

cgtggcctcc gtgacccatg cgattcaagt cgcggctgca ggatccttgc ctccaacgtg   1020

cctccagcac atgcggcttc cgagggcact accgggggct ctgagccacc gcgagggcct   1080

gcgttcaata aaaag                                                    1095
```

<210> SEQ ID NO 85
<211> LENGTH: 1904
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 85

```
agctatttca aggcgcgcgc ctcgtggtgg actcaccgct agcccgcagc gctcggcttc     60

ctggtaattc ttcacctctt ttctcagctc cctgcagcat gggtgctggg ccctccttgc    120
```

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```
tgctcgccgc cctcctgctg cttctctccg gcgacggcgc cgtgcgctgc gacacacctg    180
ccaactgcac ctatcttgac ctgctgggca cctgggtctt ccaggtgggc tccagcggtt    240
cccagcgcga tgtcaactgc tcggttatgg gaccacaaga aaaaaaagta gtggtgtacc    300
ttcagaagct ggatacagca tatgatgacc ttggcaattc tggccatttc accatcattt    360
acaaccaagg ctttgagatt gtgttgaatg actacaagtg gtttgccttt tttaagtata    420
aagaagaggg cagcaaggtg accacttact gcaacgagac aatgactggg tgggtgcatg    480
atgtgttggg ccggaactgg gcttgtttca ccggaaagaa ggtgggaact gcctctgaga    540
atgtgtatgt caacacagca caccttaaga attctcagga aaagtattct aataggctct    600
acaagtatga tcacaacttt gtgaaagcta tcaatgccat tcagaagtct tggactgcaa    660
ctacatacat ggaatatgag actcttaccc tgggagatat gattaggaga agtggtggcc    720
acagtcgaaa aatcccaagg cccaaacctg caccactgac tgctgaaata cagcaaaaga    780
ttttgcattt gccaacatct tgggactgga gaaatgttca tggtatcaat tttgtcagtc    840
ctgttcgaaa ccaagcatcc tgtggcagct gctactcatt tgcttctatg ggtatgctag    900
aagcgagaat ccgtatacta accaacaatt ctcagacccc aatcctaagc cctcaggagg    960
ttgtgtcttg tagccagtat gctcaaggct gtgaaggcgg cttcccatac cttattgcag   1020
gaaagtacgc ccaagatttt gggctggtgg aagaagcttg cttcccctac acaggcactg   1080
attctccatg caaaatgaag gaagactgct ttcgttatta ctcctctgag taccactatg   1140
taggaggttt ctatggaggc tgcaatgaag ccctgatgaa gcttgagttg gtccatcatg   1200
ggcccatggc agttgctttt gaagtatatg atgacttcct ccactacaaa aaggggatct   1260
accaccacac tggtctaaga gaccctttca accccttttga gctgactaat catgctgttc   1320
tgcttgtggg ctatggcact gactcagcct ctgggatgga ttactggatt gttaaaaaca   1380
gctggggcac cggctggggt gagaatggct acttccggat ccgcagagga actgatgagt   1440
gtgcaattga gagcatagca gtggcagcca caccaattcc taaattgtag ggtatgcctt   1500
ccagtatttc ataatgatct gcatcagttg taaaggggaa ttggtatatt cacagactgt   1560
agactttcag cagcaatctc agaagcttac aaatagattt ccatgaagat atttgtcttc   1620
agaattaaaa ctgcccttaa ttttaatata cctttcaatc ggccactggc catttttttc   1680
taagtattca attaagtggg aattttctgg aagatggtca gctatgaagt aatagagttt   1740
gcttaatcat ttgtaattca aacatgctat atttttttaaa atcaatgtga aaacatagac   1800
ttatttttaa attgtaccaa tcacaagaaa ataatggcaa taattatcaa aacttttaaa   1860
atagatgctc atatttttaa aataaagttt taaaaataac tgca                    1904
```

<210> SEQ ID NO 86
<211> LENGTH: 1493
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 86

```
ttcctttcat gttcagcatt tctactcctt ccaagaagag cagcaaagct gaagtagcag     60
caacagcacc agcagcaaca gcaaaaaaca aacatgagtg tgaagggcat ggctatagcc    120
ttggctgtga tattgtgtgc tacagttgtt caaggcttcc ccatgttcaa aagaggacgc    180
tgtctttgca taggccctgg ggtaaaagca gtgaaagtgg cagatattga gaaagcctcc    240
ataatgtacc caagtaacaa ctgtgacaaa atagaagtga ttattaccct gaaagaaaat    300
```

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```
aaaggacaac gatgcctaaa tcccaaatcg aagcaagcaa ggcttataat caaaaaagtt    360
gaaagaaaga atttttaaaa atatcaaaac atatgaagtc ctggaaaagg gcatctgaaa    420
aacctagaac aagtttaact gtgactactg aaatgacaag aattctacag taggaaactg    480
agacttttct atggttttgt gactttcaac ttttgtacag ttatgtgaag gatgaaaggt    540
gggtgaaagg accaaaaaca gaaatacagt cttcctgaat gaatgacaat cagaattcca    600
ctgcccaaag gagtccagca attaaatgga tttctaggaa aagctacctt aagaaaggct    660
ggttaccatc ggagtttaca aagtgctttc acgttcttac ttgttgtatt atacattcat    720
gcatttctag gctagagaac cttctagatt tgatgcttac aactattctg ttgtgactat    780
gagaacattt ctgtctctag aagttatctg tctgtattga tctttatgct atattactat    840
ctgtggttac agtggagaca ttgacattat tactggagtc aagcccttat aagtcaaaag    900
catctatgtg tcgtaaagca ttcctcaaac atttttcat gcaaatacac acttctttcc    960
ccaaatatca tgtagcacat caatatgtag ggaaacattc ttatgcatca tttggtttgt   1020
tttataacca attcattaaa tgtaattcat aaaatgtact atgaaaaaaa ttatacgcta   1080
tgggatactg gcaacagtgc acatatttca taaccaaatt agcagcaccg gtcttaattt   1140
gatgtttttc aacttttatt cattgagatg ttttgaagca attaggatat gtgtgtttac   1200
tgtacttttt gttttgatcc gtttgtataa atgatagcaa tatcttggac acatttgaaa   1260
tacaaaatgt ttttgtctac caaagaaaaa tgttgaaaaa taagcaaatg tatacctagc   1320
aatcactttt actttttgta attctgtctc ttagaaaaat acataatcta atcaatttct   1380
ttgttcatgc ctatatactg taaaatttag gtatactcaa gactagttta aagaatcaaa   1440
gtcatttttt tctctaataa actaccacaa cctttctttt ttaaaaaaaa aaa          1493
```

<210> SEQ ID NO 87
<211> LENGTH: 1737
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 87

```
gcggacgcgt ggggggaaaa taaaccttgg gttataagca ttagcctgag gacaatgaag     60
ccacttaacc taatttatgc tttcgactgt tctgtttcca gagaggaaag cctttacaaa    120
ttactctcag ttctttaggg gcagaaggct tgtttcaaga ggtttgacag aagaaaggaa    180
tatatgaact taatgagatg tcgacttggt tcaggtctaa aaatgagggc aaaacactaa    240
ggctctagca gtgacttgtt cactaaaaag agagagtcct gtccccagac ggttagtaca    300
aagccttgga tacagtttgc ttgtaatatt tttaataatg tgaggagtac agtgttttct    360
aattcattca agtatatatg atttaaacct gggctactga cacacacaca gtagccatta    420
gttagactct tcttagtgaa tatcaggaac atcccatctg tgcttaacca gaatccagca    480
agtcagcaca caagtgattt tattgttatt ttgttgtatt tacttgcatt tgttgtattt    540
actttcatct gcagcatttg gagtttaaaa ataatgtaaa gggttctagt agaaatagtg    600
tcctaaggcc aattacctac catactaaca atcagcagat aaaattctgg acgtgagatt    660
ccttataatc taattatacc tgaggttgag caagaaatgt cttcctttag aaaatctcat    720
tcaagtcagg ttcttctcta cagttcaaaa ttgagaatgg atttaattaa ctagcattta    780
gccagctttt tcttgccctt ggagaaaaag aatcattctc aacctgataa tctgttaaga    840
aaaatcccat atgaacaatc tggtcattaa catacatatg atacggagtc tctttgttgt    900
caccaagtga acatacttct catggtgggt tggacagtaa tacatgttag agggtcagaa    960
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gcttctggtt tctgctgttt gctttaaata cccttggggt tttttttta aacccttaca   1020

aggggagcat cagctttgga aagtgtgact ctgtaggagt gtagaaggca gtggtgtatg   1080

atcttagcct cgtcctgatg cctgaatcca gccagctgtt gctctgaccc acagcaatag   1140

agcaagttac ccatcaccag catttgtaca gagcagggaa ttctggtttt agtccattgg   1200

tagcattgtg tgtatgagga gattcaacac cacagacagc tgcaggactc gatatccatg   1260

gcttctttcc atcacaaaac gggtagaaac acattcactg cttcagggtt ctaatctgtg   1320

tgtctcctta tgactccatt tctgtaagct actctgtaac tttgatatat gctgtatttt   1380

ctttctttaa aagatttaga tgtttttca gcaagctagc catacaacca ttgtatctct   1440

ttctcttcag tatggtttag agcccagatc agttagtagg ctttcgttgt cttctctttc   1500

aatacatgta catctttact gtttgaaaag tgttacagct gtcaaagaat cttcatggac   1560

ctgaagataa tttcttgtga agttgaatgc aagtgtactg tcattcatag tgtttatatc   1620

aaaataccag gaatcttcac ttttgctacc ttgatatagc attgggctat catgttacaa   1680

cattgaaata cattgattta ttaaaaaata cttttataag aaaaaaaaaa aaaaaaa      1737
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<210> SEQ ID NO 88
<211> LENGTH: 4859
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 88

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cccctgtcct ctcatccata actcaaattt actaccagca acacaaaata caaagatgtg    120

tccagtttca ctacagctct tcgcgtttac aagtgtcgag cgcttgcttt cggaacgccc    180

ttgtgattgg ccgagccaat gccagtgaca tcaaccaact tacttttgat tggaaggctg    240

gttgctggga ctgtagcgtt tgcaggaagt cacttaactg tttgggagct ggaaaaccga    300

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cagagttgaa tcaccctccc cactggccaa ttggaggggg tttggtttgt gacgtgatgg    660

gattctgcga aattgttact gagcaagaga atgccggaac gtgcggaccg gccggagcag    720

gggttcagaa gccgtcagtg gactcgggaa aaagtgtctc ttagacctgg cgctcggcgg    780

ggccctcgcc acccgcgtcg gggtgatcgg gtgaatgtcc tggggctttg gctcgacggc    840

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gagccgaacc tccgcagcca ccgccaagtt tgtccgcgcc gcctgggctg ccgtcgcccg   1260

caccatgtcc gcggccgcct acatggactt cgtggctgcc cagtgtctgg tttccatttc   1320
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gaaccgcgct gcggtgccgg agcatggggt cgctccggac gccgagcggc tgcgactacc   1380
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actggtcacc atcgccaaga gcttgttgga cctgaacaag taccgaccca tccagacccc   1500
ctccgtgtgc agcgacagtc tggaaagtcc agatgaggat atgggatccg acagcgacgt   1560
gaccaccgaa tctgggtcga gtccttccca cagcccggag gagagacagg atcctggcag   1620
cgcgcccagc ccgctctccc tcctccatcc tggagtggct gcgaagggga aacacgcctc   1680
cgaaaagagg cacaagtgcc cctacagtgg ctgtgggaaa gtctatggaa aatcctccca   1740
tctcaaagcc cattacagag tgcatacagg tgaacggccc ttcccctgca cgtggccaga   1800
ctgccttaaa aagttctccc gctcagacga gctgacccgc cactaccgga cccacactgg   1860
ggaaaagcag ttccgctgtc cgctgtgtga gaagcgcttc atgaggagtg accacctcac   1920
aaagcacgcc cggcggcaca ccgagttcca ccccagcatg atcaagcgat cgaaaaaggc   1980
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gacaaaagta ctcccaggaa acagacgcgt gaaaactgag ccccagaaga ggcacacttg   2100
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tttaaaaagc acattgtagc ctaagatcaa agtcaacaac actcggtccc cttgaagagg   2220
caactctctg aacccgtctc tgactgttgg agggaaggca aatgcttttg ggtttttttgg   2280
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gggggggagg gggtaaggcc aagactgggt agattttaaa gattcaacac tggtgtacat   2400
atgtccgctg ggtgagttga cctgtggcct cgcacagtga ttctaggccc tttatgcttg   2460
ctgtctctca gaattgtttt cttacctttt aatgtaatga cgagtgtgct tcagtttgtt   2520
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cacagctgtc tttatgcaag caagagcaca tctactccag catgatctgt catctaaaga   2640
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atcaagacaa acctttgaaa ggttacacta agtacagaac ttttaaacct tgctttgtat   2760
gagttgtact ttttgaacat aagctgcact tttattttct aatgcagagg atgaataagt   2820
taaatacatg ctttgaggat agaagcagat gttctgtttg gcaccacgtt ataatctgct   2880
tattttacaa tatacacgtt tccctaagaa atcatgcgca gagatgtgag ggcagaatat   2940
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aacagaattt taactctatt aacttttcca aattttccta tgcttttagt taacatcatt   3060
attgtatcct aatgccacta ggggagagag cttttgactc tgttgggttt tatttgaatg   3120
tgtgcataac agtaatgaga tctggaaaca cctatttttt ggggaaaaag gtttgttggt   3180
ctccttcctg tgttcctaca aaactcccac tctcaggtgc aagagttatg tagaaggaaa   3240
gggagctgaa ataggaacag aaaaatcaac ccctataact agtgaacacc aagggaaaat   3300
accacaatga tttcagagga gactctgcaa aatcgtccct tgtggagaat gcaggcaaca   3360
tggaatacta cgaatgaaat cacatcactg tatcttttac atcaatagcc tcaccactaa   3420
tatatcttgt atctaggtgt ctataatggc tgaaaccact acatccatct atgccattta   3480
cctgaaaact taactgtggc ctttatgagg ccagaaaagt gaactgagtt ttgtagttaa   3540
gacctcaaat gaggggagtc agcagtgatc atgggggaaa tgtttacatt tttttttct   3600
tcagaagtaa cgctttctga tgattttatc tgatatttaa aacagggagc tatggtgcac   3660
tctagtttat acttgcgctc tgaaatgtgt aaacataggg tgcctaccta tttcacctga   3720
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cccatactcg tttctgattc agaatcagtg tgggctcctg cagtgggcgc gggtcacggc   3780
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tagtgttatt agtagttcta taaagagaac tgcttttaac attagggact gggagcagtc   3900
catgggataa aaaggaaagt gttttctcac gagaaaacat gtcaggaaaa ataaagaaca   3960
ctttctacct ctgtttcaga tttttgaaac acttatttta aaccaaattt taatttctgt   4020
gtccaaaata agttttaagg acatctgttc ttccatacga aataggttag gctgcctatt   4080
tctcactgag ctcatggaat ggttctgctt atgatactct gcacgctgcc ttttagtgag   4140
tgaggagttt ggggttgcct agcacttgct aacttgtaaa aagtcatctt tccctcacag   4200
aaagaaacga aagaaagcaa agcaaagtca gtgaaagaca atctttatag tttcaggagt   4260
aaatctaaat gtggcttttg tcaagcactt agatggatat aaatgcagca acttgtttta   4320
aaaaaatgca catttacttc ccaaaaaagt tgttacttgc cttttcaagt gtgacaaact   4380
cacatttgat attctcttat atgttatagt aatgtaacgt ataaactcaa gccttttttat   4440
tctttgtgat taaatcctgt tttaaaatgt cacaaaacag gaaccagcat tctaattaga   4500
tttactatat caagatatgg ttcaaatagg actactagag ttcattgaac actaaaacta   4560
tgaaacaatt actttttata ttaaaaagac catggattta acttatgaaa atccaaatgc   4620
aggatagtaa tttttgttta ctttttttaac caaactgaat ttttgaaaga ctattgcagg   4680
tgtttaaaaa gaaagaaaag ttgttttatc taatactgta agtagttgtc atattctgga   4740
aaatttaata gttttagagt taagatatct cctctctttg gttagggaag aagaaagccc   4800
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<210> SEQ ID NO 89
<211> LENGTH: 2775
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 89

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tcagttcaag ggaatgaaga attcagaata attttggtaa atggattcca atatggggaa    180
taagaataag ctgaacagtt gacctgcttt gaagaaacat actgtccatt tgtctaaaat    240
aatctataac aaccaaacca atcaaaatga attcaacatt attttcccag gttgaaaatc    300
attcagtcca ctctaatttc tcagagaaga atgcccagct tctggctttt gaaaatgatg    360
attgtcatct gcccttggcc atgatattta ccttagctct tgcttatgga gctgtgatca    420
ttcttggtgt ctctggaaac ctggccttga tcataatcat cttgaaacaa aaggagatga    480
gaaatgttac caacatcctg attgtgaacc tttccttctc agacttgctt gttgccatca    540
tgtgtctccc ctttacattt gtctacacat taatggacca ctgggtcttt ggtgaggcga    600
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ctttcctgat ctaccaagta atgactgatg agccgttcca aaatgtaaca cttgatgcgt    840
acaaagacaa atacgtgtgc tttgatcaat ttccatcgga ctctcatagg ttgtcttata    900
ccactctcct cttggtgctg cagtattttg gtccactttg ttttatattt atttgctact    960
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tcaagatata tatacgccta aaaaggagaa acaacatgat ggacaagatg agagacaata   1020
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ttgcagtctg ctggctccct cttaccatct ttaacactgt gtttgattgg aatcatcaga   1140
tcattgctac ctgcaaccac aatctgttat tcctgctctg ccacctcaca gcaatgatat   1200
ccacttgtgt caaccccata ttttatgggt tcctgaacaa aaacttccag agagacttgc   1260
agttcttctt caacttttgt gatttccggt ctcgggatga tgattatgaa acaatagcca   1320
tgtccacgat gcacacagat gtttccaaaa cttctttgaa gcaagcaagc ccagtcgcat   1380
ttaaaaaaat caacaacaat gatgataatg aaaaaatctg aaactactta tagcctatgg   1440
tcccggatga catctgttta aaaacaagca caacctgcaa catactttga ttacctgttc   1500
tcccaaggaa tggggttgaa atcatttgaa aatgactaag attttcttgt cttgcttttt   1560
actgcttttg ttgtagttgt cataattaca tttggaacaa aaggtgtggg ctttggggtc   1620
ttctggaaat agttttgacc agacatcttt gaagtgcttt ttgtgaattt atgcatataa   1680
tataaagact tttatactgt acttattgga atgaaatttc tttaaagtat tactattaac   1740
tgacttcaga agtacctgcc atccaatacg gtcattagat tgggtcatct tgattagatt   1800
agattagatt agattgtcaa cagattgggc catccttact ttatgatagg catcatttta   1860
gtgtgttaca atagtaacag tatgcaaaag cagcattcag gagccgaaag atagtctgaa   1920
gtcattcaga agtggtttga ggtttctgtt ttttggtggt ttttgtttgt tttttttttt   1980
tttcacctta agggaggatt taatttgctc ccaactgatt gtcacttaaa tgaaaattta   2040
aaaatgaata aaaagacata cttctcagct gcaaatatta tggagaattg gggcacccac   2100
aggaatgaag agagaaagca gctccctaac ttcaaaacca ttttggtacc tgacaacaag   2160
agcattttag agtaattaat ttaataaagt aaattagtat tgctgcaaat agttaaatta   2220
tatttatttg aattgatggt caagagattt tccatttttt ttacagactg ttcagtgttt   2280
gtcaagcttt ctggcataaa tatgtactca aaaggcattt ccgcttacaa tttgtagaaa   2340
cacaaaatgc gttttccata cagcagtgcc tatatagtga ctgattttta actttcaatg   2400
tccatctttc aaaggaagta acaccaaggt acaatgttaa aggaatattc actttaccta   2460
gcagggaaaa atacacaaaa actgcagata cttcatatag cccattttaa cttgtataaa   2520
ctgtgtgact tgtggcgtct tataaataat gcactgtaaa gattactgaa tagttgtgtc   2580
atgttaatgt gcctaatttc atgtatcttg taatcatgat tgagcctcag aatcatttgg   2640
agaaactata ttttaaagaa caagacatac ttcaatgtat tatacagata aagtattaca   2700
tgtgtttgat tttaaaaggg cggacatttt attaaaatca atattgtttt tgctttttca   2760
aaaaaaaaaa aaaaa                                                    2775
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<210> SEQ ID NO 90
<211> LENGTH: 3386
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 90

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agtccgcaaa gcggaccgag ctggaagtcg agcgctgccg cgggaggcgg gcgatggggg    120
caggtgccac cggccgcgcc atggacgggc cgcgcctgct gctgttgctg cttctggggg    180
tgtcccttgg aggtgccaag gaggcatgcc ccacaggcct gtacacacac agcggtgagt    240
gctgcaaagc ctgcaacctg ggcgagggtg tggcccagcc ttgtggagcc aaccagaccg    300
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tgtgtgagcc ctgcctggac agcgtgacgt tctccgacgt ggtgagcgcg accgagccgt    360
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acgacgccgt gtgccgctgc gcctacggct actaccagga tgagacgact gggcgctgcg    480
aggcgtgccg cgtgtgcgag gcgggctcgg gcctcgtgtt ctcctgccag gacaagcaga    540
acaccgtgtg cgaggagtgc cccgacggca cgtattccga cgaggccaac cacgtggacc    600
cgtgcctgcc ctgcaccgtg tgcgaggaca ccgagcgcca gctccgcgag tgcacacgct    660
gggccgacgc cgagtgcgag gagatccctg gccgttggat tacacggtcc acacccccag    720
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aaggagccaa cagccggcca gtgaaccaga cgcccccacc agagggagaa aaactccaca   1020
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cagcctcggg ccaggccctc aagggtgacg gaggcctcta cagcagcctg cccccagcca   1140
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gtcagggacc aaggacccct caccttgcaa cacacagaca cacgcacaca cacacacagg   2460
aggagaaatc tcacttttct ccatgagttt tttctcttgg gctgagactg gatactgccc   2520
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gggcccagaa ggttgcgatg aagaaaagcg ggccagtgtg ggaatgcggc aagaaggaat   2760

tgacttcgac tgtgacctgt ggggatttct cccagctcta gacaaccctg caaaggactg   2820

ttttttcctg agcttggcca gaagggggcc atgaggcctc agtggacttt ccacccccctc   2880

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<210> SEQ ID NO 91
<211> LENGTH: 2487
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 91

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cgccgctctg acccccggca gcaagtcgcc accatggtga agatcgtgac agttaagacc    240

caggcgtacc aggaccagaa gccgggcacg agcgggctgc ggaagcgggt gaaggtgttc    300

cagagcagcg ccaactacgc ggagaacttc atccagagta tcatctccac cgtggagccg    360

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cagaatggaa tcctctccac ccctgctgta tcctgcatca ttagaaaaat caaagccatt    540

ggtgggatca ttctgacagc cagtcacaac ccagggggcc ccaatggaga ttttggaatc    600

aaattcaata tttctaatgg aggtcctgct ccagaagcaa taactgataa aattttccaa    660

atcagcaaga caattgaaga atatgcagtt tgccctgacc tgaaagtaga ccttggtgtt    720

ctgggaaagc agcagtttga cttggaaaat aagttcaaac ccttcacagt ggaaattgtg    780

gattcggtag aagcttatgc tacaatgctg agaagcatct ttgatttcag tgcactgaaa    840

gaactacttt ctgggccaaa ccgactgaag atccgtattg atgctatgca tggagttgtg    900

ggaccgtatg taaagaagat cctctgtgaa gaactcggtg cccctgcgaa ctcggcagtt    960

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gatggggatc gaaacatgat tctgggcaag catgggttct ttgtgaaccc ttcagactct   1140

gtggctgtca ttgctgccaa catcttcagc attccgtatt tccagcagac tggggtccgc   1200

ggctttgcac ggagcatgcc cacgagtggt gctctggacc gggtggctag tgctacaaag   1260

attgctttgt atgagacccc aactggctgg aagtttttg ggaatttgat ggacgcgagc   1320

aaactgtccc tttgtgggga ggagagcttc gggaccggtt ctgaccacat ccgtgagaaa   1380
```

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gatggactgt gggctgtcct tgcctggctc tccatcctag ccacccgcaa gcagagtgtg   1440
gaggacattc tcaaagatca ttggcaaaag tatggccgga atttcttcac caggtatgat   1500
tacgaggagg tggaagctga gggcgcaaac aaaatgatga aggacttgga ggccctgatg   1560
tttgatcgct cctttgtggg gaagcagttc tcagcaaatg acaaagttta cactgtggag   1620
aaggccgata actttgaata cagcgaccca gtggatggaa gcatttcaag aaatcagggc   1680
ttgcgcctca ttttcacaga tggttctcga atcgtcttcc gactgagcgg cactgggagt   1740
gccggggcca ccattcggct gtacatcgat agctatgaga aggacgttgc caagattaac   1800
caggaccccc aggtcatgtt ggcccccctt atttccattg ctctgaaagt gtcccagctg   1860
caggagagga cgggacgcac tgcacccact gtcatcacct aagaagacag gcctgatgtg   1920
gtacgtccct ccacccccgg acccatccaa gtcatctgat tgaagagcat gacagaaaca   1980
aaatgtattc accaagcatt ttaggatttg actttttcac taaccagttg acgagcagtg   2040
catttacaag gcactgccaa acaagatgcc cttgggagct gtgagggaaa gaggacctgc   2100
gggcttagat caatctcaat tccttttcat gccctcctgc attgctgctg cgtgggtatt   2160
tgtctcctta gccatcaggt acagtttaca ctacaatgta agctataggt ggagcatcag   2220
cagtgagtga ggccattctt catccttagg atgtggcaat gaaatgatgg tgcaagttcc   2280
tttctctttt gtgaatcttt ccccccattt cctgtttaca tgtaacccaa caaaatgcaa   2340
tttctagtgc cttctgtcca atcagttctt tcctctgagt gagacgtact tggctacaga   2400
tttctgcctt gttttgcgac attgtcccat tcacacagat attttgggat aataaaggaa   2460
aataagctac aaaaaaaaaa aaaaaaa                                       2487
```

<210> SEQ ID NO 92
<211> LENGTH: 4343
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 92

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agatttgata atgggctgca ttaaaagtaa agaaaacaaa agtccagcca ttaaatacag     60
acctgaaaat actccagagc ctgtcagtac aagtgtgagc cattatggag cagaacccac    120
tacagtgtca ccatgtccgt catcttcagc aaagggaaca gcagttaatt tcagcagtct    180
ttccatgaca ccatttggag gatcctcagg ggtaacgcct tttggaggtg catcttcctc    240
attttcagtg gtgccaagtt catatcctgc tggtttaaca ggtggtgtta ctatatttgt    300
ggccttatat gattatgaag ctagaactac agaagacctt tcatttaaga agggtgaaag    360
atttcaaata attaacaata cggaaggaga ttggtgggaa gcaagatcaa tcgctacagg    420
aaagaatggt tatatcccga gcaattatgt agcgcctgca gattccattc aggcagaaga    480
atggtatttt ggcaaaatgg ggagaaaaga tgctgaaaga ttacttttga atcctggaaa    540
tcaacgaggt attttcttag taagagagag tgaaacaact aaaggtgctt attccctttc    600
tattcgtgat tgggatgaga taaggggtga caatgtgaaa cactacaaaa ttaggaaact    660
tgacaatggt ggatactata tcacaaccag agcacaattt gatactctgc agaaattggt    720
gaaacactac acagaacatg ctgatggttt atgccacaag ttgacaactg tgtgtccaac    780
tgtgaaacct cagactcaag gtctagcaaa agatgcttgg gaaatccctc gagaatcttt    840
gcgactagag gttaaactag gacaaggatg tttcggcgaa gtgtggatgg gaacatggaa    900
tggaaccacg aaagtagcaa tcaaaacact aaaaccaggt acaatgatgc cagaagcttt    960
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ccttcaagaa gctcagataa tgaaaaaatt aagacatgat aaacttgttc cactatatgc   1020
tgttgtttct gaagaaccaa tttacattgt cactgaattt atgtcaaaag gaagcttatt   1080
agatttcctt aaggaaggag atggaaagta tttgaagctt ccacagctgg ttgatatggc   1140
tgctcagatt gctgatggta tggcatatat tgaaagaatg aactatattc accgagatct   1200
tcgggctgct aatattcttg taggagaaaa tcttgtgtgc aaaatagcag actttggttt   1260
agcaaggtta attgaagaca atgaatacac agcaagacaa ggtgcaaaat ttccaatcaa   1320
atggacagct cctgaagctg cactgtatgg tcggtttaca ataaagtctg atgtctggtc   1380
atttggaatt ctgcaaacag aactagtaac aaagggccga gtgccatatc caggtatggt   1440
gaaccgtgaa gtactagaac aagtggagcg aggatacagg atgccgtgcc ctcagggctg   1500
tccagaatcc ctccatgaat tgatgaatct gtgttggaag aaggaccctg atgaaagacc   1560
aacatttgaa tatattcagt ccttcttgga agactacttc actgctacag agccacagta   1620
ccagccagga gaaaatttat aattcaagta gcctatttta tatgcacaaa tctgccaaaa   1680
tataaagaac ttgtgtagat tttctacagg aatcaaaaga agaaaatctt ctttactctg   1740
catgttttta atggtaaact ggaatcccag atatggttgc acaaaaccac tttttttcc    1800
ccaagtatta aactctaatg taccaatgat gaatttatca gcgtatttca gggtccaaac   1860
aaaatagagc taagatactg atgacagtgt gggtgacagc atggtaatga aggacagtga   1920
ggctcctgct tatttataaa tcatttcctt tctttttttc cccaaagtca gaattgctca   1980
aagaaaatta tttattgtta cagataaaac ttgagagata aaaagctata ccataataaa   2040
atctaaaatt aaggaatatc atgggaccaa ataattccat tccagttttt taaagtttct   2100
tgcatttatt attctcaaaa gtttttttcta agttaaacag tcagtatgca atcttaatat  2160
atgctttctt ttgcatggac atgggccagg tttttcaaaa ggaatataaa caggatctca   2220
aacttgatta aatgttagac cacagaagtg gaatttgaaa gtataatgca gtacattaat   2280
attcatgttc atggaactga aagaataaga actttttcac ttcagtcctt ttctgaagag   2340
tttgacttag aataatgaag gtaactagaa agtgagttaa tcttgtatga ggttgcattg   2400
atttttttaag gcaatatata attgaaacta ctgtccaatc aaaggggaaa tgttttgatc  2460
tttagatagc atgcaaagta agacccagca ttttaaaagc cctttttaaa aactagactt   2520
cgtactgtga gtattgctta tatgtcctta tggggatggg tgccacaaat agaaaatatg   2580
accagatcag ggacttgaat gcacttttgc tcatggtgaa tatagatgaa cagagaggaa   2640
aatgtattta aaagaaatac gagaaaagaa aatgtgaaag ttttacaagt tagagggatg   2700
gaaggtaatg tttaatgttg atgtcatgga gtgacagaat ggctttgctg gcactcagag   2760
ctcctcactt agctatattc tgagactttg aagagttata aagtataact ataaaactaa   2820
tttttcttac acactaaatg ggtatttgtt caaaataatg aagttatggc ttcacattca   2880
ttgcagtggg atatggtttt tatgtaaaac atttttagaa ctccagtttt caaatcatgt   2940
ttgaatctac attcactttt ttttgttttc ttttttgaga cggagtctcg ctctgccgcc   3000
caggctggag tgcagtggcg cgatctcggc tcactgcaag ctctgcctcc caggttcaca   3060
ccattctcct gcctcagcct cccgagtagc tgggactaca ggtgcccacc accacgcctg   3120
gctagttttt tgtattttta gtagagacgc agtttcaccg tgttagccag gatggtctcg   3180
atctcctgac cttgtgatct gcccgcctcg gcctcccaaa gtgctgggat tacaggcgtg   3240
agccaccgcg cccagcctac attcacttct aaagtctatg taatggtggt catttttcc    3300
cttttagaat acattaaatg gttgatttgg ggaggaaaac ttattctgaa tattaacggt   3360
```

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ggtgaaaagg ggacagtttt taccctaaag tgcaaaagtg aaacatacaa aataagacta   3420
atttttaaga gtaactcagt aatttcaaaa tacagatttg aatagcagca ttagtggttt   3480
gagtgtctag caaaggaaaa attgatgaat aaaatgaagg tctggtgtat atgttttaaa   3540
atactctcat atagtcacac tttaaattaa gccttatatt aggcccctct attttcagga   3600
tataattctt aactatcatt atttacctga ttttaatcat cagattcgaa attctgtgcc   3660
atggcgtata tgttcaaatt caaaccattt ttaaaatgtg aagatggact tcatgcaagt   3720
tggcagtggt tctggtacta aaaattgtgg ttgtttttc tgtttacgta acctgcttag   3780
tattgacact ctctaccaag agggtcttcc taagaagagt gctgtcatta tttcctctta   3840
tcaacaactt gtgacatgag atttttaag ggctttatgt gaactatgat attgtaattt   3900
ttctaagcat attcaaaagg gtgacaaaat tacgtttatg tactaaatct aatcaggaaa   3960
gtaaggcagg aaaagttgat ggtattcatt aggttttaac tgaatggagc agttccttat   4020
ataataacaa ttgtatagta gggataaaac actaacttaa tgtgtattca ttttaaattg   4080
ttctgtattt ttaaattgcc aagaaaaaca actttgtaaa tttggagata ttttccaaca   4140
gcttttcgtc ttcagtgtct taatgtggaa gttaaccctt accaaaaaag gaagttggca   4200
aaaacagcct tctagcacac ttttttaaat gaataatggt agcctaaact taatattttt   4260
ataaagtatt gtaatattgt tttgtggata attgaaataa aaagttctca ttgaatgcac   4320
ctattaaaaa aaaaaaaaaa aaa                                           4343
```

<210> SEQ ID NO 93
<211> LENGTH: 2110
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 93

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attgtgcaga ttctcgtgct gccaaaaacg tctgtcctgg gcatctcctt tggggctgcg     60
tttctcttgc tggccttcat cctcttcgtc tgctttgctg gacagcttct gcaatgcagc    120
aaaaaagcct ctcccctgct catgtggctt ttgaagtcct cgggcatcat tgccaaccag    180
ccctggccac ggatctctct cacgatcatc accacagcca tcatattaat gatggccgtg    240
ttcaacatgt ttttcctgag tgactcagag gaaacaatcc ctccaactgc caacacaaca    300
aacacaagct tttcagcctc aaataatcag gtggcgattc tgcgtgcgca gaatttattt    360
ttcctcccgt actttatcta cagctgcatt ctgggactga tatcctgttc cgtgttcctg    420
cgggtaaact atgagctgaa gatgttgatc atgatggtgg ccttggtggg ctacaacacc    480
atcctactcc acacccacgc ccacgtcctg ggcgactaca gccaggtctt atttgagaga    540
ccaggcattt ggaaagacct gaagaccatg ggctctgtgt ctctctctat attcttcatc    600
acactgcttg ttctgggtag acagaatgaa tattactgta ggttagactt cttatggaag    660
aacaaattca aaaaagagcg ggaggagata gagaccatgg agaacctgaa ccgcgtgctg    720
ctggagaacg tgcttcccgc gcacgtggct gagcacttcc tggccaggag cctgaagaat    780
gaggagctat accaccagtc ctatgactgc gtctgcgtca tgtttgcctc cattccggat    840
ttcaaagaat tttatacaga atccgacgtg aacaaggagg gcttggaatg ccttcggctc    900
ctgaacgaga tcatcgctga ctttgatgat cttctttcca agccaaaatt cagtggagtt    960
gaaaagatta agaccattgg cagcacatac atggcagcaa caggtctgag cgctgtgccc   1020
agccaggagc actcccagga gcccgagcgg cagtacatgc acattggcac catggtggag   1080
```

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```
tttgcttttg ccctggtagg gaagctggat gccatcaaca agcactcctt caacgacttc   1140
aaattgcgag tgggtattaa ccatggacct gtgatagctg gtgtgattgg agctcagaag   1200
ccacaatatg atatctgggg caacactgtc aatgtggcca gtaggatgga cagcaccgga   1260
gtcctggaca aaatacaggt taccgaggag acgagcctcg tcctgcagac cctcggatac   1320
acgtgcacct gtcgaggaat aatcaacgtg aaaggaaagg gggacctgaa gacgtacttt   1380
gtaaacacag aaatgtcaag gtccctttcc cagagcaacg tggcatcctg aagagtcacc   1440
ttcattttgg caagaagact gtattttcag gaaggtatca cacactttct gactgcaact   1500
tctgtccctt gtttttgatg tgcgtgctgt ctgtcctatg gagcctctgc agactcgttc   1560
tcgtgaccca gtggcatacc gtttggtgtc tgatgtgtgc ccagatcgtt ctgccacttg   1620
cactgtgctt gctcctaagc aaaagggaaa aggagcgcgc gtgatagaag aaaagcactg   1680
ggagaactaa cagaggagaa aggtgaaaca cacacacatt cttaaggcaa taaaactagg   1740
gggtgtatat tatcttctgg tgcatgttct tttctggaaa atatggtagc tcgccaaccg   1800
catctgctca tctgatattc aaacacacag tattcgtgaa taagttgatt ctgtccccca   1860
cgtggactct gtgctcaccc attgtctcat tgccagtggt gtccaagggc ccccgttggg   1920
acccacggct ctcgtccctc tgctccgtgt gtctcatgcc agcagcacgt cgccatccgt   1980
caccagaatt agtcctcaca gcctaggacc agttttgtat caaactcgtc tgatgttttg   2040
atgccatttg tcttttgtaa agttaattca ttaaaagttt tatgtacttt gaaaaaaaaa   2100
aaaaaaaaaa                                                          2110
```

<210> SEQ ID NO 94
<211> LENGTH: 1778
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 94

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agttgcaggc gagcaggcga ggaatcgccg tggcgtcttg gtgttctcca cgctggttcg     60
caggtgaaga gatggcgttt gtgaagagtg gctggttgct gcgacagagt actattttga    120
agcgctggaa gaagaactgg tttgatctgt ggtcggatgg tcacctgatc tattatgatg    180
accagactcg gcagaatatc gaggataagg tccacatgcc aatggactgc atcaacatcc    240
gcacggggca ggaatgtcgg gatactcagc ccccggatgg aaagtcaaaa gactgcatgc    300
tccagattgt ttgtcgagat gggaaaacaa ttagtctttg tgcagaaagc acagatgatt    360
gcttggcctg gaaatttaca ctccaagatt ctaggacaaa cacagcgtat gtgggctctg    420
cagtcatgac cgatgagaca tccgtggttt cctcacctcc accatacacg gcctatgctg    480
caccggcccc tgaggcttat ggctatgggc catacggtgg tgcgtacccg ccaggaactc    540
aagttgtcta cgctgcgaat gggcaggcgt atgccgtgcc ccaccagtac ccatatgcag    600
gactttatgg acagcagcct gctaaccaag tcatcattcg agagcgctat cgagacaacg    660
acagcgacct ggcactgggc atgctggcag gagcagccac gggcatggcc ttagggtctc    720
tattttgggt cttctagggg cctcaaggtc ttgatgtgca tagcttctga taaccctgtg    780
tgcaataata tgatttgcag ggcatttctg tttgtgacaa aagtttttaa taatagtttt    840
aatcattcct ttgaaagtag tgatgtcata attgtactaa tccacataag taccacagag    900
aagggtttga actgtgctat tttgttcaaa tgttgactct ccgggggcac tggctcattc    960
caagactgtt cttgtgcaac tctcagaata ccttatttga gcatacctgt tttgaaaggc   1020
attttctttt tagagttagg tgtagtgctt aagggttaat ttattttcat gttatgccag   1080
```

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```
taatatagtg ttgtatgcct attgagtgat tgtggcaaga aaagctacag cttctttgcg   1140

tttaactttt tcaaaccaca gaccagaact ggttgcatgt tactttagga gttgtgggtt   1200

ggtaagctcc caggtacttc ccgaggctat ggtgtgagag cccccgtcct gccctctggg   1260

gctccacagg cccctggcaa ggccgatggc tcaggatgat ggggcacagc ccgcctttga   1320

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gcctgtaatc ccagcacttt gagagaccga ggcgggcgga tcacgaggtc aggagatcga   1560

gaccatcctg gctaacacgg tgaaacccca tctctactaa aaatacaaaa aattagctgg   1620

gcgtggtggc aggcgcctgt ggtcccagct actcgggagg ctgaggcagg agaatagtgt   1680

gaacccagga ggcggagctt gcagtgagcc aagatagtgc cactgcactt cagcctgggt   1740

gacagagtga gactctgtct caaaaaaaaa aaaaaaaa                           1778
```

<210> SEQ ID NO 95
<211> LENGTH: 4965
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens
<220> FEATURE:
<221> NAME/KEY: misc_feature
<222> LOCATION: (3757)..(3757)
<223> OTHER INFORMATION: n stands for any base
<220> FEATURE:
<221> NAME/KEY: misc_feature
<222> LOCATION: (3810)..(3810)
<223> OTHER INFORMATION: n stands for any base
<220> FEATURE:
<221> NAME/KEY: misc_feature
<222> LOCATION: (3881)..(3881)
<223> OTHER INFORMATION: n stands for any base
<220> FEATURE:
<221> NAME/KEY: misc_feature
<222> LOCATION: (3882)..(3882)
<223> OTHER INFORMATION: n stands for any base
<220> FEATURE:
<221> NAME/KEY: misc_feature
<222> LOCATION: (3892)..(3892)
<223> OTHER INFORMATION: n stands for any base

<400> SEQUENCE: 95

```
acctctactg gggagacgag gaccccgagg ttctgggggg cgacgcgacc tgcccgaagt     60

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gaaggatgag tcctcggggt ggagaaggag gagcgggtcc ccgggtaccg ctcacccggc    180

cttaggagcc cgggagcgcg cgtagggacg cggagttgag gctctccatc tgcggccagg    240

gaaagggata cagtcccccg ggcccctccc ggccgctcgg aacccacccc aggcgcgtcc    300

ccgcgggcgc gcgctccagg cggggccgac gggctcggag gcgcgcgccc gctgccgggt    360

ccgccgcgcg cgctccctcc gctcctctcc cccgcccctc ccgggcccgc gcgctcccag    420

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cgcggagcag ctggccccag gcccctagag ccccgagagc tccgagagct ccgctcggcg    720

tcccgcgcgc ctccctgccg ctcccgcccc gggctggcga tgctgcgccg ccccgctccc    780
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gcgctggccc cggccgcccg gctgctgctg gccgggctgc tgtgcggcgg cggggtctgg    840
gccgcgcgag ttaacaagca caagccctgg ctggagccca cctaccacgg catagtcaca    900
gagaacgaca acaccgtgct cctcgacccc ccactgatcg cgctggataa agatgcgcct    960
ctgcgatttg caggtgagat ttgtggattt aaaattcacg ggcagaatgt ccccttttgat   1020
gcagtggtag tggataaatc cactggtgag ggagtcattc gctccaaaga gaaactggac   1080
tgtgagctgc agaaagacta ttcattcacc atccaggcct atgattgtgg gaagggacct   1140
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aatgagtacg cgcccgtgtt caaggagaag tcctacaaag ccacggtcat cgaggggaag   1260
cagtacgaca gcattttgag ggtggaggcc gtggatgccg actgctcccc tcagttcagc   1320
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tatataaaaa acacagagaa attaaactac gggaaagaac atcaatataa gctgaccgtc   1440
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acctactcag agaagtccct ccaccggctc tgtggtgcgg ccgcgggcac tgccgagctg   1740
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gacagcgacc aggtgtttga gttcaacggc acccaggcag tgaggatccc ggatggcgtc   1860
gtgtcggtca gccccaaaga gccgttcacc atctcggtgt ggatgagaca tgggccattc   1920
ggcaggaaga aggagacaat tctttgcagt tctgataaaa cagatatgaa tcggcaccac   1980
tactccctct atgtccacgg gtgccggctg atcttcctct tccgtcagga tccttctgag   2040
gagaagaaat acagacctgc agagttccac tggaagttga atcaggtctg tgatgaggaa   2100
tggcaccact acgtcctcaa tgtagaattc ccgagtgtga ctctctatgt ggatggcacg   2160
tcccacgagc ccttctctgt gactgaggat tacccgctcc atccatccaa gatagaaact   2220
cagctcgtgg tgggggcttg ctggcaagag ttttcaggag ttgaaaatga caatgaaact   2280
gagcctgtga ctgtggcctc tgcaggtggc gacctgcaca tgacccagtt tttccgaggc   2340
aatctggctg gcttaactct ccgttccggg aaactcgcgg ataagaaggt gatcgactgt   2400
ctgtatacct gcaaggaggg gctggacctg caggtcctcg aagacagtgg cagaggcgtg   2460
cagatccaag cacaccccag ccagttggta ttgaccttgg agggagaaga cctcggggaa   2520
ttggataagg ccatgcagca catctcgtac ctgaactccc ggcagttccc cacgcccgga   2580
attcgcagac tcaaaatcac cagcacaatc aagtgtttta acgaggccac ctgcatttcg   2640
gtccccccgg tagatggcta cgtgatggtt ttacagcccg aggagcccaa gatcagcctg   2700
agtggcgtcc accattttgc ccgagcagct tctgaatttg aaagctcaga aggggtgttc   2760
cttttccctg agcttcgcat catcagcacc atcacgagag aagtggagcc tgaaggggac   2820
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gatacctgtg aggtcacggt ggagggagag gagctgaacc acgagcagga gagcctggag   2940
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ctgctctgtt tagacagcgg acagacgctc acgcccaggg gatgtcctca cgctgtcgcc   4860
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<210> SEQ ID NO 96
<211> LENGTH: 2617
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 96

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ggtgctgtga gcctagcgag atggaggtac agtgggtgtg ggcctggagc gctgggccca    180
ggcaggggct tctgattagg aagccctggg gcaccagttc aggttctccc agagagtagt    240
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tggaggtgct ggccgatgct cttctggggg atttggcagc agaagcctct acaacctcag    660
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gagacgaggt ccctgcagct cactgtgtcc agctgggccc agcactggtg tctctgtgct   2160
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<210> SEQ ID NO 97
<211> LENGTH: 2547
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 97

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ggcgaccgcc tctgcttcaa tgtgggccgg gagctgtact tctatatcta caagggggtc 240

cgcaaggctg ctgacttgag taaaccaata gataaaagga tatacaaagg aacacagcct 300

acttgtcatg acttcaacca cctaacagcc acagcagaaa gtgtctctct cctagtgggc 360

ttttccgcag gccaagtcca gcttatagac ccaatcaaaa aagaaactag caaacttttt 420

aatgaggaaa gactaataga caagtcacga gttacctgtg tcaaatgggt tcccggttcg 480

gaaagccttt tcctagtagc ccactcgagt gggaacatgt acttatataa tgtggagcac 540

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cccgtaagtg tcacgtatcg gtttggttcc gtgggccagg acacacagct ctgtttatgg 1140

gaccttacag aagatatcct tttccctcac caaccccctct caagagcaag gacacacaca 1200

aatgtcatga atgccacgag tcctcctgct ggaagcaatg ggaacagtgt tacaacaccc 1260

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agttttcttg ctttttactc taaaattcaa tgtaattaaa tttcatatat atataatata 2040

tacatatata catagtgtaa aataaaatgt ttcttggaca agaaatcccc tgaaattcag 2100

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aaccttgaat gcactcatag agaaaactgt tactttctga cgtaatgtaa ttcaggaaga   2220

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tggaaagtta ctttgcagat gggtgtaagg actcatggcc ctctgaggtg cggcgtgaag   2340

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atcaactctg tattatatgt ataaatattg taattctgca attggggaaa atagttactt   2460

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ctattttgta atataaaaaa aaaaaaa                                       2547
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<210> SEQ ID NO 98
<211> LENGTH: 14121
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 98

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agctggcgat ggacccgccg aggcccgcgc tgctggcgct gctggcgctg cctgcgctgc    180

tgctgctgct gctggcgggc gccagggccg aagaggaaat gctggaaaat gtcagcctgg    240

tctgtccaaa agatgcgacc cgattcaagc acctccggaa gtacacatac aactatgagg    300

ctgagagttc cagtggagtc cctgggactg ctgattcaag aagtgccacc aggatcaact    360

gcaaggttga gctggaggtt ccccagctct gcagcttcat cctgaagacc agccagtgca    420

ccctgaaaga ggtgtatggc ttcaaccctg agggcaaagc cttgctgaag aaaaccaaga    480

actctgagga gtttgctgca gccatgtcca ggtatgagct caagctggcc attccagaag    540

ggaagcaggt tttcctttac ccggagaaag atgaacctac ttacatcctg aacatcaaga    600

ggggcatcat ttctgccctc ctggttcccc cagagacaga agaagccaag caagtgttgt    660

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atgtggcaac agaaatatcc actgaaagag acctggggca gtgtgatcgc ttcaagccca    780

tccgcacagg catcagccca cttgctctca tcaaaggcat gacccgcccc ttgtcaactc    840

tgatcagcag cagccagtcc tgtcagtaca cactggacgc taagaggaag catgtggcag    900

aagccatctg caaggagcaa cacctcttcc tgcctttctc ctacaacaat aagtatggga    960

tggtagcaca agtgacacag actttgaaac ttgaagacac accaaagatc aacagccgct   1020

tctttggtga aggtactaag aagatgggcc tcgcatttga gagcaccaaa tccacatcac   1080

ctccaaagca ggccgaagct gttttgaaga ctctccagga actgaaaaaa ctaaccatct   1140

ctgagcaaaa tatccagaga gctaatctct tcaataagct ggttactgag ctgagaggcc   1200

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aaagattgat tgacctgtcc attcaaaact accacacatt tctgatatac atcacggagt  13740

tactgaaaaa gctgcaatca accacagtca tgaaccccta catgaagctt gctccaggag  13800

aacttactat catcctctaa ttttttaaaa gaaatcttca tttattcttc ttttccaatt  13860

gaactttcac atagcacaga aaaaattcaa actgcctata ttgataaaac catacagtga  13920

gccagccttg cagtaggcag tagactataa gcagaagcac atatgaactg gacctgcacc  13980

aaagctggca ccagggctcg gaaggtctct gaactcagaa ggatggcatt ttttgcaagt  14040

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<210> SEQ ID NO 99
<211> LENGTH: 1890
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 99

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tacaccagaa accgaagctg aaagactggc atcctcctgg gggctttatt ctgggattat   1140

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gtcattatat atttttaaaa atgtgtttct cttgtatgaa ttggaaataa gtataaggaa   1320

actaaatttg aatcaactat taattttata acttaaagaa aaataattgt taatgcaact   1380

gcttaatggc actaaatata ttccagtttt gtattttgtg tattataaaa gcgaatgaga   1440

cagagatcag aatacattga ctgtttttga aaatagtaat ttccccttat cccctttca    1500

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attcatttca cagtcttcta ttgttggacc acttacattg taccaaatgt tttcctttgg   1800

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ttaaaagcaa agatgaaaaa aaaaaaaaaa                                    1890
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<210> SEQ ID NO 100
<211> LENGTH: 1976
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 100

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cagcagctag gcatcaagta catcgggatg aggaatgagc aagcggcttg ttatgctgcc    300

tccgcgattg gatatctgac aagcaggcca ggagtctgcc ttgttgtttc tggcccaggt    360

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attggtggtt cctctgaaag aaaccaagaa acaatgggag ctttccagga gtttcctcag    480

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tggatcatct gtgtggaagg agacagtgca tttgggtttt ctggcatgga ggtagaaacc   1500

atctgcaggt acaacttgcc aatcatactg ttggtagtga ataacaatgg aatttaccaa   1560

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cctccaatgt gtttgctgcc aaattcacat tatgagcaag tcatgactgc atttggaggc   1680

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gagttttctc tttcttgcaa gatgaaattt tattttccac agcaaaatta ctctactgtt   1920

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<210> SEQ ID NO 101
<211> LENGTH: 1019
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 101

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atgaagatgt aggccgggtg atctttggtc tcttcggaaa gactgttcca aaaacagtgg    360

ataattttgt ggccttagct acaggagaga aaggatttgg ctacaaaaac agcaaattcc    420

atcgtgtaat caaggacttc atgatccagg gcggagactt caccagggga gatggcacag    480

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agggcatgga ggtggtgcgg aaggtggaga gcaccaagac agacagccgg gataaacccc    720

tgaaggatgt gatcatcgca gactgcggca agatcgaggt ggagaagccc tttgccatcg    780

ccaaggagta gggcacaggg acatctttct ttgagtgacc gtctgtgcag gccctgtagt    840

ccgccacagg gctttgagct gcactggccc cggtgctggc atctggtgga gcggacccac    900

tcccctcaca ttccacaggc ccatggactc acttttgtaa caaactccta ccaaccctga    960

ccaataaaaa aaaatgtggg tttttttttt tttttaataa aaaaaaaaaa aaaaaaaaa   1019
```

<210> SEQ ID NO 102
<211> LENGTH: 1541
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 102

```
cgcgcgagcg gcgccagctc ggggcagcgg aacccagaga agctgagggg gcggtagcgg     60

cggcgacggc gacgacgacg actcccgcgc gtgtgcccag cctcttcccg ccgcagccgc    120

ccttttcctc cctcccttac gtccccgagt gcggcagtac cgcctccttc ccagccgcgc    180

ggcttcctcc agacctctcg gcgcgggtga gccctattcc cagaggcagg tggtgctgac    240

cctgtaaccc aaaggaggaa acagctggct aagctcatca ttgttactgg tgggcaccat    300

gtccttgaag cttcaggcaa gcaatgtaac caacaagaat gaccccaagt ccatcaactc    360

tcgagtcttc attggaaacc tcaacacagc tctggtgaag aaatcagatg tggagaccat    420

cttctctaag tatggccgtg tggccggctg ttctgtgcac aagggctatg cctttgttca    480

gtactccaat gagcgccatg cccgggcagc tgtgctggga gagaatgggc gggtgctggc    540

cgggcagacc ctggacatca acatggctgg agagcctaag cctgacagac ccaaggggct    600

aaagagagca gcatctgcca tatacaggct cttcgactac cggggccgtc tgtcgcccgt    660
```

-continued

```
gccagtgccc agggcggtcc ctgtgaagcg accccgggtc acagtccctt tggtccggcg    720

tgtcaaaact aacgtacctg tcaagctctt tgcccgctcc acagctgtca ccaccagctc    780

agccaagatc aagttaaaga gcagtgagct gcaggccatc aagacggagc tgacacagat    840

caagtccaat atcgatgccc tgctgagccg cttggagcag atcgctgcgg agcaaaaggc    900

caatccagat ggcaagaaga agggtgatgg aggtggcgcc ggcggcggcg gcggtggtgg    960

tggcagcggt ggcggtggca gtggtggtgg cggtggcggt ggcagcagcc ggccaccagc   1020

cccccaagag aacacaactt ctgaggcagg cctgccccag ggggaagcac ggacccgaga   1080

cgacggcgat gaggaagggc tcctgacaca cagcgaggaa gagctggaac acagccagga   1140

cacagacgcg gatgatgggg ccttgcagta agcagcctga caggagcaat ggccaccagc   1200

aggtgaaggg catcgctgcc ccaggcctca agccgggcac ccaaccctgg atgccacccc   1260

ccagcgggta ccagaggaaa gctggcagca ggcgcctcct cccccaacgc atcccagcca   1320

gtgccatgtc ctctgcaggt ggagttactg gcctactcct tccccatgag ccctccctgt   1380

ctgcactgcc caggccagag ggtagagcac aggggtttcc ccatactacc tcccctcccc   1440

aggacactcc caggcttggg ttttttctat aggtttggcg gggggccaca gggaggggac   1500

cctgacaata aagagattgg atcccaaaaa aaaaaaaaaa a                       1541
```

<210> SEQ ID NO 103
<211> LENGTH: 2834
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 103

```
gcccactccc accgccagct ggaaccctgg ggactacgac gtccctcaaa ccttgcttct     60

aggagataaa aagaacatcc agtcatggat aaaaatgagc tggttcagaa ggccaaactg    120

gccgagcagg ctgagcgata tgatgacatg gcagcctgca tgaagtctgt aactgagcaa    180

ggagctgaat tatccaatga ggagaggaat cttctctcag ttgcttataa aaatgttgta    240

ggagcccgta ggtcatcttg gagggtcgtc tcaagtattg aacaaaagac ggaaggtgct    300

gagaaaaaac agcagatggc tcgagaatac agagagaaaa ttgagacgga gctaagagat    360

atctgcaatg atgtactgtc tcttttggaa aagttcttga tccccaatgc ttcacaagca    420

gagagcaaag tcttctattt gaaaatgaaa ggagattact accgttactt ggctgaggtt    480

gccgctggtg atgacaagaa agggattgtc gatcagtcac aacaagcata ccaagaagct    540

tttgaaatca gcaaaaagga aatgcaacca acacatccta tcagactggg tctggccctt    600

aacttctctg tgttctatta tgagattctg aactccccag agaaagcctg ctctcttgca    660

aagacagctt ttgatgaagc cattgctgaa cttgatacat taagtgaaga gtcatacaaa    720

gacagcacgc taataatgca attactgaga gacaacttga cattgtggac atcggatacc    780

caaggagacg aagctgaagc aggagaagga ggggaaaatt aaccggcctt ccaacttttg    840

tctgcctcat tctaaaattt acacagtaga ccatttgtca tccatgctgt cccacaaata    900

gtttttttgtt tacgatttat gacaggttta tgttacttct atttgaattt ctatatttcc    960

catgtggttt ttatgtttaa tattagggga gtagagccag ttaacattta gggagttatc   1020

tgttttcatc ttgaggtggc caatatgggg atgtggaatt tttatacaag ttataagtgt   1080

ttggcatagt actttttggta cattgtggct tcaaaagggc cagtgtaaaa ctgcttccat   1140

gtctaagcaa agaaaactgc ctacatactg gtttgtcctg gcggggaata aaagggatca   1200
```

-continued

```
ttggttccag tcacaggtgt agtaattgtg ggtactttaa ggtttggagc acttacaagg   1260
ctgtggtaga atcatacccc atggatacca catattaaac catgtatatc tgtggaatac   1320
tcaatgtgta cacctttgac tacagctgca gaagtgttcc tttagacaaa gttgtgaccc   1380
attttactct ggataagggc agaaacggtt cacattccat tatttgtaaa gttacctgct   1440
gttagctttc attatttttg ctacactcat tttatttgta tttaaatgtt ttaggcaacc   1500
taagaacaaa tgtaaaagta aagatgcagg aaaaatgaat tgcttggtat tcattacttc   1560
atgtatatca agcacagcag taaaacaaaa acccatgtat ttaacttttt tttaggattt   1620
ttgcttttgt gatttttttt tttttttttt gatacttgcc taacatgcat gtgctgtaaa   1680
aatagttaac agggaaataa cttgagatga tggctagctt tgtttaatgt cttatgaaat   1740
tttcatgaac aatccaagca taattgttaa gaacacgtgt attaaattca tgtaagtgga   1800
ataaaagttt tatgaatgga cttttcaact actttctcta cagcttttca tgtaaattag   1860
tcttggttct gaaacttctc taaaggaaat tgtacatttt ttgaaattta ttccttattc   1920
cctcttggca gctaatgggc tcttaccaag tttaaacaca aaatttatca taacaaaaat   1980
actactaata taactactgt ttccatgtcc catgatcccc tctcttcctc cccaccctga   2040
aaaaaatgag ttcctatttt ttctgggaga ggggggggatt gattagaaaa aaatgtagtg   2100
tgttccattt aaaattttgg catatggcat tttctaactt aggaagccac aatgttcttg   2160
gcccatcatg acattgggta gcattaactg taagttttgt gcttccaaat cactttttgg   2220
tttttaagaa tttcttgata ctcttatagc ctgccttcaa ttttgatcct ttattctttc   2280
tatttgtcag gtgcacaaga ttaccttcct gttttagcct tctgtcttgt caccaaccat   2340
tcttacttgg tggccatgta cttggaaaaa ggccgcatga tctttctggc tccactcagt   2400
gtctaaggca ccctgcttcc tttgcttgca tcccacagac tatttccctc atcctattta   2460
ctgcagcaaa tctctcctta gttgatgaga ctgtgtttat ctccctttaa aaccctacct   2520
atcctgaatg gtctgtcatt gtctgccttt aaaatccttc ctctttcttc ctcctctatt   2580
ctctaaataa tgatggggct aagttatacc caaagctcac tttacaaaat atttcctcag   2640
tactttgcag aaaacaccaa acaaaaatgc cattttaaaa aaggtgtatt ttttctttta   2700
gaatgtaagc tcctcaagag cagggacaat gttttctgta tgttctattg tgcctagtac   2760
actgtaaatg ctcaataaat attgatgatg ggaggcagtg agtcttgatg ataagggtga   2820
gaaactgaaa tccc                                                     2834
```

<210> SEQ ID NO 104
<211> LENGTH: 1637
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 104

```
ggcaagacgc ctcttcagtt gtctgctact cagaggaagg ggcggttggt gcggcctcca     60
ttgttcgtgt tttaaggcgc catgaggggt gacagaggcc gtggtcgtgg tgggcgcttt    120
ggttccagag gaggcccagg aggagggttc aggccctttg taccacatat cccatttgac    180
ttctatttgt gtgaaatggc ctttccccgg gtcaagccag cacctgatga aacttccttc    240
agtgaggcct tgctgaagag gaatcaggac ctggctccca attctgctga acaggcatct    300
atcctttctc tggtgacaaa aataaacaat gtgattgata atctgattgt ggctccaggg    360
acatttgaag tgcaaattga agaagttcga caggtgggat cctataaaaa ggggacaatg    420
actacaggac acaatgtggc tgacctggtg gtgatactca agattctgcc aacgttggaa    480
```

-continued

```
gctgttgctg ccctggggaa caaagtcgtg gaaagcctaa gagcacagga tccttctgaa    540
gttttaacca tgctgaccaa cgaaactggc tttgaaatca gttcttctga tgctacagtg    600
aagattctca ttacaacagt gccacccaat cttcgaaaac tggatccaga actccatttg    660
gatatcaaag tattgcagag tgccttagca gccatccgac atgcccgctg gttcgaggaa    720
aatgcttctc agtccacagt taaagttctc atcagactac tgaaggactt gaggattcgt    780
tttcctggct ttgagcccct cacaccctgg atccttgacc tactaggcca ttatgctgtg    840
atgaacaacc ccaccagaca gcctttggcc ctaaacgttg catacaggcg ctgcttgcag    900
attctggctg caggactgtt cctgccaggt tcagtgggta tcactgaccc ctgtgagagt    960
ggcaacttta gagtacacac agtcatgacc ctagaacagc aggacatggt ctgctataca   1020
gctcagactc tcgtccgaat cctctcacat ggtggcttta ggaagatcct tggccaggag   1080
ggtgatgcca gctatcttgc ttctgaaata tctacctggg atggagtgat agtaacacct   1140
tcagaaaagg cttatgagaa gccaccagag aagaaggaag gagaggaaga agaggagaat   1200
acagaagaac cacctcaagg agaggaagaa gaaagcatgg aaactcagga gtgacattcc   1260
cttcactcct tttcctaccc aagggggaag actggagcct aagctgcctg ctactgggct   1320
ttacatggtg acagacattt ccgtgggata gggaagatag caggaagaaa agtaaactcc   1380
atagaagtgt cattccactg ggttttgata ttggcttagc tgccagtctc ccatttgtga   1440
cctatgccat ccatctataa tggaggatac caacatttct tcctaatatt ctataatctc   1500
caactcctga aaacccctct ctcaactaat actttgctgt tgaaatgttg tgaaatgtta   1560
agtgtctgga aatttttttt tctaagaaaa actattaaag tacttcctag taaaaaaaaa   1620
aaaaaaaaaa aaaaaaa                                                  1637
```

<210> SEQ ID NO 105
<211> LENGTH: 1591
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 105

```
tagaatcggg ggtttcagct cactgctcct tttctttttt ttctttctct cccccgccca     60
ccccccccaaa aataattgat ttgctttaca atcatccaca ctgtgttttg tggatcttta    120
attatatata acaatagtag tcattttaaa tatatattct gaaatctttg caaattttaa    180
cagaagagtc gaagctctgc gagacccaat atttgccaat aagaatggtt atgataatta    240
gcaccatgga gcctcaggtg tcaaatggtc cgacatccaa tacaagcaat ggaccctcca    300
gcaacaacag aaactgtcct tctcccatgc aaacaggggc aaccacagat gacagcaaaa    360
ccaacctcat cgtcaactat ttaccccaga atatgaccca agaagaattc aggagtctct    420
tcgggagcat tggtgaaata gaatcctgca aacttgtgag agacaaaatt acaggacaga    480
gtttagggta tggatttgtt aactatattg atccaaagga tgcagagaaa gccatcaaca    540
ctttaaatgg actcagactc cagaccaaaa ccataaaggt ctcatatgcc cgtccgagct    600
ctgcctcaat cagggatgct aacctctatg ttagcggcct tcccaaaacc atgacccaga    660
aggaactgga gcaacttttc tcgcaatacg gccgtatcat cacctcacga atcctggttg    720
atcaagtcac aggagtgtcc agaggggtgg gattcatccg ctttgataag aggattgagg    780
cagaagaagc catcaaaggg ctgaatggcc agaagcccag cggtgctacg gaaccgatta    840
ctgtgaagtt tgccaacaac cccagccaga agtccagcca ggccctgctc tcccagctct    900
```

-continued

```
accagtcccc taaccggcgc tacccaggtc cacttcacca ccaggctcag aggttcaggc    960

tggacaattt gcttaatatg gcctatggcg taaagagact gatgtctgga ccagtccccc   1020

cttctgcttg ttcccccagg ttctccccaa ttaccattga tggaatgaca agccttgtgg   1080

gaatgaacat ccctggtcac acaggaactg ggtggtgcat ctttgtctac aacctgtccc   1140

ccgattccga tgagagtgtc ctctggcagc tctttggccc ctttggagca gtgaacaacg   1200

taaaggtgat tcgtgacttc aacaccaaca agtgcaaggg attcggcttt gtcaccatga   1260

ccaactatga tgaggcggcc atggccatcg ccagcctcaa cgggtaccgc ctgggagaca   1320

gagtgttgca agtttccttt aaaaccaaca aagcccacaa gtcctgaatt tcccattctt   1380

acttactaaa atatatatag aaatatatac gaacaaaaca cacgcgcgca cacacacaca   1440

tacacgaaag agagagaaac aaacttttca aggcttatat tcaaccatgg actttataag   1500

ccagtgttgc ctaagtatta aaacattgga ttatcctgag gtgtaccagg aaaggatttt   1560

ataatgctta gaaaaaaaaa aaaaaaaaaa a                                  1591
```

<210> SEQ ID NO 106
<211> LENGTH: 1923
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 106

```
gactgtctac attagtaatt cccaacttgg gtccgaaagt gaacttttgc tgaagcgaag     60

tagctaaccg cttccatgtg caaggcaggt tccagacttc ggggtgagga ggattaactg    120

aaggacccca ggggaaccgg tgtgctcact gatccgcctc cagggccacc gccatgtcga    180

gccgcggtgg gaagaagaag tccaccaaga cgtccaggtc tgccaaagca ggagtcatct    240

ttcccgtggg gcggatgctg cggtacatca agaaaggcca ccccaagtac aggattggag    300

tgggggcacc cgtgtacatg gccgccgtcc tggaatacct gacagcggag attctggagc    360

tggctggcaa tgcagcgaga gacaacaaga agggacgggt cacaccccgg cacatcctgc    420

tggctgtggc caatgatgaa gagctgaatc agctgctaaa aggagtcacc atagccagtg    480

ggggtgtgtt acccaacatc caccccgagt tgctagcgaa gaagcgggga tccaaaggaa    540

agttggaagc catcatcaca ccacccccag ccaaaaaggc caagtctcca tcccagaaga    600

agcctgtatc taaaaaagca ggaggcaaga aaggggcccg gaaatccaag aagcagggtg    660

aagtcagtaa ggcagccagc gccgacagca caaccgaggg cacacctgcc gacggcttca    720

cagtcctctc caccaagagc ctcttccttg gccagaagct gaaccttatt cacagtgaaa    780

tcagtaattt agccggcttt gaggtggagg ccataatcaa tcctaccaat gctgacattg    840

accttaaaga tgacctagga aacacgctgg agaagaaagg tggcaaggag tttgtggaag    900

ctgtcctgga actccggaaa aagaacgggc ccttggaagt agctggagct gctgtcagcg    960

caggccatgg cctgcctgcc aagtttgtga tccactgtaa tagtccagtt tggggtgcag   1020

acaagtgtga agaacttctg gaaaagacag tgaaaaactg cttggccctg gctgatgata   1080

agaagctgaa atccattgca tttccatcca tcggcagcgg caggaacggt tttccaaagc   1140

agacagcagc tcagctgatt ctgaaggcca tctccagtta cttcgtgtct acaatgtcct   1200

cttccatcaa aacggtgtac ttcgtgcttt ttgacagcga gagtataggc atctatgtgc   1260

aggaaatggc caagctggac gccaactagg ctgagcaatg acagaaccag ctgcaccatg   1320

taccccacct tcagtttaaa agaaaaaaaa aatccccttc actcctactg ggaggtggga   1380

ccccttttcat tttcagtttt gctcatctag ggaaaataag gctttggttt ccagtttaat   1440
```

-continued

```
tgtttttgac cttctaaaat gtttttatgt tagcactgat agttggcatt actgttgtta   1500

agcactgtgt tccagaccgt gtctgactta gtgtaaccta ggagatttta tagttttatt   1560

ttaatgaaac cctgattgac gcacagcagt ggggagaaca gcgtctttta cctgtcaccg   1620

aagccaggaa gccccgtttg taagcgtgtg ttgtggtgct ttattgtaca tcctccagtg   1680

gcgttctttt tactctaatg ttcttttggt ttccccccctc agaagaatca tgaatttgca   1740

acagacctaa tttttggtta ctttttgtct tattgatgga tttgaaaatg aaagatttaa   1800

taaggcaaag cagaatctgt tgtccttaat tatatttgca atttggaatt tgtgtgagtt   1860

gatttagtaa aatgttaaac cgttaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa   1920

aaa                                                                 1923
```

<210> SEQ ID NO 107
<211> LENGTH: 799
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 107

```
cactcccaaa gaactgggta ctcaacactg agcagatctg ttctttgagc taaaaaccat     60

gtgctgtacc aagagtttgc tcctggctgc tttgatgtca gtgctgctac tccacctctg    120

cggcgaatca gaagcagcaa gcaactttga ctgctgtctt ggatacacag accgtattct    180

tcatcctaaa tttattgtgg gcttcacacg gcagctggcc aatgaaggct gtgacatcaa    240

tgctatcatc tttcacacaa agaaaaagtt gtctgtgtgc gcaaatccaa aacagacttg    300

ggtgaaatat attgtgcgtc tcctcagtaa aaaagtcaag aacatgtaaa aactgtggct    360

tttctggaat ggaattggac atagcccaag aacagaaaga accttgctgg ggttggaggt    420

ttcacttgca catcatggag ggtttagtgc ttatctaatt tgtgcctcac tggacttgtc    480

caattaatga agttgattca tattgcatca tagtttgctt tgtttaagca tcacattaaa    540

gttaaactgt attttatgtt atttatagct gtaggttttc tgtgtttagc tatttaatac    600

taattttcca taagctattt tggtttagtg caaagtataa aattatattt ggggggggaat    660

aagattatat ggactttctt gcaagcaaca agctattttt taaaaaaact atttaacatt    720

cttttgttta tattgttttg tctcctaaat tgttgtaatt gcattataaa ataagaaaaa    780

cattaataag acaaatatt                                                 799
```

<210> SEQ ID NO 108
<211> LENGTH: 1023
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 108

```
gttggctgcc ggtgagttgg gtgccggtgg agtcgtgttg gtcctcagaa tccccgcgta     60

gccgctgcct cctcctaccc tcgccatgtt tcttacccgg tctgagtacg acaggggcgt    120

gaatactttt tctcccgaag gaagattatt tcaagtggaa tatgccattg aggctatcaa    180

gcttggttct acagccattg ggatccagac atcagagggt gtgtgcctag ctgtggagaa    240

gagaattact tccccactga tggagcccag cagcattgag aaaattgtag agattgatgc    300

tcacataggt tgtgccatga gtgggctaat tgctgatgct aagactttaa ttgataaagc    360

cagagtggag acacagaacc actggttcac ctacaatgag acaatgacag tggagagtgt    420

gacccaagct gtgtccaatc tggctttgca gtttggagaa gaagatgcag atccaggtgc    480
```

-continued

```
catgtctcgt ccctttggag tagcattatt atttggagga gttgatgaga aaggacccca    540

gctgtttcat atggacccat ctgggacctt tgtacagtgt gatgctcgag caattggctc    600

tgcttcagag ggtgcccaga gctccttgca agaagtttac cacaagtcta tgactttgaa    660

agaagccatc aagtcttcac tcatcatcct caaacaagta atggaggaga agctgaatgc    720

aacaaacatt gagctagcca cagtgcagcc tggccagaat ttccacatgt tcacaaagga    780

agaacttgaa gaggttatca aggacattta aggaatcctg atcctcagaa cttctctggg    840

acaatttcag ttctaataat gtccttaaat tttatttcca gctcctgttc cttggaaaat    900

ctccattgta tgtgcatttt ttaaatgatg tctgtacata aaggcagttc tgaaataaag    960

aaaattttaa aataaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa   1020

aaa                                                                 1023
```

<210> SEQ ID NO 109
<211> LENGTH: 2533
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 109

```
ccaagcccat gagggccgcg cgcccggccg ccggtgctga cgagacggag ctcctggccc     60

ccgaggagga gcagaggatc aatgcggttc aagaatcgat tccagcggtt catgaaccat    120

cgagctccag ccaatggccg ctacaagcca acttgctatg aacatgctgc taactgttac    180

acacacgcat tcctcattgt tccggccatc gtgggcagtg ccctcctcca tcggctgtct    240

gatgactgct gggaaaagat aacagcatgg atttatggaa tgggactctg tgccctcttc    300

atcgcttcta cagtatttca cattgtatca tggaaaaaga gccacttaag gacagcggag    360

cattgttttc acatgtgtga tagaatggtt atctatttct tcattgctgc ttcttatgct    420

ccatggttaa atcttcgtga acttggaccc ctggcatctc atatgcgttg gtttatctgg    480

ctcatggcag ctggaggaac catttatgta tttctctacc atgaaaaata taaggtggtt    540

gaactctttt tctatctcac aatgggattc tctccagcct tggtggtgac atcaatgaac    600

aacaccgatg gacttcagga acttgcctgt gggggcttaa tttattgctt gggagttgtg    660

ttcttcaaga gtgatggcat cattccattt gcccacgcca tctggcacct gtttgtggcc    720

acggcagctg cagtgcatta ctacgccatt tggaaatacc tttaccgaag tcctacggac    780

tttatgcggc atttatgacc aatctgtact aattctccaa accagtatta tttcaattat    840

ggcacttggg agtggggtga gagctaaaca ttgcacaggg caaagaaaaa aaataactgc    900

actgacttta tatcttttga atataattac tgtgaaagta taaaggctgt gttctggaat    960

tttctgcctc acagcaaata aataaggtag tgaattaatt attcattcca ttccactatc   1020

atgaaggact ctgaatagac ttggccaact gatgtttaca aaccagactt ttatatttta   1080

attttacaga ttttactaca tgatttttct aaattactat gtcaggttgt aaaagtcagt   1140

gcaataacaa accttccttt ttaagaagaa aattgtttct attactttcc cattcactag   1200

gtaaagaatc atggacagaa cttacactac tttttaccat gtttcatctt ggcataacat   1260

ggttcttttt taaatagaaa ctttagtttt ttgtaaattt ttaaaaaaat atttcattga   1320

tatgcatctc tgcaggtcct cattcatgtt gtaaattttt ggagcaagca gtcaacattc   1380

cacaaacgaa caaacattat acctcttctg atagttttat taagcatgga gaaattgcca   1440

atttttaaaa actgcagttt tccaaacttt tctgccaacc tcttactctg aattcagtgc   1500

tgctttggga catatacttg acctagcttg gtttaccagt gatggaaaag tattttgata   1560
```

-continued

```
tcattaactt tttcaaaaga tccaactttt tctctatgcc tttgccacat tctcttcagg   1620
gtctctttcc acagcggata aatgtttttt ctgtattatg acagtattgt tgtgatggcc   1680
atctgctgga aactcctgaa gagcattatg tattacagtg agcagttgta ttgcctgttt   1740
ggtgcccaat ggttaagtca ttgtcactta gctttatatt gtcagtttga tatttatttt   1800
aaattgtgga actagatgca taaattcaca tttctgcctt tcctttgcat cttctcatat   1860
attgtgtttt tttttttttt cctagaaaaa atatttaaag cattgtttga caggtagaaa   1920
ctcatgtatc tgtagtccat gagttatatc ctggctcagt ggagtgatat ttatgtatta   1980
tttttacttt tctctcagtg tcttatatta agattaacat gttgttaata gttgctttgt   2040
tgattaatct ctcttgttgg tgttttaata aatgaaatag gcttgccttt agatcgggtg   2100
ctgatattgc ctgtttccta gtaatgggct gatcaaatga tcagtggaat tcttggtttg   2160
atgataacct tattaattga aatttttac tgatgtggct ttaaaagagg tttattttgt   2220
atatgtttag aactctctga ttttgatgaa ttatatggga gtgagaaaca gaagaagtgg   2280
tatttgctgg cgagttaaat aggcaaggta cccagtgata acaccaacca aaccactcct   2340
atctgcatga ttctgaacat ctggatgcct gttgttttac tgtgtatatt ttatttttaa   2400
tatattaact ttgtggattc atttaaggtc tactcaaaag taacactgtc caaaccacta   2460
atatgtatgt aaaaattgtg ctgtatacta caataaagtt gttacttgga tttgttccaa   2520
aaaaaaaaaa aaa                                                      2533
```

<210> SEQ ID NO 110
<211> LENGTH: 2899
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 110

```
cagacggcgc tgagcgcggc ggcggcggga gcggcgtcga gtgtctccgt gcgcccgtct     60
gtggccaagc agccagcagc ctagcagcca gtcagcttgc cgccggcggc caagcagcca    120
accatgctca acttcggtgc ctctctccag cagactgcgg aggaaagaat ggaaatgatt    180
tctgaaaggc caaaagagag tatgtattcc tggaacaaaa ctgcagagaa aagtgatttt    240
gaagctgtag aagcacttat gtcaatgagc tgcagttgga agtctgattt taagaaatac    300
gttgaaaaca gacctgttac accagtatct gatttgtcag aggaagagaa tctgcttccg    360
ggaacacctg attttcatac aatcccagca ttttgtttga ctccacctta cagtccttct    420
gactttgaac cctctcaagt gtcaaatctg atggcaccag cgccatctac tgtacacttc    480
aagtcactct cagatactgc caaacctcac attgccgcac ctttcaaaga ggaagaaaag    540
agcccagtat ctgcccccaa actccccaaa gctcaggcaa caagtgtgat tcgtcataca    600
gctgatgccc agctatgtaa ccaccagacc tgcccaatga aagcagccag catcctcaac    660
tatcagaaca attcttttag aagaagaacc cacctaaatg ttgaggctgc aagaaagaac    720
ataccatgtg ccgctgtgtc accaaacaga tccaaatgtg agagaaacac agtggcagat    780
gttgatgaga aagcaagtgc tgcactttat gacttttctg tgccttcctc agagacggtc    840
atctgcaggt ctcagccagc ccctgtgtcc ccacaacaga agtcagtgtt ggtctctcca    900
cctgcagtat ctgcaggggg agtgccacct atgccggtca tctgccagat ggttcccctt    960
cctgccaaca accctgttgt gacaacagtc gttcccagca ctcctcccag ccagccacca   1020
gccgtttgcc cccctgttgt gttcatgggc acacaagtcc ccaaaggcgc tgtcatgttt   1080
```

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```
gtggtacccc agcccgttgt gcagagttca aagcctccgg tggtgagccc gaatggcacc   1140
agactctctc ccattgcccc tgctcctggg ttttcccctt cagcagcaaa agtcactcct   1200
cagattgatt catcaaggat aaggagtcac atctgtagcc acccaggatg tggcaagaca   1260
tactttaaaa gttcccatct gaaggcccac acgaggacgc acacaggaga aaagcctttc   1320
agctgtagct ggaaaggttg tgaaaggagg tttgcccgtt ctgatgaact gtccagacac   1380
aggcgaaccc acacgggtga gaagaaattt gcgtgcccca tgtgtgaccg gcggttcatg   1440
aggagtgacc atttgaccaa gcatgcccgg cgccatctat cagccaagaa gctaccaaac   1500
tggcagatgg aagtgagcaa gctaaatgac attgctctac ctccaacccc tgctcccaca   1560
cagtgacaga ccggaaagtg aagagtcaga actaactttg gtctcagcgg gagccagtgg   1620
tgatgtaaaa atgcttccac tgcaagtctg tggccccaca acgtgggctt aaagcagaag   1680
ccccacagcc tggcacgaag gccccgcctg ggttaggtga ctaaaagggc ttcggccaca   1740
ggcaggtcac agaaaggcag gtttcatttc ttatcacata agagagatga gaaagctttt   1800
attcctttga atatttttg aaggtttcag atgaggtcaa cacaggtagc acagattttg   1860
aatctgtgtg catatttgtt actttacttt tgctgtttat acttgagacc aacttttcaa   1920
tgtgattctt ctaaagcact ggtttcaaga atatggaggc tggaaggaaa taaacattac   1980
ggtacagaca tggagatgta aaatgagttt gtattattac aaatattgtc atctttttct   2040
agagttatct tctttattat tcctagtctt tccagtcaac atcgtggatg tagtgattaa   2100
atatatctag aactatcatt tttacactat tgtgaatatt tggaattgaa cgactgtata   2160
ttgctaagag ggcccaaaga attggaatcc tccttaattt aattgctttg aagcatagct   2220
acaatttgtt tttgcatttt tgttttgaaa gtttaacaaa tgactgtatc taggcatttc   2280
attatgcttt gaactttagt ttgcctgcag tttcttgtgt agatttgaaa attgtatacc   2340
aatgtgtttt ctgtagactc taagatacac tgcactttgt ttagaaaaaa aactgaagat   2400
gaaatatata ttgtaaagaa gggatattaa gaatcttaga taacttcttg aaaaagatgg   2460
cttatgtcat cagtaaagta cctttatgtt atgaggatat aatgtgtgct ttattgaatt   2520
agaaaattag tgaccattat tcacaggtgg acaaatgttg tcctgttaat ttataggagt   2580
tttttgggga tgtggaggta gttgggtaga aaaattatta gaacattcac ttttgttaac   2640
agtatttctc ttttattctg ttatatagtg gatgatatac acagtggcaa aacaaaagta   2700
cattgcttaa aatatatagt gaaaaatgtc actatatctt cccatttaac attgtttttg   2760
tatattgggt gtagatttct gacatcaaaa cttggaccct tggaaaacaa aagttttaat   2820
taaaaaaaat ccttgtgact tacaatttgc acaatatttc ttttgttgta ctttatatct   2880
tgtttacaat aaagaattc                                                2899
```

<210> SEQ ID NO 111
<211> LENGTH: 1159
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 111

```
agtgccccag gagctatgac aagcaaagga acatacttgc ctggagatag cctttgcgat     60
atttaaatgt ccgtggatac agaaatctct gcaggcaagt tgctccagag catattgcag    120
gacaagcctg taacgaatag ttaaattcac ggcatctgga ttcctaatcc ttttccgaaa    180
tggcaggtgt gagtgcctgt ataaaatatt ctatgtttac cttcaacttc ttgttctggc    240
tatgtggtat cttgatccta gcattagcaa tatgggtacg agtaagcaat gactctcaag    300
```

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```
caatttttgg ttctgaagat gtaggctcta gctcctacgt tgctgtggac atattgattg    360

ctgtaggtgc catcatcatg attctgggct tcctgggatg ctgcggtgct ataaaagaaa    420

gtcgctgcat gcttctgttg tttttcatag gcttgcttct gatcctgctc ctgcaggtgg    480

cgacaggtat cctaggagct gttttcaaat ctaagtctga tcgcattgtg aatgaaactc    540

tctatgaaaa cacaaagctt ttgagcgcca caggggaaag tgaaaaacaa ttccaggaag    600

ccataattgt gtttcaagaa gagtttaaat gctgcggttt ggtcaatgga gctgctgatt    660

ggggaaataa ttttcaacac tatcctgaat tatgtgcctg tctagataag cagagaccat    720

gccaaagcta taatggaaaa caagtttaca aagagacctg tatttctttc ataaaagact    780

tcttggcaaa aaatttgatt atagttattg gaatatcatt tggactggca gttattgaga    840

tactgggttt ggtgttttct atggtcctgt attgccagat cgggaacaaa tgaatctgtg    900

gatgcatcaa cctatcgtca gtcaaacccc tttaaaatgt tgctttggct ttgtaaattt    960

aaatatgtaa gtgctatata agtcaggagc agctgtcttt ttaaaatgtc tcggctagct   1020

agaccacaga tatcttctag acatattgaa cacatttaag atttgaggga tataagggaa   1080

aatgatatga atgtgtattt ttactcaaaa taaaagtaac tgtttacgtt aaaaaaaaaa   1140

aaaaaaaaaa aaaaaaaaa                                                1159
```

<210> SEQ ID NO 112
<211> LENGTH: 2500
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 112

```
gtgtcgctcc agctcagagc tcccggagcc gcccggccag cgtccggcct ccctgatcgt     60

ctctggccgg cgccctcgcc ctcgcccggc gcgcaccgag cagccgcggg cgccgagcag    120

ccaccgtccc gaccaagcgc cggccctgcc cgcagcggca ggatgaatga tttcggaatc    180

aagaatatgg accaggtagc ccctgtggct aacagttaca gagggacact caagcgccag    240

ccagcctttg acacctttga tgggtccctg tttgctgttt ttccttctct aaatgaagag    300

caaacactgc aagaagtgcc aacaggcttg gattccattt ctcatgactc cgccaactgt    360

gaattgcctt tgttaacccc gtgcagcaag gctgtgatga gtcaagcctt aaaagctacc    420

ttcagtggct tcaaaaagga acagcggcgc ctgggcattc caaagaaccc ctggctgtgg    480

agtgagcaac aggtatgcca gtggcttctc tgggccacca atgagttcag tctggtgaac    540

gtgaatctgc agaggttcgg catgaatggc cagatgctgt gtaaccttgg caaggaacgc    600

tttctggagc tggcacctga ctttgtgggt gacattctct gggaacatct ggagcaaatg    660

atcaaagaaa accaagaaaa gacagaagat caatatgaag aaaattcaca cctcacctcc    720

gttcctcatt ggattaacag caatacatta ggttttggca cagagcaggc gccctatgga    780

atgcagacac agaattaccc caaaggcggc ctcctggaca gcatgtgtcc ggcctccaca    840

cccagcgtac tcagctctga gcaggagttt cagatgttcc ccaagtctcg gctcagctcc    900

gtcagcgtca cctactgctc tgtcagtcag gacttcccag gcagcaactt gaatttgctc    960

accaacaatt ctgggacgcc caaagaccac gactcccctg agaacggtgc ggacagcttc   1020

gagagctcag actccctcct ccagtcctgg aacagccagt cgtccttgct ggatgtgcaa   1080

cgggttcctt ccttcgagag cttcgaagat gactgcagcc agtctctctg cctcaataag   1140

ccaaccatgt ctttcaagga ttacatccaa gagaggagtg acccggtgga gcaaggcaaa   1200
```

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```
ccagttatac ctgcagctgt gctggccggc ttcacaggaa gtggacctat tcagctgtgg   1260
cagtttctcc tggagctgct atcagacaaa tcctgccagt cattcatcag ctggactgga   1320
gacggatggg agtttaagct cgccgacccc gatgaggtgg cccgccggtg gggaaagagg   1380
aaaaataagc ccaagatgaa ctacgagaag ctgagccggg gcttacgcta ctattacgac   1440
aagaacatca tccacaagac gtcggggaag cgctacgtgt accgcttcgt gtgcgacctc   1500
cagaacttgc tggggttcac gcccgaggaa ctgcacgcca tcctgggcgt ccagcccgac   1560
acggaggact gaggtcgccg ggaccaccct gagccggccc caggctcgtg gactgagtgg   1620
gaagcccatc ctgaccagct gctccgagga cccaggaaag gcaggattga aaatgtccag   1680
gaaagtggcc aagaagcagt ggccttattg catcccaaac cacgcctctt gaccaggctg   1740
cctcccttgt ggcagcaacg gcacagctaa ttctactcac agtgctttta agtgaaaatg   1800
gtcgagaaag aggcaccagg aagccgtcct ggcgcctggc agtccgtggg acgggatggt   1860
tctggctgtt tgagattctc aaaggagcga gcatgtcgtg gacacacaca gactattttt   1920
agattttctt ttgccttttg caaccaggaa cagcaaatgc aaaaactctt tgagagggta   1980
ggagggtggg aaggaaacaa ccatgtcatt tcagaagtta gtttgtatat attattataa   2040
tcttataatt gttctcagaa tcccttaaca gttgtattta acagaaattg tatattgtaa   2100
tttaaaataa ttatataact gtatttgaaa taagaattca gacatctgag gttttatttc   2160
atttttcaat agcacatatg gaattttgca aagatttaat ctgccaaggg ccgactaaga   2220
gaagttgtaa agtatgtatt atttacattt aatagactta cagggataag gcctgtgggg   2280
ggtaatccct gctttttgtg tttttttgtt tgtttgtttg tttgtttttg gggggttttc   2340
ttgccttggt tgtctggcaa ggactttgta catttgggag tttttatgag aaacttaaat   2400
gttattatct gggcttatat ctggcctctg ctttctcctt taattgtaaa gtaaaagcta   2460
taaagcagta tttttcttga caaaaaaaaa aaaaaaaaaa                         2500
```

<210> SEQ ID NO 113
<211> LENGTH: 2391
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 113

```
atgctgcgag gcggacggcg cgggcagctt ggctggcaca gctgggctgc ggggccgggc     60
agcctgctgg cttggctgat actggcatct gcgggcgccg caccctgccc cgatgcctgc    120
tgcccccacg gctcctcggg actgcgatgc acccgggatg gggccctgga tagcctccac    180
cacctgcccg gcgcagagaa cctgactgag ctctacatcg agaaccagca gcatctgcag    240
catctggagc tccgtgatct gaggggcctg ggggagctga gaaacctcac catcgtgaag    300
agtggtctcc gtttcgtggc gccagatgcc ttccatttca ctcctcggct cagtcgcctg    360
aatctctcct tcaacgctct ggagtctctc tcctggaaaa ctgtgcaggg cctctcctta    420
caggaactgg tcctgtcggg gaaccctctg cactgttctt gtgccctgcg ctggctacag    480
cgctgggagg aggagggact gggcggagtg cctgaacaga agctgcagtg tcatgggcaa    540
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cccaatgcct cggtggatgt gggggacgac gtgctgctgc ggtgccaggt ggaggggcgg    660
ggcctggagc aggccggctg gatcctcaca gagctggagc agtcagccac ggtgatgaaa    720
tctgggggtc tgccatccct ggggctgacc ctggccaatg tcaccagtga cctcaacagg    780
aagaacgtga cgtgctgggc agagaacgat gtgggccggg cagaggtctc tgttcaggtc    840
```

-continued

```
aacgtctcct tcccggccag tgtgcagctg cacacggcgg tggagatgca ccactggtgc    900
atccccttct ctgtggatgg gcagccggca ccgtctctgc gctggctctt caatggctcc    960
gtgctcaatg agaccagctt catcttcact gagttcctgg agccggcagc caatgagacc   1020
gtgcggcacg ggtgtctgcg cctcaaccag cccacccacg tcaacaacgg caactacacg   1080
ctgctggctg ccaacccctt cggccaggcc tccgcctcca tcatggctgc cttcatggac   1140
aaccctttcg agttcaaccc cgaggacccc atccctgtct ccttctcgcc ggtggacact   1200
aacagcacat ctggagaccc ggtggagaag aaggacgaaa cacctttttgg ggtctcggtg   1260
gctgtgggcc tggccgtctt tgcctgcctc ttcctttcta cgctgctcct tgtgctcaac   1320
aaatgtggac ggagaaacaa gtttgggatc aaccgcccgg ctgtgctggc tccagaggat   1380
gggctggcca tgtccctgca tttcatgaca ttgggtggca gctccctgtc ccccaccgag   1440
ggcaaaggct ctgggctcca aggccacatc atcgagaacc cacaatactt cagtgatgcc   1500
tgtgttcacc acatcaagcg ccgggacatc gtgctcaagt gggagctggg ggagggcgcc   1560
tttgggaagg tcttccttgc tgagtgccac aacctcctgc ctgagcagga caagatgctg   1620
gtggctgtca aggcactgaa ggaggcgtcc gagagtgctc ggcaggactt ccaacgtgag   1680
gctgagctgc tcaccatgct gcagcaccag cacatcgtgc gcttcttcgg cgtctgcacc   1740
gagggccgcc ccctgctcat ggtcttcgag tatatgcggc acggggacct caaccgcttc   1800
ctccgatccc atggacccga tgccaagctg ctggctggtg gggaggatgt ggctccaggc   1860
cccctgggtc tggggcagct gctggccgtg gctagccagg tcgctgcggg gatggtgtac   1920
ctggcgggtc tgcattttgt gcaccgggac ctggccacac gcaactgtct agtgggccag   1980
ggactggtgg tcaagattgg tgattttggc atgagcaggg atatctacag caccgactat   2040
taccgtgtgg gaggccgcac catgctgccc attcgctgga tgccgcccga gagcatcctg   2100
taccgtaagt tcaccaccga gagcgacgtg tggagcttcg gcgtggtgct ctgggagatc   2160
ttcacctacg gcaagcagcc ctggtaccag ctctccaaca cggaggcaat cgactgcatc   2220
acgcagggac gtgagttgga gcggccacgt gcctgcccac cagaggtcta cgccatcatg   2280
cggggctgct ggcagcggga gccccagcaa cgccacagca tcaaggatgt gcacgcccgg   2340
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```

<210> SEQ ID NO 114
<211> LENGTH: 3609
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 114

```
cagcccgtcg tggatgacta gagccaacca cctgccttcc gtcttccagg cagaaccaca     60
gagaggctac agccgtcctg gcctccctcc ggccctgaga gctcctctgg cctgtctcaa    120
gtcttaacgt ctcaagcgca gactgccggc tccgaacggg gagaccaggc ttctgcaccg    180
gaaacaaggc accggttgtg acgtcacagc cgcagagcgc ccgacttccc agaaggcacc    240
gagtccctgc cgttctcctc aactggcggc ggcgcgaacg aatagtcgcc ggcgacctgt    300
gagggcactc ggaagggcga ggggagggct cgaccgctcg cgcctagttt ttctatctct    360
cccggagcct gagtctctga gccgtcccca gcaaacgctc aggggctgca gaggccccga    420
gaggtgaggg gctccgtgag ggcgggaacc aggctgaggc cgcctctggg gagcggagcg    480
tgtccgttgc tgagggagca aggccgggta gggagcctgg tgagcgcctc aggcaggggc    540
```

-continued

```
gcacgctgag ctttacggta aaggtgttcc ttgaccagcg gaagaggccc cagagtgagc    600
ctggcccggc ggtccttagt gggatgtcgc ctgccgctct cagcagagct ttgacggcgg    660
agaggagtcg gcaggcggtg tgtggacacc tcctcggcct tgcatctgct ccccgggaga    720
gtcaccaacc gcctccccgc ccaaagggca ccggagggag cttcggttcg agggcttggc    780
tctctggcag atttcctcta gtaagaggtg gctctggagg ccccgcgaaa cgagtgtggt    840
gtgtggttgc aaggcatgat ggctgcaaaa gtggttccta tgcccccaaa gccaaagcag    900
tcctttatac tgagagttcc gccagactcc aagctgggcc aagacctact tcgagatgcc    960
actaacgggc ccaagaccat ccaccagcta gtgctggagc acttcctcac cttcttgccc   1020
aagccaagcc tggtccagcc cagtcagaaa gtcaaggaga ccttggttat tatgaaagat   1080
gtgagctcaa gccttcagaa cagagtgcat cctcgtccct tggtgaagct tctgcccaaa   1140
ggagtccaaa aggaacaaga gacagtgtct ctgtatttga aagctaaccc tgaggagctg   1200
gtggtctttg aggatttgaa tgtatttcac tgccaggaag aatgtgtgag cttggatcct   1260
actcaacaac tcacgtcaga gaaggaagat gacagcagtg tcggggaaat gatgttactg   1320
gcagtcaatg gcagtaatcc tgaaggtgaa gatcctgaga gggaacctgt agaaaatgaa   1380
gattatagag aaaagtcttc agatgatgat gaaatggatt cttccttggt ctctcagcag   1440
cctcccgata accaggaaaa ggaacgacta aatacatcca ttccacaaaa aaggaaaatg   1500
agaaatctgt tagttaccat tgagaatgat actcctctag aggaactctc aaaatatgta   1560
gacatcagta ttattgccct tactcgaaat cggaggacaa ggagatggta cacttgtcca   1620
ctgtgtggga aacagtttaa tgaaagttct tacctcattt cccaccagag gacccacact   1680
ggagaaaaac cctatgactg taatcactgt gggaaaagct tcaatcataa aacaaacctc   1740
aataaacatg agcgaattca tacaggagag aaaccttatt cctgttctca gtgtggaaaa   1800
aacttccgtc agaattctca tcggagtcgt catgaaggaa tccatataag ggagaagata   1860
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ctgtcaaact gtacccggca tgagaaaacc cactcagcct gtaagacccg aaagcagaag   2040
taatactggg aaccctttct gggtctgatg gtgctgcctc aacctgagag ctttcataag   2100
tagttctgaa ttcccaagct gcctaaaaag gtataaatgt gtaaaaatct cattattgcc   2160
aaaattggat aaatgcccat cttagctaaa acctcaaatt gctagaaaat tcacagggaa   2220
gaaaacattt caagggctat acctcagcat ctaggctttt tggactaagg agctttcctt   2280
tttgaagtta tatgataatg tacaggtcac agatcccctt tcccaacact ttgaagatga   2340
atctggagtc tgcttacttg gaaggcaaag agtgacttgt gtctattgaa agtatatccg   2400
ttttcccccc acatggggat tcatacttga gaaatagtgc aaagatgctt atctggaact   2460
gtgttctggt gaaagaacca aattactggc ttgttagcca acagcttctg atagcaattc   2520
atataaccct ctaagaatac ctgtttaagt cttgagtgtt gaaaggaatt gtttactttg   2580
gaatatagga aaacagttga atgtcagact ctcatttgta tgtgatctaa atttgcaatc   2640
aatttcaata atatttacaa tttgtgataa aactgacttt tacagattcc ttttcacaac   2700
ataatttagg tgtctactgt tcttattgta ttttgttctg ctgttgatct ctccagcagc   2760
cgtctcatgc ttctcccttg ctaaaagaag tttggattac tcaggcaggg ccatccagcc   2820
ccaccactag aaaagctctt cagaatcttg tccctctgtt gagcccagat ctcatgtgct   2880
acgaaggaaa ccccaagacc cagagaggaa gggtcaacct ggaggcagga aaaagttggc   2940
```

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```
ttggatccat gtctcatcaa taaccttacc atatgcttag gtcccctcta tgctgtcatc   3000

agacctttgg caatggggtg gtcactacct cacaaggcaa agtgttgtat gattagaaat   3060

tacgtctcca gtggttagct cacattgcct ctcaagagac aggtttccag gtgtcttcat   3120

tgtagtgggt attaattgtc ttcagcctct tgatatccat accttcctgt cctctgccta   3180

gaagcaaggc cagcggtgcc tttacggact gatcgtgtgg tgcgatttag ggattcttca   3240

gttttgcttg ctttaggttt ccaaaagtta tacattggtg ttttgattgg aataaagaaa   3300

tcctataagc tatttgggaa aaattatagt gtatgtttcc catccagaaa catgcctttc   3360

tatttattag agtattatat tcctgtgaaa atttttctaa ttttcttcac ttgttttaca   3420

caattttgtt attgtagttt tttccattat atttttatag ttgattattg cttttacatg   3480

ggaaagttat ttttaattat atatttgtat agtcatctca ctgttgttaa ttttcaatag   3540

tttgttggtt tagttctgtt aacttttggt aaaatgacac catctacaaa gaaaaaaaaa   3600

aaaaaaaaa                                                           3609
```

<210> SEQ ID NO 115
<211> LENGTH: 1386
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 115

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gctcctcgcc ccgcgcctgc ccccaggatg gtccgcgcga ggcaccagcc gggtgggctt     60

tgcctcctgc tgctgctgct ctgccagttc atggaggacc gcagtgccca ggctgggaac    120

tgctggctcc gtcaagcgaa gaacggccgc tgccaggtcc tgtacaagac cgaactgagc    180

aaggaggagt gctgcagcac cggccggctg agcacctcgt ggaccgagga ggacgtgaat    240

gacaacacac tcttcaagtg gatgattttc aacgggggcg cccccaactg catcccctgt    300

aaagaaacgt gtgagaacgt ggactgtgga cctgggaaaa aatgccgaat gaacaagaag    360

aacaaacccc gctgcgtctg cgccccggat tgttccaaca tcacctggaa gggtccagtc    420

tgcgggctgg atgggaaaac ctaccgcaat gaatgtgcac tcctaaaggc aagatgtaaa    480

gagcagccag aactggaagt ccagtaccaa ggcagatgta aaaagacttg tcgggatgtt    540

ttctgtccag gcagctccac atgtgtggtg gaccagacca ataatgccta ctgtgtgacc    600

tgtaatcgga tttgcccaga gcctgcttcc tctgagcaat atctctgtgg gaatgatgga    660

gtcacctact ccagtgcctg ccacctgaga aaggctacct gcctgctggg cagatctatt    720

ggattagcct atgagggaaa gtgtatcaaa gcaaagtcct gtgaagatat ccagtgcact    780

ggtgggaaaa aatgtttatg ggatttcaag gttgggagag gccggtgttc cctctgtgat    840

gagctgtgcc ctgacagtaa gtcggatgag cctgtctgtg ccagtgacaa tgccacttat    900

gccagcgagt gtgccatgaa ggaagctgcc tgctcctcag gtgtgctact ggaagtaaag    960

cactccggat cttgcaactg aatctgcccg taaaacctga gccattgatt cttcagaact   1020

ttctgcagtt tttgacttca tagattatgc tttaaaaaat tttttttaac ttattgcata   1080

acagcagatg ccaaaaacaa aaaaagcatc tcactgcaag tcacataaaa atgcaacgct   1140

gtaatatggc tgtatcagag ggctttgaaa acatacactg agctgcttct gcgctgttgt   1200

tgtccgtatt taaacaacag ctcccctgta ttcccccatc tagccatttc ggaagacacc   1260

gaggaagagg aggaagatga agaccaggac tacagctttc ctatatcttc tattctagag   1320

tggtaaactc tctataagtg ttcagtgttc acatagcctt tgtgcaaaaa aaaaaaaaaa   1380
```

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aaaaaa 1386

<210> SEQ ID NO 116
<211> LENGTH: 3163
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 116

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tattgcaata gtcaacttcc aatacaacag cagctggaga tttatagcta acgggctggg 120

tgaaggagtt aaaggatgct aaattactaa gaggaagtga tgggcagtag gggctgagca 180

aagataactt ctgacatagt caaaccaact ccctctcaga agaacctgat gtttcctgac 240

tgctttctcc ttcctcagcc ctgccctgct tggatagagg cctccgaaca ggagtaaaga 300

atggctgttg aacatccaca aggcacctgc aagactatga atcaaagttg agaccaagaa 360

attatttctg aaaaaggata tggaaaacct tacaaaacac agcattgagt gttcaagttt 420

cagaggtgat tgggaatgta aaaaccagtt tgagagaaaa cagggatctc aggaaggaca 480

tttcagtgaa atgatattta ctcctgaaga catgcccact ttcagtatcc agcatcagag 540

aattcatact gatgagaaac tccttgaatg taaggaatgt gggaaggatt ttagttttgt 600

atcagtcctt gttcgacatc agcgaattca tactggtgag aaaccttatg aatgcaaaga 660

atgtggcaag gcctttggta gtggtgcaaa ccttgcttac catcaaagaa ttcatactgg 720

tgagaagcct tttgaatgta aagaatgtgg gaaggccttt ggtagtggct caaaccttac 780

tcaccatcag agaattcata ctggtgagaa accctatgag tgtaaggaat gtgggaaagc 840

ctttagtttt ggatcaggcc ttattcgaca tcagatcatt cacagtggtg agaagcctta 900

tgagtgtaag gaatgtggga agtcctttag ttttgaatca gcccttattc ggcatcacag 960

aattcacaca ggtgagaaac cttatgaatg tatagattgt ggtaaagcct ttggcagtgg 1020

ttcaaacctt actcaacatc ggcggattca tactggtgag aaaccttatg aatgcaaagc 1080

atgtggaatg gcctttagca gtggttcggc tcttactcgg catcagagaa ttcataccgg 1140

tgagaaacca tatatatgta atgaatgtgg taaggccttt agttttggat cagcccttac 1200

tcgacatcaa agaattcata ctggtgagaa accttatgta tgtaaggaat gtgggaaggc 1260

ttttaatagt ggctcagatc tcactcagca tcagagaatt cacactggtg agaaacccta 1320

tgagtgtaag gagtgtgaga aagcctttag aagtggttca aaacttattc agcatcaaag 1380

aatgcatact ggagagaaac cttatgaatg taaggaatgt gggaagacct ttagtagtgg 1440

ttcagacctt actcaacatc acagaattca tactggtgag aaaccctatg aatgtaagga 1500

atgtgggaag gcctttggta gtggctcaaa acttatccaa caccagctaa tccatactgg 1560

tgaaagaccc tatgaatgta aagaatgtgg aaagtccttt agtagtggtt cagctcttaa 1620

tcggcaccag agaatacaca ctggtgagaa accctatgaa tgtaaggagt gtgggaaggc 1680

tttttatagt ggctcaagcc ttactcagca tcagagaatt catacaggtg agaaacttta 1740

tgaatgtaag aactgtggga aggcttatgg gagggattca gagtttcagc aacataagaa 1800

aagtcataat ggtaagaaac tctgcgaatt ggaaactata aattgaaatt atgtgctgaa 1860

ggaaggactc taaacatatg acttaagaaa attcatagtg gtgaaaatct ctacaaatag 1920

aactaaggta caaatgcctt acttatgctt cacaggttag tcagtctaag aatatttata 1980

caggaaaaaa atcaccccaa ataaaataaa tatttgaaga tccttatcta tattcattcc 2040

ttcattactt ttggaaaatt cttacttgtg aatgttaaaa atgaaaaaaa aatcatttat 2100

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tatattttgc ctcaacttta aacattggaa aactcatttc tgggttaatc ctactatatt   2160
ttttcaatgg tctttttttt ttgtattata cagaattact gattcattga aaaattattt   2220
tatttattgc aagtctaaat ttatcctttt tttctttcct gattatccta acaccattta   2280
ttcaataacc ttgtccattt tcatattttt tttattgact atttgatggt aagttacatt   2340
tttattcaca taaagcttgg atatcaggtc agtgtttttt tgtttttgtt tttgtttttg   2400
ttttttgag atggagtctc actgtcacca ggctggagtg cagtggtgca atctcggttc   2460
actgcaacct ccacctcccg agttcaagtg attttcctgc ctcagctccc cagtagctgg   2520
gactacaggc gcccgccacc acgcccagct aatttttgt attttcatta gagatggggt   2580
ttcaccacgt tggccaggat ggtctcgatc tcttgacctc gtgatccatc tgcctcggcc   2640
tcccaacgtg ctggaattac aggcatgagc caccatgcct ggcccagtgt ttgtttttta   2700
aatttatata tatgtatcta tgtctcatcc tgtttatggt caataactgt tacttttaag   2760
tatcctttaa tacctgtacc ttttgtttta gaagattgtt tactttcctt ttataaaatt   2820
atactctcca ttttagcaaa acagctttcc ctcatcataa tgtagataaa aagaaaaaaa   2880
ggatatggtt acctgtaatc ttaccaatca tagataatca ctgtcaaact tttggagcaa   2940
atcctttaat actatctctc attgttttgg aaacaaggtg tgattatgct atactataac   3000
cagcccttaa tattttttgt ctgtaaatat gttgttacca ttttattggc tttatagtat   3060
tcacctgtct ttatcaaacc ccaattttgt caaatattaa aaattttgcc attataaaaa   3120
aaaaaaaaaa aaaaaaaaaa aaaaaaaaga aaaaaaaaaa aaa                     3163
```

<210> SEQ ID NO 117
<211> LENGTH: 1632
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 117

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atagatacta gattgtattg aattctgttt taattattct ctaggtaagt atgttttagg     60
attaaatacc ttttacagat actgaaagtg cctccttttg tggtgtaaaa aacaaattat    120
ggtgcaaaaa gtaatcacta gattgaaata catgaaggtt ttttgctttt tgacatacga    180
aaatgtcaag agaaaggcca aagatttgta ctttttcact tacaaagcac tccttttcc    240
cttaaacttc tttctgtcaa attagattta atgagagagt actattttta aggagctatc    300
tgtttatgta gaatgatttt gttaagagta atgtaaacta ttattgagta gaggcctaaa    360
gaggactgtg ccatttttgc tatttaaagg aatcacaaat gatcatactt aagtgagcaa    420
aaatgacaag ttttactagc taagtagaga aataaatctc aaatgcagcg ctacaatttt    480
cattatctta agtacattgt acatttctac agaacctgtg attattctcg catgataagg    540
atggtacttg catatggtga attactactg ttgacagttt ccgcagaaat cctatttcag    600
tggaccaaca ttgtggcatg gcagcaaatg ccaacatttt gtggaatagc agcaaatcta    660
caagagaccc tggttggttt ttcgttttgt tttctttgtt ttttccccct tctcctgaat    720
cagcagggat ggaaggaggg tagggaagtt atgaattact ccttccagta gtagctctga    780
agtgtcacat ttaatatcag tttttttaa acatgattct agttaaatgt agaagagaga    840
agaaagagga agtgttcact tttttaatac actgatttag aaatttgatg tcttatatca    900
gtagttctga ggtattgata gcttgcttta tttctgcctt tacgttgaca gtgttgaagc    960
agggtgaata actagggcat atattttttt tttttttgt aagctgtttc atgatgtttt   1020
```

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ctttggaatt tccggataag ttcaggaaaa cattctgcat gttgtatcta gtctgatgta   1080

cttatccatc tcattacaaa caaaaacaca cagaactgca tttgtagctc tgtaatcctt   1140

gaatacggaa gtaaattttc ttctttcctg actttgacat tgtagctata ctgtttccat   1200

ttttgttttt acaaatcctt tgggtctaat tctgtgagcc tacctatagc actggattaa   1260

aatgtctgca tcatttcttt agttatccag ttaactttaa aactgttgta aaagtgtaaa   1320

ccagcccatg acaggttttt gtacatgtta aagaacttca ttgttcagtt ttcatgatta   1380

ttgtgtaagg aagactgatg tagatgttct gtgctgtcct ggaccatgtt aattacactt   1440

acgacgtatt ttagttccac atcacaatga tttgtcccca gtgacccttt tatcctttct   1500

aggcacattt cttgttgttg ttgttgttgc agttcccctt tgcattgtat tgctttgaca   1560

actgtaattt gaatcagatc tgaaagaggt ccagaataaa atatattttg atattaaaaa   1620

aagaaaaaaa at                                                       1632
```

<210> SEQ ID NO 118
<211> LENGTH: 2202
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 118

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gggactgtcg cgtcggcgcc cgacgcggag tcagcagggg cgaaaagcgg tagatcatgg     60

caaccataga agaaattgca catcaaatta ttgaacaaca gatgggagag attgttacag    120

agcagcaaac tgggcagaaa atccagattg tgacagcact tgatcataat acccaaggca    180

agcagttcat tctgacaaat cacgacggct ctactccaag caaagtcatt ctggccaggc    240

aagattccac tccgggaaaa gttttcctta caactccaga tgcagcaggt gtcaaccagt    300

tatttttac cactcctgat ctgtctgcac aacacctgca gctcctaaca gataattctc    360

cagaccaagg accaaataag gtttttgatc tttgcgtagt atgtggagac aaagcatcag    420

gacgtcatta tggagcagta acttgtgaag gctgcaaagg atttttaaa agaagcatcc    480

gaaaaaattt agtatattca tgtcgaggat caaaggattg tattattaat aagcaccacc    540

gaaaccgctg tcaatactgc aggttacaga gatgtattgc gtttggaatg aagcaagact    600

ctgtccaatg tgaaagaaaa cccattgaag tatcacgaga aaaatcttcc aactgtgccg    660

cttcaacaga aaaaatctat atccgaaagg accttcgtag cccattaact gcaactccaa    720

cttttgtaac agatagtgaa agtacaaggt caacaggact gttagattca ggaatgttca    780

tgaatattca tccatctgga gtaaaaactg agtcagctgt gctgatgaca tcagataagg    840

ctgaatcatg tcagggagat ttaagtacat tggccaatgt ggttacatca ttagcgaatc    900

ttggaaaaac taaagatctt tctcaaaata gtaatgaaat gtctatgatt gaaagcttaa    960

gcaatgatga tacctctttg tgtgaatttc aagaaatgca gaccaacggt gatgtttcaa   1020

gggcatttga cactcttgca aaagcattga atcctggaga gagcacagcc tgccagagct   1080

cagtagcggg catggaagga agtgtacacc taatcactgg agattcaagc ataaattaca   1140

ccgaaaaaga ggggccactt ctcagcgatt cacatgtagc tttcaggctc accatgcctt   1200

ctcctatgcc tgagtacctg aatgtgcact acattgggga gtctgcctcc agactgctgt   1260

tcttatcaat gcactgggca ctttcgattc cttctttcca ggctctaggg caagaaaaca   1320

gcatatcact ggtgaaagct tactggaatg aactttttac tcttggtctt gcccagtgct   1380

ggcaagtgat gaatgtagca actatattag caacatttgt caattgtctt cacaatagtc   1440

ttcaacaaga taaaatgtca acagaaagaa gaaaattatt gatggagcac atcttcaaac   1500
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tacaggagtt ttgtaacagc atggttaaac tctgcattga tggatacgaa tatgcctacc   1560
tgaaggcaat agtactcttc agtccagatc atccaagcct agaaaacatg gaactgatag   1620
agaaatttca ggaaaaggct tatgtggaat tccaagatta tataaccaaa acatatccag   1680
atgacaccta caggttatcc agactactac tcagattgcc agctttaaga ctgatgaatg   1740
ctaccatcac tgaagaattg tttttcaaag gtctcattgg caatatacga attgacagtg   1800
ttatcccaca tattttgaaa atggagcctg cagattataa ctctcaaata attggtcaca   1860
gcatttgaaa actgtgactg cagtgctgta aacttaactg ttctttgcca gaacacaaga   1920
caccaaattg aactcactgc ttttgaggca tctggaaatt tttactttaa aaagtaacca   1980
gaatccaagg tatttttatt ttagcttccc ttaagaattt ttgaagtgac tgggcaggca   2040
gcagaaatta aatgaatttt tcttcctgat tcctttaaat gaatatgaaa cactacaaat   2100
ttattcttgg tgaagatgat acctgaagct gtcacctctt gattatctaa actaagcgct   2160
cattctattt tataaaacaa ataaattagt ctctttttc tg                       2202
```

<210> SEQ ID NO 119
<211> LENGTH: 2716
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 119

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aggctgaggg gcggttgttg ttggcagctg tggctaagga ggggagaacc tctgctcccc     60
gcccgtcttc tcttctgcgt ttcccgggct agggggcgtg gggagtggtt ttaggcggcg    120
aagccgctcg gcagcacctt ccttctttgc caggcagacg cccgttgtag ccgttgggga    180
accgttgaga atccgccatg gagccagaga gggaagggac cgagagacac cccaggaagg    240
tcagggaagg caggcaggcc ccaaataagc tggtcggggc agctgaggcg atgaaagccg    300
gttgggatct cgaggagagt cagcccgagg ccaagaaagc ccgcttatct accattttat    360
ttactgacaa ctgtgaagta acccatgacc agctgtgtga attgctgaag tatgcagttc    420
tgggcaaatc caatgttcca aaacccagct ggtgccagct ttttcatcaa aaccacctaa    480
acaacgtagt ggtttttgtt ctgcagggaa tgagtcagct acacttttac aggttctatt    540
tggagtttgg atgtcttcga aaagcattca gacataaatt ccgcttgcct ccaccatcat    600
ctgattttct agctgatgtt gttgggctac aaactgaaca aagagctgga gatctgccca    660
agacaatgga agggccttta ccttctaatg caaaagccgc catcaacctt caggatgatc    720
ccatcattca aaagtatggc tctaagaaag tgggcttgac cagatgcctt ctgacaaagg    780
aggaaatgag aacgtttcac tttccattac aaggttttcc tgattgtgaa aactttttac    840
ttaccaaatg taatggttct atagcagaca atagtcctct ctttggactt gactgtgaaa    900
tgtgcctcac atccaagggg agagagctaa cacgcatctc actggttgct gaaggaggct    960
gctgtgttat ggatgaactg gtcaaacctg aaaacaagat tctggactac ctcaccagct   1020
tttcgggaat cacgaagaag attcttaacc cagtgacgac caaactcaaa gatgtacaga   1080
ggcagttaaa agcactgctt cctcctgatg ctgtgttagt gggccactcc ttagatttgg   1140
atctcagagc actgaaaatg atacatccat atgttattga tacatcgttg ctttatgtca   1200
gagagcaggg cagaagattt aagctcaagt tcttagccaa agttattttg gggaaggata   1260
tacagtgtcc agacagactt ggtcatgatg ccacagaaga tgctagaaca atccttgaat   1320
tggctcggta tttccttaag catggcccaa aaaagattgc agaactaaat ctagaagcac   1380
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tagctaatca ccaagaaata caagcagcag gccaagagcc taaaaacaca gcagaagtac   1440
ttcagcaccc aaacacaagt gttttagaat gcttggattc agtgggtcag aagcttcttt   1500
ttttgacccg ggagacagat gctggtgaac ttccatcttc cagaaattgt caaactatta   1560
agtgtctttc aaataaagag gttcttgagc aggccagagt ggaaatcccc ctgtttccct   1620
tcagcattgt tcagttctct tttaaggcct tttcacctgt cctcactgag gagatgaaca   1680
aaaggatgag gatcaagtgg acagagatat caactgtcta tgctgggcca tttagcaaaa   1740
attgcaatct cagggctctg aagaggctgt ttaaaagctt tggcccagtc cagtcaatga   1800
cttttgttct tgaaacccgt cagcctcatc tctgtataca gtatgaagtc ctagaagctg   1860
cccagctggc catagagtcc ttggatggta ttctggtaga tggtatctgc atcaaggtgc   1920
agaggcctgt gacagagctc acgcttgatt gtgacaccct cgtgaatgag ctggaaggag   1980
attctgaaaa ccaaggctct atatatctgt ctggagtgag tgaaaccttc aaagaacagc   2040
tattgcagga gccccgcctc tttcttggcc tggaagctgt gatcttgcct aaagatctta   2100
aaagtggaaa gcagaaaaaa tactgtttcc tgaaattcaa aagttttggc agtgcccagc   2160
aggccctcaa cattctcaca ggcaaggact ggaagctgaa aggcaggcat gccctaaccc   2220
ccaggcacct ccatgcctgg ctcagaggct taccacctga atcaacaagg ctcccagggc   2280
ttcgtgttgt acctcccccc tttgaacagg aggccttgca gactctgaaa ctggaccacc   2340
cgaagatagc agcctggcgc tggagccgga agattggaaa gctctacaac agcttgtgcc   2400
cgggcactct ctgcctcatc ctgctgccag gaaccaagag cactcatggt tcactctctg   2460
gtctaggact gatgggaata aaagaggaag aagaaagcgc tggcccaggc ctgtgttcgt   2520
gagtcggcct gccatgtttc catgtgccat ttcttacccc ttgtaggcaa tggcaaagaa   2580
tgtggtcagg ctgtagcctc cccaaccagc agacagtttt atggaaactt ggtatagcag   2640
ctaaaagagt ttagtttgtt tatatggcat gtataagttt tcaataaatg cctaaagttc   2700
aagcataaaa aaaaaa                                                   2716
```

<210> SEQ ID NO 120
<211> LENGTH: 7825
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 120

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cctttcgtt cgccctctcg gggcggcttc gccgaaggta gcgccgaatc cggcaaccgg     60
agcctgggcg cgaagcgaag aagccggaac aaagtgaggg ggagccggcc ggctggcccg    120
ggaagcccca ggggcgcagg ggaagcggga ctcgcgccgg gcggggtttc cctgcgcccc    180
ggcgccccgc gggcagcatg cccctgcggg caggggagc tgggctgaac tggccctccc    240
gggggctcag cttgcgccct agagcccacc agatgtgccc ccgccggggc cccgggttg    300
cgtgaggaca cctcctctga ggggcgccgc ttgcccctct ccggatcgcc cggggccccg    360
gctggccaga ggatggacga ggaggaggat ggagcgggcg ccgaggagtc gggacagccc    420
cggagcttca tgcggctcaa cgacctgtcg ggggccgggg gccggccggg gccggggtca    480
gcagaaaagg acccgggcag cgcggactcc gaggcggagg ggctgccgta cccggcgctg    540
gccccggtgg ttttcttcta cttgagccag gacagccgcc cgcggagctg gtgtctccgc    600
acggtctgta acccctggtt tgagcgcatc agcatgttgg tcatccttct caactgcgtg    660
accctgggca tgttccggcc atgcgaggac atcgcctgtg actcccagcg ctgccggatc    720
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cagcccagca gcagctgctc tcgctcccac cgccgcctat ccgtccacca cctggtgcac   1860
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<210> SEQ ID NO 121
<211> LENGTH: 3497
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 121

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cgggacggca gcggcctggg gacccagcaa gtgtccatgg gctattcctc aaaatacaat 240

atcttgttct ttggctgatg taatgagtga acagctggcc aaagaattgc agttagaaga 300

agaagctgcc gtttttcctg aagttgctgt tgctgaagga ccatttatta ctggagaaaa 360

cattgatact tccagtgacc ttatgctggc tcagatgcta cagatggaat atgacagaga 420

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taaaaagggc tttattggaa aaggaaaaga tatcaccacc aaacatgatg aagtagtatg 660

tgggagaaag aacacagcaa gaatggaaaa ttttgcacct gagtttcagg taggagatgg 720

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tccaaaataa agatttatat gactggtgat actggcttta cagaaatttc agagaactaa   3420
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<210> SEQ ID NO 122
<211> LENGTH: 1966
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 122

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gcgagcctgc gagcgaggtg cggcggtcgc gaagggcaac cgagggggcc gtgaccaccg    180
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ccttgaatca agtcaggtga aatatctccg tcgagaactg atagaacttc gaaataaagt    660
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aggatattaa aatgctaggg tgaggtttag ccatcttact tggcttttta ctattaacat   1860

gatgtactaa agtagagccc tttgagaata caagatatta tgtataaaat gtaacactga   1920

tgataggtta ataaagatga ttgaatccaa aaaaaaaaaa aaaaaa                  1966
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<210> SEQ ID NO 123
<211> LENGTH: 419
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 123

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accgctccca cttgtgagcc cccagcgggc tctgccctgg tgcgcttcac acagcaccaa    240

gcagcaacaa gaacagcaga aggggaactg ccaaggagac ctgatgttag atcaaagcca    300

gagaggagcc tatggaatgt ggatcaaatg ccagttgtga cgaaatgagg aatgtatatg    360

ttggctgttt ttccccaaca tctcaataaa actttgaaag cagaaaaaaa aaaaaaaaa     419
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<210> SEQ ID NO 124
<211> LENGTH: 2679
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 124

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cggaccgtgc aatggcccag cgtaagaatg ccaagagcag cggcaacagc agcagcagcg     60

gctccggcag cggtagcacg agtgcgggca gcagcagccc cggggcccgg agagagacaa    120

agcatggagg acacaagaat gggaggaaag gcggactctc aggaacttca ttcttcacgt    180

ggtttatggt gattgcattg ctgggcgtct ggacatctgt agctgtcgtt tggtttgatc    240
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ttgttgacta tgaggaagtt ctaggaaaac taggaatcta tgatgctgat ggtgatggag    300
attttgatgt ggatgatgcc aaagttttat taggacttaa agagagatct acttcagagc    360
cagcagtccc gccagaagag gctgagccac acactgagcc cgaggagcag gttcctgtgg    420
aggcagaacc ccagaatatc gaagatgaag caaaagaaca aattcagtcc cttctccatg    480
aaatggtaca cgcagaacat gttgagggag aagacttgca acaagaagat ggacccacag    540
gagaaccaca acaagaggat gatgagtttc ttatggcgac tgatgtagat gatagatttg    600
agaccctgga acctgaagta tctcatgaag aaaccgagca tagttaccac gtggaagaga    660
cagtttcaca agactgtaat caggatatgg aagagatgat gtctgagcag gaaaatccag    720
attccagtga accagtagta gaagatgaaa gattgcacca tgatacagat gatgtaacat    780
accaagtcta tgaggaacaa gcagtatatg aacctctaga aaatgaaggg atagaaatca    840
cagaagtaac tgctccccct gaggataatc ctgtagaaga ttcacaggta attgtagaag    900
aagtaagcat ttttcctgtg gaagaacagc aggaagtacc accagatact taaagcttca    960
aaaagactgc ccctaccacc acaggaggac cagcctaacc atacgctcca aaagatggct   1020
gtgatagatc ttgtgaagca attactgagc agatcaagat ctttgggaag gaacactaaa   1080
gatgttttga atgaattata gtccactggc attttagtgt atttttttt ctttttacaa   1140
acacacattt ctaaaaatgt catgttacat tcctgcatgt ccctttgat agcattagtg   1200
gatccattgg atttcttttt tctttttgtg agacagcttt tagtcttacc tgaatttatg   1260
tgtgtttttc cgacagtggt taataattat attggtgatg tagcagcaat tgtgttggca   1320
gggttttcat atattattag taattaacac taactgttgg actgacttgt gtacactgtg   1380
ttaaacatga tttaaaagct attaagagta ctttgtgtta gcactcttaa aaacgctaac   1440
agagatcatc attagctgtg aagatttgag ttgtatatac ctgcactgat attcttatca   1500
aaaatttcta cattagcttt aagtgttcag attaacactt ttgaaatttt tgtagctttt   1560
agctgattaa ttagaaaaat taatatttca gtgaaagttt taaattatca ttatttattt   1620
ttttaaatga gaggggaaag ctgaaattcc ttgttaagac acaaggaaaa agaatggccc   1680
tactattatc atgcaaaaat gctttgttgg cacctcagat taatcatata atagctatag   1740
tctcttcagc atttgtttaa attttagaaa acctgtataa attactggtg cataacttaa   1800
agattattct gcctttggct aattgagtaa ttcccctcca gcactagaga ccgctcagtg   1860
ctcttactag atgaactcag taacgccttg agctgggttg attgaggatg tgtgaaaagc   1920
tcacagagcc cgatgcctgc tgctatttca cggcaatgag cctttttctt tctacactga   1980
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ataatccttt gtcagaaaag aaggtagcta ccacatcatt ttgaaaggac catgagcaac   2100
tataagcaaa gccataagaa gtggtttgat cgatatatta ggggtagctc ttgattttgt   2160
taacattaag ataaggtgac tttttccccc tgcttttagg attaaaatca aagatacttc   2220
tatattttta tcactataga tcatagttat tatacaatgt agtgagtcct gcatgggtac   2280
tcgatgtgta atgaaacctg aaataataag ataataagaa aagcaataat tttctaaagc   2340
tgtgctgtcg gtgatacaga gacgatactc aaattataat aaaactcttc attttgtgaa   2400
ttatagaagc tactttttat aaagccatat ttttttaggg aaactaagga gtgacataga   2460
actgatgaat gagcaaaagt aagttttgct ggatttttgt agaactctgg acgttgagga   2520
ttcattatgc tgtggttaac tttaaatatt tttgaattcc aaatatctga attaatgagc   2580
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cttgtgttta caaatatgtg ccattgtgca acatcggtgg attttctaaa aataatgtaa   2640

atgtcttcta ttaaatgttg agtgcaataa aatccagaa                          2679


<210> SEQ ID NO 125
<211> LENGTH: 1279
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 125

gcggccgcgt cgacatgcag tgtgcctaaa acctgccagc agtacttttg agtttttttt     60

tttgttttgt tttactttag catttattat tcatggattg aagaaatcaa aatggctgaa    120

gataaagaga caaagcatgg aggacacaag aatgggagga aaggcggact ctcaggaact    180

tcattcttca cgtggtttat ggtgattgca ttgctgggcg tctggacatc tgtagctgtc    240

gtttggtttg atcttgttga ctatgaggaa gttctaggaa aactaggaat ctatgatgct    300

gatggtgatg gagattttga tgtggatgat gccaaagttt tattagaagg acccagtggg    360

gtagccaaga gaaaaactaa ggctaaagtt aaagaactca ctaaagaaga gctcaagaag    420

gagaaagaga aacctgagtc aaggaaggaa agtaagaatg aagagagaaa aaaggggaag    480

aaagaggatg tccgaaagga taagaaaatt gctgatgcag acctatccag gaaggagtct    540

cctaagggta aaaaggacag agaaaaagag aaagtggacc tagaaaaaag tgctaaaacc    600

aaggaaaata ggaaaaaatc aacaaatatg aaggatgttt ctagtaaaat ggcatcccga    660

gacaaagatg acagaaagga aagtagaagt tctaccagat atgcacactt aacaaaggga    720

aatacccaga aaagaaacgg ctaaagctct ggcatcatca tcccagaaca tggtcatgtt    780

ccagattgca gtttgttaca aaaaagcatg gaaaatgtaa tattgctctg attggtgagg    840

gtgtgtaaat tagccattga atgtatcatt ggtgcttagc aagtaaatta cctgaaattt    900

aaatataccg tctcatactt ctaaatgtaa aaacatttta aaaatgtcac agaatatgat    960

gtaataactt ctatttattg atcatttatt gatcatgtat tcagataaat gtatatgtat   1020

catgaatttt tatggattaa tatattgaat actttcattg acgttaaata agaatattaa   1080

gattttaaat gttaccctgt gcataatgcc ttgtaacttt ttcaagtatg ctaaatactc   1140

agggagatgg atttgctcgt tgttttcttc cctccttccc cttcctgctt ccctgttttc   1200

tctttcgtgg acacctcccc aggctcatgt gccaccacct tccctcctct ccagccctcc   1260

cagccctccc gcagccttt                                                1279


<210> SEQ ID NO 126
<211> LENGTH: 5119
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 126

ccccagccgc atgacgcgcg gaggaggcag cgggacgagc gcgggagccg ggaccgggta     60

gccgcgcgct gggggtgggc gccgctcgct ccgccccgcg aagcccctgc gcgctcaggg    120

acgcggcccc cccgcggcag ccgcgctagg ctccggcgtg tggccgcggc cgccgccgcc    180

gctgccatgt ctccggggaa gcccggggcg ggcggagcgg ggacgaggcg gaccggctgg    240

cggaggagga ggcgaaggag acggcaggag gcggcgacga cggtgcccgg gctcgggcgc    300

acggcggggc ccgattcgcg cgtccggggc acgttccagg gcgcgcgggg catgaagccg    360

gcggcgcggg aggcgcggct gcctccgcgc tcgcccgggc tgcgctgggc gctgccgctg    420

ctgctgctgc tgctgcgcct gggccagatc ctgtgcgcag gtggcacccc tagtccaatt    480
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cctgaccctt cagtagcaac tgttgccaca ggggaaaatg gcataacgca gatcagcagt    540
acagcagaat cctttcataa acagaatgga actggaacac ctcaggtgga aacaaacacc    600
agtgaggatg gtgaaagctc tggagccaac gatagtttaa gaacacctga acaaggatct    660
aatgggactg atggggcatc tcaaaaaact cccagtagca ctgggcccag tcctgtgttt    720
gacattaaag ctgtttccat cagtccaacc aatgtgatct taacttggaa aagtaatgac    780
acagctgctt ctgagtacaa gtatgtagta aagcataaga tggaaaatga gaagacaatt    840
actgttgtgc atcaaccatg gtgtaacatc acaggcttac gtccagcgac ttcatatgta    900
ttctccatca ctccaggaat aggcaatgag acttggggag atcccagagt cataaaagtc    960
atcacagagc cgatcccagt ttctgatctc cgtgttgccc tcacgggtgt gaggaaggct   1020
gctctctcct ggagcaatgg caatggcact gcctcctgcc gggttcttct tgaaagcatt   1080
ggaagccatg aggagttgac tcaagactca agacttcagg tcaatatctc gggcctgaag   1140
ccaggggttc aatacaacat caacccgtat cttctacaat caaataagac aaagggagac   1200
cccttgggca cagaaggtgg cttggatgcc agcaatacag agagaagccg ggcagggagc   1260
cccaccgccc ctgtgcatga tgagtccctc gtgggacctg tggacccatc ctccggccag   1320
cagtcccgag acacggaagt cctgcttgtc gggttagagc ctggcacccg atacaatgcc   1380
accgtttatt cccaagcagc gaatggcaca gaaggacagc cccaggccat agagttcagg   1440
acaaatgcta ttcaggtttt tgacgtcacc gctgtgaaca tcagtgccac aagcctgacc   1500
ctgatctgga aagtcagcga taacgagtcg tcatctaact atacctacaa gatacatgtg   1560
gcgggggaga cagattcttc caatctcaac gtcagtgagc ctcgcgctgt catccccgga   1620
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acgccgggct tcctccaagt gcacaccccc cctgttccag tttctgactt ccgagtgaca   1740
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atgcatatca cacaggaggg agctggcaat tctcgggtag aaataaccac caaccaaagt   1860
attatcattg gtggcttgtt ccctggaacc aagtattgct ttgaaatagt tccaaaagga   1920
ccaaatggga ctgaaggggc atctcggaca gtttgcaata gaactgttcc cagtgcagtg   1980
tttgacatcc acgtggtcta cgtcaccacc acggagatgt ggctggactg gaagagccct   2040
gacggtgctt ccgagtatgt ctaccattta gtcatagagt ccaagcatgg ctctaaccac   2100
acaagcacgt atgacaaagc gattactctc cagggcctga ttccgggcac cttatataac   2160
atcaccatct ctccagaagt ggaccacgtc tgggggggacc ccaactccac tgcacagtac   2220
acacggccca gcaatgtgtc caacattgat gtaagtacca acaccacagc agcaacttta   2280
agttggcaga actttgatga cgcctctccc acgtactcct actgccttct tattgagaag   2340
gctggaaatt ccagcaacgc aacacaagta gtcacggaca ttggaattac tgacgctaca   2400
gtcactgaat taatacctgg ctcatcatac acagtggaga tctttgcaca agtaggggat   2460
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tccttcgact gcgaagtggt ccccaaagag ccagccctgg ttctcaaatg gacctgccct   2580
cctggcgcca atgcaggctt tgagctggag gtcagcagtg gagcctggaa caatgcgacc   2640
cacctggaga gctgctcctc tgagaatggc actgagtata gaacggaagt cacgtatttg   2700
aatttttcta cctcgtacaa catcagcatc accactgtgt cctgtggaaa gatggcagcc   2760
cccacccgga acacctgcac tactggcatc acagatcccc ctcctccaga tggatcccct   2820
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aatattacat ctgtcagtca caattcagta aaggtcaagt tcagtggatt tgaagccagc   2880
cacggaccca tcaaagccta tgctgtcatt ctcaccaccg gggaagctgg tcacccttct   2940
gcagatgtcc tgaaatacac gtatgacgat ttcaaaaagg gagcctcaga tacttatgtg   3000
acatacctca taagaacaga agaaaaggga cgttctcaga gcttgtctga agttttgaaa   3060
tatgaaattg acgttgggaa tgagtcaacc acacttggtt attacaatgg gaagctggaa   3120
cctctgggct cctaccgggc ttgtgtggct ggcttcacca acattacctt ccaccctcaa   3180
aacaaggggc tcattgatgg ggctgagagc tatgtgtcct tcagtcgcta ctcagatgct   3240
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gccctggtta ttgtgactgt gggaggcttc atcttctgga gaaagaagag gaaagatgca   3360
aagaataatg aagtgtcctt ttctcaaatt aaacctaaaa aatctaagtt aatcagagtg   3420
gagaattttg aggcctactt caagaagcag caagctgact ccaactgtgg gttcgcagag   3480
gaatacgaag atctgaagct tgttggaatt agtcaaccta aatatgcagc agaactggct   3540
gagaatagag gaaagaatcg ctataataat gttctgccct atgatatttc ccgtgtcaaa   3600
ctttcggtcc agacccattc aacggatgac tacatcaatg ccaactacat gcctggctac   3660
cactccaaga aagattttat tgccacacaa ggacctttac cgaacacttt gaaagatttt   3720
tggcgtatgg tttgggagaa aaatgtatat gccatcatta tgttgactaa atgtgttgaa   3780
cagggaagaa ccaaatgtga ggagtattgg ccctccaagc aggctcagga ctatggagac   3840
ataactgtgg caatgacatc agaaattgtt cttccggaat ggaccatcag agatttcaca   3900
gtgaaaaata tccagacaag tgagagtcac cctctgagac agttccattt cacctcctgg   3960
ccagaccacg gtgttcccga caccactgac ctgctcatca acttccggta cctcgttcgt   4020
gactacatga agcagagtcc tcccgaatcg ccgattctgg tgcattgcag tgctggggtc   4080
ggaaggacgg gcactttcat tgccattgat cgtctcatct accagataga gaatgagaac   4140
accgtggatg tgtatgggat tgtgtatgac cttcgaatgc ataggccttt aatggtgcag   4200
acagaggacc agtatgtttt cctcaatcag tgtgttttgg atattgtcag atcccagaaa   4260
gactcaaaag tagatcttat ctaccagaac acaactgcaa tgacaatcta tgaaaacctt   4320
gcgcccgtga ccacatttgg aaagaccaat ggttacatcg cctaattcca aaggaataac   4380
ctttctggag tgaaccagac cgtcgcaccc acagcgaagg cacatgcccc gatgtcgaca   4440
tgtttttata tgtctaatat cttaattctt tgttctgttt tgtgagaact aattttgagg   4500
gcatgaagct gcatatgata gatgacaaat tggggctgtc gggggctgtg gatgggtggg   4560
gagcaaatca tctgcattcc tgatgaccaa tgggatgagg tcactttttt ttttttcccc   4620
cttgaggatt gcggaaaacc aggaaaaggg atctatgatt tttttttcca aaacaatttc   4680
ttttttaaaa agactatttt atatgattca catgctaaag ccaggattgt gttgggttga   4740
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aaaataccta attgtggatg atgattgcgc agggaggggt acgtggcacc tcttccgaat   4860
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gagatctata tttttgtact gaatctcata attggaatat acggaatatt taaacagtag   4980
cttagcatca gaggtttgct tcctcagtaa catttctgtt ctcatttgat caggggaggc   5040
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cttttccctc ccagttttc                                                5119
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<210> SEQ ID NO 127
<211> LENGTH: 4009
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 127

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tggactggaa ccttttggag agaacccccg gcaggaccaa ccccgcaccc gccagcaccg 120

cggcaatgtc cagcaatagt tttccttaca atgagcagtc cggaggaggg gaggcgacgg 180

agctgggtca ggaggcgacc tcaaccattt ccccctcggg ggccttcggc ctctttagca 240

gcgatttgaa gaagaatgaa gatctaaagc aaatgttaga gagcaacaaa gattctgcta 300

aactggatgc tatgaagcgg attgttggga tgattgcaaa agggaaaaat gcatctgaac 360

tgtttcctgc tgttgtgaag aatgtggcca gtaaaaatat tgagatcaag aagttggtat 420

atgtttacct ggttcgatat gctgaagaac agcaggatct tgcactcctg tccataagca 480

cttttcagcg agctctgaag gacccaaacc aactaattcg tgcaagcgct ttgagagttc 540

tgtcaagtat tagagtgcca attattgtac ctatcatgat gcttgctatt aaggaagctt 600

ctgctgactt atcaccatat gttaggaaga atgcagccca tgcaatacaa aaattataca 660

gccttgatcc agagcagaag gaaatgttaa ttgaagtaat tgaaaaactt ctgaaagata 720

aaagcacatt ggtagctggc agtgttgtga tggcttttga agaagtatgc ccggacagaa 780

tagatctgat tcataaaaat taccgcaagc tatgtaactt actagtggat gttgaagagt 840

gggggcaggt tgtcataatc cacatgctaa ctcgatatgc tcggacacag tttgtcagcc 900

cttggaaaga gggtgatgaa ttagaagaca atggaaagaa tttctacgaa tctgatgatg 960

atcagaagga aaagactgac aaaaagaaga agccgtatac tatggatcca gatcatagac 1020

tcttaattag aaatacaaag cctttgcttc agagcaggaa tgctgcggtg gttatggcag 1080

ttgctcagct gtattggcac atatcaccaa aatctgaagc tggcataatt tctaaatcac 1140

tagtgcgttt acttcgtagc aatagggagg tgcagtatat tgtcctacaa aatatagcaa 1200

ctatgtcaat tcaaagaaag gggatgtttg aaccttatct gaagagtttc tatgttaggt 1260

caactgatcc aactatgatc aagacactga agcttgaaat tttgacaaac ttggcaaatg 1320

aagccaacat atcaactctt cttcgagaat ttcagaccta tgtgaaaagc caggataaac 1380

aatttgcagc agccactatt cagactatag gcagatgtgc aaccaacatc ttggaagtca 1440

ctgacacgtg cctcaatggc ttggtctgtc tgctgtccaa cagggatgaa atagttgttg 1500

ctgaaagtgt ggttgttata aagaaattac tgcaaatgca acctgcacaa catggtgaaa 1560

ttattaaaca tatggccaaa ctcctggaca gtatcactgt tcctgttgct agagcaagta 1620

ttctttggct aattggagaa aactgtgaac gagttcctaa aattgcccct gatgttttga 1680

ggaagatggc taaaagcttc actagtgaag atgatctggt aaaactgcag atattaaatc 1740

tgggagcaaa attgtattta accaactcca aacagacaaa attgcttacc cagtacatat 1800

taaatctcgg caagtatgat caaaactacg acatcagaga ccgtacaaga tttattaggc 1860

agcttattgt tccgaatgta aagagtggag ctttaagtaa atatgccaaa aaaatattcc 1920

tagcacaaaa gcctgcacca ctgcttgagt ctccttttaa agatagagat catttccagc 1980

ttggcacctt atctcatact ctcaacatta aagctactgg gtacctggaa ttatctaatt 2040

ggccagaggt ggcgcccgac ccatcagttc gaaatgtaga agtaatagag ttggcaaaag 2100

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actcctccag tgagcaggac agtgagagtg gacgggagtc aggcctagaa aacaaaagaa   2340
cagccaagag gaactcaaaa gccaaaggaa aaagtgattc tgaagatggg gagaaggaaa   2400
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cttccgattc tgaatcagag tcagaacctg aaagtgaatc tgaatccaga agagtcacta   2520
aggagaaaga aaagaaaaca aagcaagata gaactcctct taccaaagat gtttcacttc   2580
tagatctgga tgattttaac ccagtatcca ctccagttgc acttcccaca ccagctcttt   2640
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gaaaaggact agctgcccat tatttctttc caagacagcc ttgcattttt ggtgataaga   2820
tggtctctat acaaataaca ctgaataaca ctactgatcg aaagatagaa aatatccaca   2880
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ttggagaact gcttttacct gtggccatgt cagagaaaga ttttaagaaa gagcaaggag   3120
tgctaacagg aatgaatgaa acttctgctg taatcattgc tgcaccacag aatttcactc   3180
cctctgtgat ctttcagaag gttgtaaatg tagccaatgt aggtgcagtc ccttctggcc   3240
aggataatat acacaggttt gcagctaaaa ctgtgcacag tgggtcattg atgctagtca   3300
cagtggaact gaaggaaggc tctacagccc agcttatcat aaacactgag aaaactgtga   3360
ttggctctgt tctgctgcgg gaactgaagc ctgtcctgtc tcaggggtaa cctgcttaca   3420
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atttataata atagcccttc catctggcag tgggggtaga atacactctt gacattcttg   3540
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tggtagacat gaatgagata tttaaagttc attggaaatc ttcttcccta cagcagtaag   3780
caaaaattag caaagagata gtctaaatgg cctctcagct tggtatgtga aaatgagatc   3840
acatactttt taaatccaaa tacaaaagca tagtctctgc aagattttgt tctttgaatt   3900
tcttgatatt gtaattgatt attgataact gtcatcatga aattatctct caataataag   3960
ataaataaac tagcatatga atcataaaaa aaaaaaaaaa aaaaaaaaa               4009
```

<210> SEQ ID NO 128
<211> LENGTH: 3863
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 128

```
gagatggaga ctcgctctgt cacccaggct ggagtgcaat ggtgagatct cggctcactg     60
caacctccac ctcctgggtt caggcgattc tcctgcctcc caatcctagt agctgggagt    120
atcaggtgag tcgcagcccc aacgcacgcc cggcataatt tttttatttt tagtcgagac    180
gggtttcacc acgttggcca ggatggtctc gaactcctga cctcaggtga tccacccgcc    240
tcggcctccc aaagcactgg gattacaggc gtgagccacc gcgcccggcc tccatatcca    300
```

-continued

```
ttcttgggaa cacttgttgc ttagctgaac ggagcccgca tcctgctgtg gcggcactcg    360
ccccggtgct ggtctgagca gacgcctcct ttctcttgca gaagaagtaa gtgaggaaga    420
aatgagtgaa gatgaagaac gagaaaatga aaaccacctc ttggttgttc cagagtcacg    480
gttcgaccga gattccgggg agagtgaaga agcagaggaa gaagtgggtg agggaacgcc    540
gcagagcagc gccctgacag agggcgacta tgtgcccgac tcccctgccc tgtcgcccat    600
cgagctcaag caggagctgc ccaagtacct gccggccctg cagggctgcc ggagcgtcga    660
ggagttccag tgcctgaaca ggatcgagga gggcacctat ggagtggtct acagagcaaa    720
agacaagaaa acagatgaaa ttgtggctct aaagcggctg aagatggaga aggagaagga    780
gggcttcccg atcacgtcgc tgagggagat caacaccatc ctcaaggccc agcatcccaa    840
catcgtcacc gttagagaga ttgtggtggg cagcaacatg gacaagatct acatcgtgat    900
gaactatgtg gagcacgacc tcaagagcct gatggagacc atgaaacagc ccttcctgcc    960
aggggaggtg aagaccctga tgatccagct gctgcgtggg gtgaaacacc tgcacgacaa   1020
ctggatcctg caccgtgacc tcaagacgtc caacctgctg ctgagccacg ccggcatcct   1080
caaggtgggt gacttcgggc tggcgcggga gtacggatcc cctctgaagg cctacacccc   1140
ggtcgtggtg accctgtggt accgcgcccc agagctgctg cttggtgcca aggaatactc   1200
cacggccgtg gacatgtggt cagtgggttg catcttcggg gagctgctga ctcagaagcc   1260
tctgttcccc gggaagtcag aaatcgatca gatcaacaag gtgttcaagg atctggggac   1320
ccctagtgag aaaatctggc ccggctacag cgagctccca gcagtcaaga agatgacctt   1380
cagcgagcac ccctacaaca acctccgcaa gcgcttcggg gctctgctct cagaccaggg   1440
cttcgacctc atgaacaagt tcctgaccta cttccccggg aggaggatca gcgctgagga   1500
cggcctcaag catgagtatt tccgcgagac ccccctcccc atcgacccct ccatgttccc   1560
cacgtggccc gccaagagcg agcagcagcg tgtgaagcgg ggcaccagcc cgaggccccc   1620
tgagggaggc ctgggctaca gccagctggg tgacgacgac ctgaaggaga cgggcttcca   1680
ccttaccacc acgaaccagg gggcctctgc cgcgggcccc ggcttcagcc tcaagttctg   1740
aaggtcagag tggaccccgt catggggaga actcagccgg gaccacaggc gtggctactg   1800
cggctggagc tgcgatgaga ctcggaactc ctcgtcttac tttgtgctcc atgttttgtt   1860
tttgtatttt ggtttgtaaa tttgtagaat taaatcattt tccttgtaaa cccgaattcg   1920
ggaccatcac agtttgatta gcctcagcct caagagctgg cacatgcttg tgaacttgtg   1980
ctttcatatt ttcctaacct gtgtgctctt tgtgggagga ataacccaga ctaggaatgc   2040
cagcatctgc caagcagttg ggataattct tcactattcc acccttgcca cagtactatg   2100
ggtaggagtg acagctcgaa atatctacaa acaagtcact aaaaaagcta aaagatgcca   2160
ggatcctgat gaaccaccac ctccaccaag accaatgctc agattttacc tgattggtgg   2220
tggtatcccc atcattgttt gcggcataac tgcaggcagc gaacattaag aattacggca   2280
gtcggccaaa cgcaccctat tgctggatgg catgggaacc ctccttggga gccttctatg   2340
ggccagccag cttcagcact tttgtaaact gcatgtactt tctgagcata tttattcagt   2400
tgaaaagaca ccctgagcgc aaatatgagc ttaaggagcc cactggccag caacagagat   2460
tggcatgcca atgaaaatgg cgaaataaat catcaggaaa tcatttcttt gtctctgatt   2520
tctacatcag ccttggaaaa tgagcacact tttcattctc agctcttggg gccagcctta   2580
ctttgctctt atatgttgca ctgtggatgt ttggggcttt ggctgtttct ttgtattacc   2640
```

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```
ctttggactt ggtttttagc ttcgtttttg gagccacaag tttaagcttc agtgcattct   2700
tcatggtcca ccattgtgtt aatagggagg atcttagact tgcgtggatc atgacttgct   2760
gcccaggacg gagctcgtat tcagtgcaag tcaacgtcca gccccccaac tctaatggga   2820
cgaatggaga ggcacccaaa tgccccaata gcagtgcgga gtcttcatgc acaaacaaaa   2880
gtgattcaag cttcaaaatt cctcccaggg ctgcaaatta acaaacttgc aggcggctgc   2940
agctcagtgc catgccaatt ctttaccttt gaactccacc cctcagcttg ataatagtct   3000
gacagaacat tcaatggaca atgatattaa aatgcacgct ggcgccttta gaagttcagt   3060
ttcgaacaaa tgtgcactca agccgccacc ataaaaacag aagtaaagga caccgggcaa   3120
gccgactcac agtcctgaga gaatatgcct acgatgtccc aacgagcgtg gaaggaagcg   3180
tgcagaacgg cttacctaaa agccggctgg gcaataacga aggacactcg aggagccgaa   3240
gagcttattt agcctacaga gagagacagt acaacccacc ccagcaagac agcagcgatg   3300
cttgtagcac acttcccaaa agtagcagaa attttgaaaa gccagtttca accactagta   3360
aaaagatgcg ttaagggaag ccagctgtgg ttgaacttca aaatcagcaa aaatcttatg   3420
gcctcaactt ggccattcag aatggaccaa ttaaaagcaa tgggcaggag ggacccttgc   3480
tcggtaccga tagcactggc aatgttacca ctggattatg gaaacacgaa actactgtgt   3540
aacattgctg ggcttcctag gcagaaattc atataaactg tgatactcac attccttgaa   3600
gctatgagca tttaaaaact gtttacagcc accataggga ttcaaaagaa tttggaataa   3660
actttgaagt tttggatttt acttattttt atccccaaat tgttgctatt ttttaggatc   3720
tgaaacaaaa tctttctaaa acattgtttt agttgtcaaa gcaccaacag gacattttgg   3780
gatgtgaaat gtaatttctt ggaatctgta atttgtactt aatatttcag gcttgtattt   3840
aatataataa ataggtgttt gtt                                           3863
```

<210> SEQ ID NO 129
<211> LENGTH: 2165
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 129

```
aaatgactct aatctggaga catttgctga gacccttgtg cctggtcact tccgctccca     60
ggatccttga gatgcatcct ttcctgagcc taggtacttc ccggacatca gtaaccaagc    120
tcagtcttca tacaaagccc agaatgcctc catgtgactt catgcctgaa agataccagt    180
cccttggcta caaccgtgtc ctggaaatcc acaaggaaca tctttctcct gtggtgacgg    240
catatttcca gaaacccctg ctgctccacc aggggcacat ggagtggctc tttgatgctg    300
aaggaagcag atacctggat ttcttttccg ggattgttac tgtcagtgtt ggccattgcc    360
acccaaaggt gaatgcagtg gcacaaaagc agctcggccg cctgtggcat acaagcaccg    420
tcttcttcca ccctccaatg catgaatatg cagagaagct tgccgcactt cttcctgagc    480
ctcttaaggt cattttcttg gtgaacagtg gctcagaagc caatgagctg gccatgctga    540
tggccagggc gcactcaaac aacatagaca tcatttcttt cagaggagcc taccatggat    600
gcagtcctta cacacttggc ttgacaaacg tagggaccta caagatggaa ctccctggtg    660
ggacaggttg ccaaccaaca atgtgtccag atgtttttcg tggcccttgg ggaggaagcc    720
actgtcgaga ttctccagtg caaacaatca ggaagtgcag ctgtgcacca gactgctgcc    780
aagctaaaga tcagtatatt gagcaattca aagatacgct gagcacatct gtggccaagt    840
caattgctgg atttttcgca gaacctattc aaggtgtgaa tggagttgtc cagtacccaa    900
```

-continued

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aggggtttct aaaggaagcc tttgagctgg tgcgagcaag gggaggcgtg tgcattgcag    960
atgaagtgca gacaggattt ggaaggttgg gctctcactt ctggggcttc caaacccacg   1020
atgtcctgcc tgacattgtc accatggcta aagggattgg gaatggcttt cccatggcag   1080
cagtcataac cactccagag attgccaaat ctttggcgaa atgcctgcag cacttcaaca   1140
cctttggagg gaaccccatg gcctgtgcca ttggatctgc tgtgcttgag gtgattaaag   1200
aagaaaatct acaggaaaac agtcaagaag ttgggaccta catgttacta aagtttgcta   1260
agctgcggga tgaatttgaa attgttggag acgtccgagg caaaggtctc atgataggca   1320
tagaaatggt gcaggataag ataagctgtc ggcctcttcc ccgtgaagaa gtaaatcaga   1380
tccatgagga ctgcaagcac atgggactcc tcgttggcag aggcagcatt ttttctcaga   1440
catttcgcat tgcgccctca atgtgcatca ctaaaccaga agttgatttt gcagtagaag   1500
tatttcgttc tgccttaacc caacacatgg aaagaagagc taagtaacat tgtcagaaat   1560
aaataaaacc acaagtctca agaatttgcc acgtatgttc aagggtgaat ttgaagaatt   1620
tcagaaccac tggtatccag agaaagcctg cagctctcca caggagctgt aaaagtcatg   1680
gttgactgcc taccaaccat atttgttagc agagcccctc ttatcttgag aactccattc   1740
ttcagggaaa ggatctccct agctcagaga ataaatccta attagtttat gttaggtatg   1800
gtaatttgat tccccttttgc agtgattggt ttatgcatga atatgtgatg tatttttgtc   1860
cagtgaatct tgaagaaaaa tcttttggtg gaggtgcctt cagggaaagt tttcttcacc   1920
ctcactcttc agttcaagaa gagatgtctt cttgttgcgc tgagaacacc atatgttcat   1980
gacgagattc ctggcaccat gtcagccggc ttgtagtcat gaggacaacc ctttttggtg   2040
aggttggaag atggatggaa gccaagtgct tagtgatgtc aaagaagcac tcacttaagc   2100
attcctggag ccaccctacc tcagggcctc ttgatatttg aggtaataaa ttcattgttc   2160
tgtat                                                               2165
```

<210> SEQ ID NO 130
<211> LENGTH: 2279
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 130

```
aggtggagcc ttttttgctc acggcagcaa gttcccttct cctttctctc ccccggcggc     60
gtgtgcattg gctcttcaag ctgcctgtgc tgctccgtgg agtgaaaaag gcagggtgtg    120
ctcgcagact gtgctataaa ctgcaatttc tatttggggt cctcacggag aagaacacca    180
ggaaagacag acaggaccag tgccatgggc cagctttgct gctttccttt ctcaagagat    240
gaaggaaaaa tcagtgaaaa gaacggaggg gagcccgatg acgctgaact agtaaggctc    300
agtaagaggc tggtggagaa cgcggtgctc aaggctgtcc agcagtatct ggaggaaaca    360
cagaataaaa acaagccggg ggaggggagc tctgtgaaaa ccgaagcagc tgatcagaat    420
ggcaatgaca atgagaacaa caggaaatga gcccggaacg caggccccca tgtctctgtg    480
caaagcctcc ctgcttccct ctgctgagtc tagggactga cttgcagcgt gctgtttaag    540
ttaagtttct ctggtgcaat ctgtgaagat tgcctaatac ttttcatgat cgatgtgttc    600
gcattgctga aacacaacag aagaaaaatg gagtgctggg actggcagag gaaattaatt    660
gatgaaagaa gaatggccca agtttcattc gccctcagcc acgcacaagg gaaagggaac    720
tttgggttat gcctcctgga cgcaaattaa aggccgagaa agaggccttg ccatcaatgg    780
```

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```
aatactgcca tttatattgc ttagcagggc atttgactac tttatctgag gccagaactc    840
tcacacacag ctatcaagtg ctaagtttaa aataatcact gttggaattg tcatctgtac    900
aattagtcca taatgtttca tgtttgtcct aagtgtgctg ttgctatgca gtgtgatctt    960
tatttatagt aaattatgtt tcatgtaaat gatatatttt tggtgaaatg caacctttc   1020
tataaaatgt gggcaacatt ttaaagtttt tttaaaatcc tattttgata agtcagtatg   1080
ccatatttaa tgaaatgtta ttatataatt tttttttctt aggcaagaaa cctattggaa   1140
ttcgagactt aattaatgaa gctttgcatc gagaaacgat gggtctgaag tccaaagtga   1200
aacagataaa ggaactttta ttaaagcctg agactcaggc cagaattagg agggagcttt   1260
ttgaaggaag acttattaac aacagtaatt cagcaaatga cgttgatttc agcacaactt   1320
tgacataagc tctacattgc gattgtgaca acatagctta tgaaatcttt tcagcttatt   1380
aagtagctct ttggtaaaca ccaaagaagt ttctgatagt gtctgcacaa cagcaaacca   1440
acatttggtg aggaattagc aatttcttgc caaagaaaat tgattctgcc caattatttt   1500
ttgagctaca cttgtgtttt agaatatctg tttctgtaat attgagagtt attttataga   1560
aatgatttct taattagctg ttgtgagata tttctcgggt ccttgcagaa aaaaacatac   1620
agactgtgaa caaatcattc acaaacagaa taaaacagag ccaacaacag tattttaagg   1680
gtcacttgcc tcctgttgac acaattgttg ctaaatcaaa agaagcgttg tccaggtgtg   1740
tctacatcta gtgttacttt taatgagaat ttgaatgttt attgaacaat agtacttgaa   1800
tgaacattta taaatgtaat tattgcgatc actggttaag aatgttttat atatccttat   1860
aatatttttc actgatcaaa atgttgttct gctttttcat ttcttaagga atacatgttt   1920
gggattttta ttttttacgt gtccgaagat aagctccagg tcttatcgta tcccttgcca   1980
tctgaacttg tttgcactgc ttctgtttga aagagcatct tgaaaaactt ccccggtatg   2040
atgattgttg gtaacaactt tttctatagt cattgatgga gtagatcatg atggagggga   2100
aatcactgga gatcaaatat gtaaaatcat ttcaaatata aaatccagtt tactcatgga   2160
ttttagctat tttttcactg ggtaaattat actacattta tttacaaatg agtttatgca   2220
ttttcatggc tcttaataaa catattgttt tcccttgaaa aaaaaaaaaa aaaaaaaaa    2279
```

<210> SEQ ID NO 131
<211> LENGTH: 2881
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 131

```
atccactcag gtctacaggc tcttagaact agaacttaga actttatctt gaaaatgtac     60
cactgttgca gaagctcctc acagagtatg tgtcaggcat ttttaacctg ctaaaggcaa    120
gaagaagtgt tcaccacata gttgcaaagg tcttcaactt gccacagcca acagaaaaat    180
caaaatgatt gaacccttttg ggaatcagta tattgtggcc aggccagtgt attctacaaa   240
tgcttttgag gaaaatcata aaaagacagg aagacatcat aagacatttc tggatcatct    300
caaagtgtgt tgtagctgtt ccccacaaaa ggccaagaga attgtcctct ctttgttccc    360
catagcatct tggttgccag cataccggct taaagaatgg ttgctcagtg atattgtttc    420
tggtatcagc acagggattg tggccgtact acaaggttta gcatttgctc tgctggtcga    480
cattccccca gtctatgggt tgtatgcatc ctttttccca gccataatct accttttctt    540
cggcacttcc agacacatat ccgtgggtcc gtttccgatt ctgagtatga tggtgggact    600
agcagtttca ggagcagttt caaaagcagt cccagatcgc aatgcaacta ctttgggatt    660
```

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gcctaacaac tcgaataatt cttcactact ggatgacgag agggtgaggg tggcggcggc    720
ggcatcagtc acagtgcttt ctggaatcat ccagttggct tttgggattc tgcggattgg    780
atttgtagtg atatacctgt ctgagtccct catcagtggc ttcactactg ctgctgctgt    840
tcatgttttg gtttcccaac tcaaattcat ttttcagttg acagtcccgt cacacactga    900
tccagtttca attttcaaag tactatactc tgtattctca caaatagaga agactaatat    960
tgcagacctg gtgacagctc tgattgtcct tttggttgta tccattgtta aagaaataaa   1020
tcagcgcttc aaagacaaac ttccagtgcc cattccaatc gaattcatta tgaccgtgat   1080
tgcagcaggt gtatcctacg gctgtgactt taaaaacagg tttaaagtgg ctgtggttgg   1140
ggacatgaat cctggatttc agccccctat tacacctgac gtggagactt tccaaaacac   1200
cgtaggagat tgcttcggca tcgcaatggt tgcatttgca gtggcctttt cagttgccag   1260
cgtctattcc ctcaaatacg attatccact tgatggcaat caggagttaa tagccttggg   1320
actgggtaac atagtctgtg gagtattcag aggatttgct gggagtactg ccctctccag   1380
atcagcagtt caggagagca caggaggcaa aacacagatt gctgggctta ttggtgccat   1440
catcgtgctg attgtcgttc tagccattgg atttctcctg gcgcctctac aaaagtccgt   1500
cctggcagct ttagcattgg gaaacttaaa gggaatgctg atgcagtttg ctgaaatagg   1560
cagattgtgg cgaaaggaca aatatgattg tttaatttgg atcatgacct tcatcttcac   1620
cattgtcctg ggactcgggt taggcctggc agctagtgtg gcatttcaac tgctaaccat   1680
cgtgttcagg acccaatttc caaaatgcag cacgctggct aatattggaa gaaccaacat   1740
ctataagaat aaaaaagatt attatgatat gtatgagcca gaaggagtga aaattttcag   1800
atgtccatct cctatctact ttgcaaacat tggtttcttt aggcggaaac ttatcgatgc   1860
tgttggcttt agtccacttc gaattctacg caagcgcaac aaagctttga ggaaaatccg   1920
aaaactgcag aagcaaggct tgctacaagt gacaccaaaa ggatttatat gtactgttga   1980
caccataaaa gattctgacg aagagctgga caacaatcag atagaagtac tggaccagcc   2040
aatcaatacc acagacctgc ctttccacat tgactggaat gatgatcttc ctctcaacat   2100
tgaggtcccc aaaatcagcc tccacagcct cattctcgac ttttcagcag tgtcctttct   2160
tgatgtttct tcagtgaggg gccttaaatc gattttgcaa gaatttatca ggatcaaggt   2220
agatgtgtat atcgttggaa ctgatgatga cttcattgag aagcttaacc ggtatgaatt   2280
ttttgatggt gaagtgaaaa gctcaatatt tttcttaaca atccatgatg ctgttttgca   2340
tattttgatg aagaaagatt acagtacttc aaagtttaat cccagtcagg aaaaagatgg   2400
aaaaattgat tttaccataa atacaaatgg aggattacgt aatcgggtat atgaggtgcc   2460
agttgaaaca aaattctaat caacatataa ttcagaagga tcttcatctg actatgacat   2520
aaaaacaact ttatacccag aaagttattg ataagttcat acattgtacg aagagtattt   2580
ttgacagaat atgtttcaaa ctttggaaca agatggttct agcatggcat atttttcaca   2640
tatctagtat gaaattatat aagtattcta aattttatat cttgtagctt tatcaaaggg   2700
tgaaaattat tttgttcata catatttttg tagcactgac agatttccat cctagtcact   2760
accttcatgc ataggtttag cagtatagtg gcgccactgt tttgaatctc ataatttata   2820
caggtcatat taatatattt ccattaaaaa atcagttgta cagtgaaaaa aaaaaagaaa   2880
a                                                                   2881
```

<210> SEQ ID NO 132

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<211> LENGTH: 2832
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 132

aggaagctga accatctatc tccagaaatg tcttcagaaa gtaaagagca acataacgtt 60

tcacccagag actcagctga aggaaatgac agttatccat ctgggatcca tctggaactt 120

caaagggaat caagtactga cttcaagcaa tttgagacca atgatcaatg cagaccttat 180

cataggatcc ttattgagcg tcaagagaaa tcagatacaa acttcaagga gtttgttatt 240

aaaaagctgc agaagaattg ccagtgcagt ccagccaaag ccaaaaatat gattttaggt 300

ttccttcctg ttttgcagtg gctcccaaaa tacgacctaa agaaaaacat tttaggggat 360

gtgatgtcag gcttgattgt gggcatatta ttggtgcccc agtccattgc ttattccctg 420

ctggctggcc aagaacctgt ctatggtctg tacacatctt tttttgccag catcatttat 480

tttctcttgg gtacctcccg tcacatctct gtgggcattt ttggagtact gtgccttatg 540

attggtgaga cagttgaccg agaactacag aaagctggct atgacaatgc ccatagtgct 600

ccttccttag gaatggtttc aaatgggagc acattattaa atcatacatc agacaggata 660

tgtgacaaaa gttgctatgc aattatggtt ggcagcactg taacctttat agctggagtt 720

tatcaggtag cgatgggctt ctttcaagtg ggttttgttt ctgtctacct ctcagatgcc 780

ttgctgagtg gatttgtcac tggtgcctcc ttcactattc ttacatctca ggccaagtat 840

cttcttgggc tcaaccttcc tcggactaat ggtgtgggct cactcatcac tacctggata 900

catgtcttca gaaacatcca taagaccaat ctctgtgatc ttatcaccag ccttttgtgc 960

cttttggttc ttttgccaac caaagaactc aatgaacact tcaaatccaa gcttaaggca 1020

ccgattccta ttgaacttgt tgttgttgta gcagccacat tagcctctca ttttggaaaa 1080

ctacatgaaa attataattc tagtattgct ggacatattc ccactgggtt tatgccaccc 1140

aaagtaccag aatggaacct aattcctagt gtggctgtag atgcaatagc tatttccatc 1200

attggttttg ctatcactgt atcactttct gagatgtttg ccaagaaaca tggttacaca 1260

gtcaaagcaa accaggaaat gtatgccatt ggcttttgta atatcatccc ttccttcttc 1320

cactgtttta ctactagtgc agctcttgca aagacattgg ttaaagaatc aacaggctgc 1380

catactcagc tttctggtgt ggtaacagcc ctggttcttt tgttggtcct cctagtaata 1440

gctcctttgt tctattccct tcaaaaaagt gtccttggtg tgatcacaat tgtaaatcta 1500

cggggagccc ttcgtaaatt tagggatctt cccaaaatgt ggagtattag tagaatggat 1560

acagttatct ggtttgttac tatgctgtcc tctgcactgc taagtactga aataggccta 1620

cttgttgggg tttgtttttc tatattttgt gtcatcctcc gcactcagaa gccaaagagt 1680

tcactgcttg gcttggtgga agagtctgag gtctttgaat ctgtgtctgc ttacaagaac 1740

cttcagacta agccaggcat caagattttc cgctttgtag cccctctcta ctacataaac 1800

aaagaatgct ttaaatctgc tttatacaaa caaactgtca acccaatctt aataaaggtg 1860

gcttggaaga aggcagcaaa gagaaagatc aaagaaaaag tagtgactct tggtggaatc 1920

caggatgaaa tgtcagtgca actttcccat gatcccttgg agctgcatac tatagtgatt 1980

gactgcagtg caattcaatt tttagataca gcagggatcc acacactgaa agaagttcgc 2040

agagattatg aagccattgg aatccaggtt ctgctggctc agtgcaatcc cactgtgagg 2100

gattccctaa ccaacggaga atattgcaaa aaggaagaag aaaaccttct cttctatagt 2160

gtgtatgaag cgatggcttt tgcagaagta tctaaaaatc agaaaggagt atgtgttccc 2220

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aatggtctga gtcttagtag tgattaattg agaaggtaga tagaagaatg tctagccaat   2280

aggttaaaat ttcaagtgtc caacatttcc cagttccaca gtgggaaatt ttgcacactt   2340

gaaattttaa ccaagtggct agatattatt cctcctttga agctaatggc atttgtatat   2400

acacactgca gcagagcttg tagctggaca gagtcaaaaa gaagaaaata cggtttcagg   2460

ctttcttgca gatatgaagt attcttggaa tgcaataagt atgtattgaa ctgtactgta   2520

aagtagctcc aaaacttaat tactctcctg ttttaggggt tatacatttg gactgtgcat   2580

tctccaagag atgaagcggt gaagttggga tttacattgg aagtgctgta gacttcttta   2640

tgtggctcag tggagagagg gaaagaatgt tgcacctgct ctagtaccat aggtcaagag   2700

gcttctggat cacaaagtca taactagaca ggtttgttct tgtagttttc tatccccagt   2760

ctttgctccc cagatggcag tagtttttag taggaaagtg ccattcctgt ccttaaggca   2820

cagtctcatc ag                                                       2832
```

<210> SEQ ID NO 133
<211> LENGTH: 1702
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 133

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tgaaagggag tgagggagga gagatgagtg gctattccag aacgacataa agaatttcca     60

gccttggacg gacagctggg aacgtcttcc aatttggact ggtgtttaca agcgggaagc    120

taggtggacc ttggattttg gcgggtgaag aggctaggtt gtttaaggag gtggggcgcg    180

tttcagtggc tctctttgaa aaagcccagc aagatgtcag acctgctctc agtcttcctc    240

cacctcctcc ttctcttcaa gttggttgcc ccggtgacct ttcgccacca ccgctatgat    300

gatcttgtgc ggacgctgta caaggtgcaa aacgaatgcc ccggcatcac gcgggtctac    360

agcattgggc gcagcgtgga ggggagacac ctctacgtgc tggagttcag cgaccaccct    420

ggaatccacg agcccttgga accagaggtc aagtatgtgg ggaacatgca cggcaacgaa    480

gcgttgggcc gcgagctgat gctgcagctg tcggagtttc tgtgcgagga gttccggaac    540

aggaaccagc gcatcgtcca gctcatccag gacacgcgca ttcacatcct gccatccatg    600

aaccccgacg gctacgaggt ggctgctgcc cagggcccaa acaagcctgg gtatctagtt    660

ggcaggaaca atgcaaatgg agtggacctg aaccgcaact tccctgatct caatacctat    720

atctactata acgagaagta cggaggcccc aaccaccacc tgccccttcc agacaactgg    780

aaaagtcagg tggaacccga gacccgggcg gtgatccggt ggatgcactc cttcaacttt    840

gttctttcag ccaatctcca cggaggggcg gtggtggcca attacccgta tgacaagtcc    900

tttgagcacc gggtccgagg ggtccgccgc accgccagca cccccacgcc tgacgacaag    960

ctcttccaga agctggccaa ggtctactcc tatgcacatg gatggatgtt ccaaggttgg   1020

aactgcggag attacttccc agatggcatc accaatgggg cttcctggta ttctctcagc   1080

aagggaatgc aagactttaa ttatctccat accaactgct ttgagatcac gctggaactg   1140

agttgcgaca agtttccccc cgaagaggag ttacagcggg agtggctggg taatcgggaa   1200

gccctaatcc agttcctgga acaggttcac cagggcatca agggaatggt gcttgatgag   1260

aattacaata atctcgccaa tgctgtcatt tctgtcagtg ggattaacca tgatgtcact   1320

tcaggtgacc atggtgatta cttccggctg ctgcttccag gtatctacac tgttagtgcc   1380

acagcacctg ggtatgaccc agagacagta actgtgaccg tgggtcctgc ggaaccaacg   1440
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ttggttaact tccacctcaa aagaagcatc cctcaagtaa gccctgtgag gagagctccc   1500

agcagaaggc acggagtcag agccaaagtg cagccccaag ccagaaagaa agaaatggag   1560

atgaggcagc tgcagagagg ccctgcctga aacccacagt gccaggcaac ccttcagaaa   1620

ggctttgctc ctgctctcag atcagatcaa gcattctttc tattttatta tctgggacat   1680

atttaaatac aaacatattc ag                                            1702
```

<210> SEQ ID NO 134
<211> LENGTH: 4139
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 134

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ggcggcgcag gggcggggct ttacggacgc aagcacgtcg aagcgctgct cctggagccg     60

cggagggtgc gggtttggct gcggtggttt ctgtggcggt tgctgtggcg gagtttggag    120

gttggagaga aatccaggta ctcactagac tggtaccttc tgccaccatg ggggagcttt    180

tccggagtga agaaatgaca ctggcccagc tttttctaca gtcagaggct gcttattgtt    240

gtgtcagtga attaggagaa cttggaaagg ttcagtttcg tgacttaaat ccagatgtga    300

atgttttcca acggaaattt gtgaatgaag ttagaagatg tgaagaaatg gatcgaaagc    360

ttcgatttgt tgagaaagag ataagaaaag ctaacattcc gattatggac accggtgaaa    420

acccagaggt tcccttcccc cgggacatga ttgacttaga ggccaatttt gagaagattg    480

aaaatgaact gaaggaaatc aacacaaacc aggaagctct gaagagaaac ttcctggaac    540

tgaccgaatt aaaatttata cttcgcaaaa ctcagcaatt ttttgatgag atggcggatc    600

cagacttgtt ggaagagtcc tcatccctct tggagccaag tgagatggga agaggcactc    660

ctttaagact tggcttcgtg gctggtgtca ttaaccggga gcgcatccct acttttgagc    720

gcatgctttg gcgggtatgc cggggaaatg tgttcctgcg acaggctgaa atcgagaacc    780

ccctggagga tcctgtgact ggcgactacg tgcacaagtc tgtgtttatc attttcttcc    840

aaggcgatca gctgaaaaac agagtcaaga aaatctgtga agggttccga gcctcactct    900

atccctgtcc tgagacacca caggagagga aggaaatggc ttctggagtg aataccagga    960

ttgatgatct ccaaatggtt ctgaatcaaa cggaggatca ccgccagagg gttctgcagg   1020

cagctgctaa gaacatccgt gtctggttca tcaaagtgcg gaagatgaag gccatctatc   1080

acaccctgaa cctgtgcaac atagatgtga ctcagaaatg cttgattgca gaggtctggt   1140

gccctgtcac cgaccttgac tccatccagt ttgcactcag aaggggcacg gaacacagtg   1200

gttccactgt accttccatt ttgaacagga tgcagacaaa ccagactccc ccaacctata   1260

acaaaaccaa caagtttacc tatggctttc agaacatagt agatgcttat ggaattggaa   1320

cttaccgaga gataaatcca gctccgtata ctattatcac gttccctttt ctatttgctg   1380

tgatgtttgg agacttcggt catggcattt taatgaccct ttttgctgtg tggatggtac   1440

tgagggagag ccggatcctt tcccagaaga atgagaatga gatgtttagc actgtgttca   1500

gtggtcgata cattatttta ttgatgggtg tgttctccat gtacactggc ctcatctaca   1560

atgattgctt ttccaagtct cttaatatct ttgggtcatc ctggagtgta cggccgatgt   1620

ttacttataa ttggactgaa gagacgcttc gggggaaccc tgttctacag ctgaacccag   1680

ccctccctgg agtgtttggt ggaccatacc cttttggcat tgatccaatt tggaacattg   1740

ctaccaataa actgacgttc ttgaactcct ttaagatgaa gatgtctgtt atccttggta   1800

tcatccatat gctgtttgga gtcagcctga gtctgttcaa ccatatctat ttcaagaagc   1860
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ccctgaatat ctactttgga tttattcctg aaataatctt catgacctct ttgtttggct   1920
atttggttat ccttattttt tacaagtgga cggcctatga tgctcatacc tctgagaatg   1980
caccaagcct tctgatccat ttcataaaca tgttcctctt ttcctaccca gagtctggtt   2040
attcaatgtt gtattctgga cagaaaggaa ttcagtgttt cctggtagtg gttgcactac   2100
tgtgtgtacc ttggatgctg ctgtttaaac cattggtcct tcgccgtcag tatttgagga   2160
gaaagcattt gggaactctc aactttggtg ggatcagggt gggcaacgga ccgacagagg   2220
aggatgctga gattattcag catgaccagc tctccaccca ctcagaggac gcagacgagt   2280
ttgactttgg ggacaccatg gtccaccagg ccatccacac catcgagtac tgcctgggct   2340
gcatctccaa cactgcctcc tacttgcggc tctgggccct cagcctcgct catgcgcagc   2400
tgtctgaggt gctttggacc atggtgatcc acatcggcct gagcgtgaag agcttggcgg   2460
gaggtttggt gctgttcttc ttcttcactg cctttgccac cctgaccgtg gccatcctcc   2520
tgatcatgga gggcctctcg gcctttctcc acgcactgcg cttacactgg gttgagttcc   2580
agaataaatt ctacagcggg accggtttca agttcttacc cttctccttc gagcatattc   2640
gggaagggaa gtttgaagag tgagtccctg tgagggccgt gtgccccatg ctaccctccc   2700
cgcctccctc cacagtgatc agctgtgcct ctctgcctgt tggttgtgat ctgtgggcac   2760
cagctcattc gtgtcaccct gtctgtgagt catttagata gaatagtcct ccttgggtct   2820
cccaccaccc ctagctttgt gtgtagtgta gtgattttct ggctgtcact catactcact   2880
gggcaccagc cttgccctct tagcctccat ccatccagac agcccttccc acctcctggt   2940
ggtgagccag tctgcattcc cacgccatcc caaagccctt tcatcttccc cgtgcattgt   3000
agatggaagg agcacccatg ccattcaccc atctagactt tgagttccct gcatctgcca   3060
ccgtagtttc tagcaggagt agtgggggga gtaatacaga ttcttcccta gaaggggaca   3120
ctggtaacat gtcccactct tggattagca ggggtgggtc caggaagatg atatttgcgt   3180
cttttgccca ccccccctggc attcagctgg acccaactag gccatcatga gtggcttctc   3240
cctgtcatcc ccaggggtca taggatatct acaccgcctt tctgacccca ccctgcactc   3300
ccatcctttc ctctctcccc gttcatgccc tgcactacat agcacagccg ggatgcttgg   3360
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cccaggcctt gcatgggccc tgcccacaag cacaccctca ggccgagggt gcagactgat   3480
gctcttccct gatggagacc ctgagatctt ccccaccccc aatcatgatg tcttcagtgt   3540
gggactgggg tcctcttggt tctgcctgca gcctgcctgg ctccgcccct agtgcccccct   3600
cctcaccaca ctggccccag gtctcaggag gggtgtcctg ggcagggaag gtcagtgtca   3660
ctgatggttt gctgtttgga agccattggc agggctgccg tgcatgtggc tgtgagggct   3720
gcacagtcct gccaaggggc ttcctccttg tcaccccgaa ccttgtaatc gtgtgctggc   3780
gtggcagccc tggctaagtt aatccccacc gctttcagtg gtagaaagaa ttccctgagt   3840
gggccaggct ggtgccctcc tcctaccctg gcttttctga gtgagctgcc tggagccctc   3900
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cctgacccga ccttgtgcag cccccctgcc ctggtgtcct gggttttcgt gatgatcttt   4020
gctctgtttc cagtggggtt tgaagcagag ttcagggaac cctgcccaag gtcctcctgt   4080
tcagacattc ctatgttgaa taaagtatgt ttgacttccc cggaaaaaaa aaaaaaaaa    4139
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<210> SEQ ID NO 135

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<211> LENGTH: 2808
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 135

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ctgaaatact ctctggtgcc aacctccaaa ttctcgtctg tcacttcaga cccccactag 120

ttgacagagc agcagaatat caactccagt agacttgaat gtgcctctgg gcaaagaagc 180

agagctaacg aggaaaggga tttaaagagt ttttcttggg tgtttgtcaa acttttattc 240

cctgtctgtg tgcagagggg attcaacttc aattttctgc agtggctctg ggtccagccc 300

cttacttaaa gatctggaaa gcatgaagac tgggcctttt ttcctatgtc tcttgggaac 360

tgcagctgca atcccgacaa atgcaagatt attatctgat cattccaaac caactgctga 420

aacggtagca cctgacaaca ctgcaatccc cagtttatgg gctgaagctg aagaaaatga 480

aaaagaaaca gcagtatcca cagaagacga ttcccaccat aaggctgaaa aatcatcagt 540

actaaagtca aaagaggaaa gccatgaaca gtcagcagaa cagggcaaga gttctagcca 600

agagctggga ttgaaggatc aagaggacag tgatggtcac ttaagtgtga atttggagta 660

tgcaccaact gaaggtacat tggacataaa agaagatatg attgagcctc aggagaaaaa 720

actctcagag aacactgatt ttttggctcc tggtgttagt tccttcacag attctaacca 780

acaagaaagt atcacaaaga gagaggaaaa ccaagaacaa cctagaaatt attcacatca 840

tcagttgaac aggagcagta aacatagcca aggcctaagg gatcaaggaa accaagagca 900

ggatccaaat atttccaatg gagaagagga agaagaaaaa gagccaggtg aagttggtac 960

ccacaatgat aaccaagaaa gaaagacaga attgcccagg gagcatgcta acagcaagca 1020

ggaggaagac aatacccaat ctgatgatat tttggaagag tctgatcaac caactcaagt 1080

aagcaagatg caggaggatg aatttgatca gggtaaccaa gaacaagaag ataactccaa 1140

tgcagaaatg gaagaggaaa atgcatcgaa cgtcaataag cacattcaag aaactgaatg 1200

gcagagtcaa gagggtaaaa ctggcctaga agctatcagc aaccacaaag agacagaaga 1260

aaagactgtt tctgaggctc tgctcatgga acctactgat gatggtaata ccacgcccag 1320

aaatcatgga gttgatgatg atggcgatga tgatggcgat gatggcggca ctgatggccc 1380

caggcacagt gcaagtgatg actacttcat cccaagccag gcctttctgg aggccgagag 1440

agctcaatcc attgcctatc acctcaaaat tgaggagcaa agagaaaaag tacatgaaaa 1500

tgaaaatata ggtaccactg agcctggaga gcaccaagag gccaagaaag cagagaactc 1560

atcaaatgag gaggaaacgt caagtgaagg caacatgagg gtgcatgctg tggattcttg 1620

catgagcttc cagtgtaaaa gaggccacat ctgtaaggca gaccaacagg gaaaacctca 1680

ctgtgtctgc caggatccag tgacttgtcc tccaacaaaa ccccttgatc aagtttgtgg 1740

cactgacaat cagacctatg ctagttcctg tcatctattc gctactaaat gcagactgga 1800

ggggaccaaa aaggggcatc aactccagct ggattatttt ggagcctgca aatctattcc 1860

tacttgtacg gactttgaag tgattcagtt tcctctacgg atgagagact ggctcaagaa 1920

tatcctcatg cagctttatg aagccaactc tgaacatgct ggttatctaa atgagaagca 1980

gagaaataaa gtcaagaaaa tttacctgga tgaaaagagg cttttggctg gggaccatcc 2040

cattgatctt ctcttaaggg actttaagaa aaactaccac atgtatgtgt atcctgtgca 2100

ctggcagttt agtgaacttg accaacaccc tatggataga gtcttgacac attctgaact 2160

tgctcctctg cgagcatctc tggtgcccat ggaacactgc ataacccgtt tctttgagga 2220

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gtgtgacccc aacaaggata agcacatcac cctgaaggag tggggccact gctttggaat   2280

taaagaagag gacatagatg aaaatctctt gttttgaacg aagattttaa agaactcaac   2340

tttccagcat cctcctctgt tctaaccact tcagaaatat atgcagctgt gatacttgta   2400

gatttatatt tagcaaaatg ttagcatgta tgacaagaca atgagagtaa ttgcttgaca   2460

acaacctatg caccaggtat ttaacattaa ctttggaaac aaaaatgtac aattaagtaa   2520

agtcaacata tgcaaaatac tgtacattgt gaacagaagt ttaattcata gtaatttcac   2580

tctctgcatt gacttatgag ataattaatg attaaactat taatgataaa aataatgcat   2640

ttgtattgtt cataatatca tgtgcacttc aagaaaatgg aatgctactc ttttgtggtt   2700

tacgtgtatt attttcaata tcttaatacc ctaataaaga gtccataaaa atccaaaaaa   2760

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa                2808
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<210> SEQ ID NO 136
<211> LENGTH: 1479
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 136

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gcgaggcgcg gggaaggcgc acctggggtg gccctggcgt gcgggcggcg acatggagga     60

cggcgtgctc aaggagggct tcctggtcaa gaggggccac attgtccaca actggaaggc    120

gcgatggttc atccttcggc agaacacgct ggtgtactac aagcttgagg ggggtcggag    180

agtgacccct cccaagggcc ggatcctcct ggatggctgc accatcacct gcccctgcct    240

ggagtatgaa aaccgaccgc tcctcattaa gctgaagact caaacatcca cggagtactt    300

cctggaggcc tgttctcgag aggagcggga tgcctgggcc tttgagatca ccggggctat    360

tcatgcaggg cagccgggga aggtccagca gctgcacagc ctgagaaact ccttcaagct    420

gcccccgcac atcagcctgc atcgcattgt ggacaagatg cacgatagca acaccggaat    480

ccgttcaagc cccaacatgg agcagggaag cacctataaa aagaccttcc tcggctcctc    540

cctggtggac tggctcatct ccaacagctt cacggccagc cgtctggagg cggtgaccct    600

ggcctccatg ctcatggagg agaacttcct caggcctgtg ggtgtccgaa gcatgggagc    660

cattcgctct ggggatctgg ccgagcagtt cctggatgac tccacagccc tgtacacttt    720

tgctgagagc tacaaaaaga agataagccc caaggaagaa attagcctga gcactgtgga    780

gttaagtggc acggtggtga aacaaggcta cctggccaag cagggacaca agaggaaaaa    840

ctggaaggtg cgtcgctttg ttctaaggaa ggatccagct ttcctgcatt actatgaccc    900

ttccaaagaa gagaacaggc cagtgggtgg gttttctctt cgtggttcac tcgtgtctgc    960

tctggaagat aatggcgttc ccactggggt taaagggaat gtccagggaa acctcttcaa   1020

agtgattact aaggatgaca cacactatta cattcaggcc agcagcaagg ctgagcgagc   1080

cgagtggatt gaagctatca aaaagctaac atgacaagga cctgagggaa ccaggattcc   1140

tccctcctac cagatgacac agacaagagt tcctggagaa tgggagtgtt aagacttttg   1200

acttctttgt aagttttgta ctgctttgga gagtgaatgc tgccaagagt tcctcagatt   1260

acaaacagca gtggtgccat ttccttcccc atcttcatgt tacaaacctg gaaaggctag   1320

aacagccatt aggcgtcagc atcttgactt ttccccagca tcacaaacag ccatttcctc   1380

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taaaactctc ttcttatgag aaaaaaaaaa aaaaaaaaa                          1479
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<210> SEQ ID NO 137
<211> LENGTH: 2828
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 137

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cccgccgcgc cgcgcggtcc tgcagccccg ccacggcccc gcggcccgca cccccccggg 120

gcgacagtga gcctctcccg ccaccaccgg gggccgagcg gagggctctc gggtgggaga 180

gcgggaccag atctcgacag ctgttcattt ccaggaagcc accgcagcca gagcgaaagg 240

ggaccttctg ccaccagcgg ggcatcagcc agcggcgcgc atggatttat gaagacactc 300

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cctacaacca gtacgccgag gcgtgcgcgc cggtgctggc gcagcacggc gggggcgacg 660

cgcccggggc cgccgccgcc gctttcccgg cctcggccgc ctctttctcg tcgcgctggc 720

gctgcccgag tcactgcatc tcggccctca ttcagctcaa ccacacgcgc cgcgggcccg 780

ccctggagga ctgtgactgc gcgcaggacg agaactgcaa gtccaccaag cgcgccattg 840

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gcggccgcgg ggacctgccc tatgggcctg ggcgcaggag cagcggcggc ggcggccgct 1380

tggcgccccg gggcgcctgg accccactcg cctccatctt gctgctgctg cttgggccgc 1440

tcttttagcc ctcgcgcccc ccgccgttgg ctgcgggaga gcccgcgtcc cactcccgtg 1500

ctcgcctcga ccccgcgccg ggcacctgtg gcttgggaca gatagaaggg atggttgggg 1560

atacttccca aaactttttc caagtcaact tggtgtagcc ggttccccgg ccacgactct 1620

gggcacttcc cctgaagctc ctctccggag cttgacttct tggacctcct cccccgcccc 1680

aattccaagc tccagaaact cccaactcgt ctgccgtcca gaaagctagc tgcagtgttc 1740

aggacgtccg ggaggaagca agcatgtggg ggacagaaca gtagtcctgg actcgaaagg 1800

gaaggtgctg accagtgggg ccttagcaat ttgaagggtt gggaaggagg aattatattt 1860

gcaaaggggc tgtctattag catatttcct ttgagggggc aaaaaaaagt gccagtatcg 1920

acttttacag attgtggcca gtgaggatat tataatccta tgtaaacaga aaagtcccac 1980

ttaccgattc attctttcac tgtttgtatc tgcgcccaga attctcagtg acgtgggggt 2040

gagggtgggt ggcgattgcc ttagagggaa cccctaaatt ggttttggat aagtttgagc 2100

ccttgacctt aatttcattg ctaccactct gatctcttag cacatttctt aggattaagg 2160

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```
gtccaaaaat gctgatctaa ggggttgcca tggtgttgaa caatgcaact ttttatttaa   2220

aaaagctctg cactgccatg tatgaaagtc tctttatgat gtttgttttt ttgtcatttt   2280

tgttctttac atcaagaaat tttatgttta aatatgcgga gaatgtatat tgcctctgct   2340

cctatcaggg ttgctaaacc ctggtacatc gtatataaaa tgtattaaaa ctggggtttg   2400

ttaccagttg ctgtactttg tatatagaat ttttataaat tgtatgcttc agaaataatt   2460

tatttttaaa aagaaattaa aagttttaaa ctcacatcca tattacacct ttccccccctg   2520

aaatgtatag aatccatttg tcatcaggaa tcaaaaccca cagtccattg tgaagtgtgc   2580

tatatttaga acagtcttaa aatgtacagt gtattttata gaattgaagt taacattctt   2640

attttcaaga gaatttatgg acgttgtaga aatgtacaaa tgcatttcca aactgcctta   2700

aacgttgtat ttttatagac atgtttttt aaaaatccta agtttttaaa taactatgga   2760

tttgtgtatt ttttttggtt atttgtttta ttaaaacatg tacatcagta aagagtttta   2820

aacaatga                                                            2828
```

<210> SEQ ID NO 138
<211> LENGTH: 1741
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 138

```
ttggaacacc tggcgagtcc tcggtgtcgg tggccggcag tcatctcgcg gccgttcaga     60

attataaggc tgtctgcaga gatttgaaaa atggcaacaa atgaaagtgt cagcatcttt    120

agttcagcat ccttggctgt ggaatatgta gattcacttt tacctgagaa tcctctgcaa    180

gaaccattta aaaatgcttg gaactatatg ttgaataatt atacaaagtt ccagattgca    240

acatggggat cccttatagt tcatgaagcc ctttatttct tattctgttt acctggattt    300

ttatttcaat ttatacctta tatgaaaaaa tacaaaattc aaaaggataa gccagagaca    360

tgggaaaacc aatggaagtg tttcaaagtt cttctcttta atcacttctg tatccagctg    420

cctttgattt gtggaaccta ttattttaca gagtatttca atattcctta tgattgggaa    480

agaatgccaa gatggtattt tcttttggca agatgctttg gttgtgcagt cattgaagat    540

acttggcact attttctgca tagactctta caccacaaaa gaatatacaa gtatattcat    600

aaagttcatc atgagtttca ggctccattt ggaatggaag ctgaatatgc acatcctttg    660

gagactctaa ttcttggaac tggatttttc attggaatcg tgcttttgtg tgatcatgta    720

attcttcttt gggcatgggt gaccattcgt ttattagaaa ctattgatgt ccatagtggt    780

tatgatattc ctctcaaccc tttaaatctg atccctttct atgctggttc tcggcatcat    840

gatttccacc acatgaactt cattggaaac tatgcttcaa catttacatg gtgggatcga    900

atttttggaa cagactctca gtataatgcc tataatgaaa agaggaagaa gtttgagaaa    960

aagactgaat aaatatctca cgtaaacctt cctgaaagat aaacgttttc ctgaattcag   1020

aaactagtag ctaacattgc ttctggagag cagaaataag catgtcttct ggctactaag   1080

tgataaaaag aacattaaca acctttaatt accttcctag tgggaacttt ttctacttta   1140

cctacaagtt ctatatatgt agaaatgaat aaatatatat ttaagtacag ttttcatgag   1200

gaagttttaa aagaccatgt tcctaagctt ccaagaaggt tttggatact agaagtatta   1260

atctatggct tttctcccag taaaaccata ggcctgaagt tcacattggg tctttaaatc   1320

ttttagatat atactggtca tttcagaaaa ttcttcatag tggtattggc cttatattta   1380
```

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```
actttttttt tattttttt ttgagacaaa gccacactct gtctccttgt ctggagtgtg   1440

gtggcacagt ctcagctcac tgcaacctct gcctcccagt tcaagcaatt cttctgcctc   1500

agcctcccaa gtagctggga ttacaggcac ccgccaccac gcccagctaa tttttgtatt   1560

tttgtagaga tggggtttct cgatgttggc caggctggtc tcaaacttct gacctcaagt   1620

gatctgccca ccttggcctc ccaaagtgct gggattacag gtgtaagcca ctgcgcccgg   1680

cctttttaac tttaaacatg ttttagaatt cacctaaaga tcaaaatatc atggattgaa   1740

c                                                                   1741
```

<210> SEQ ID NO 139
<211> LENGTH: 904
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 139

```
ggaattccgt cgacggcagc ggcggcggcg ggtgggaaat ggcggagtat ctggcctcca     60

tcttcggcac cgagaaagac aaagtcaact gttcatttta tttcaaaatt ggagcatgtc    120

gtcatggaga caggtgctct cggttgcaca ataaaccgac gtttagccag accattgccc    180

tcttgaacat ttaccgtaac cctcaaaact cttcccagtc tgctgacggt ttgcgctgtg    240

ccgtgagcga tgtggagatg caggaacact atgatgagtt ttttgaggag gtttttacag    300

aaatggagga gaagtatggg gaagtagagg agatgaacgt ctgtgacaac ctgggagacc    360

acctggtggg gaacgtgtac gtcaagtttc gccgtgagga agatgcggaa aaggctgtga    420

ttgacttgaa taaccgttgg tttaatggac agccgatcca cgccgagctg tcacccgtga    480

cggacttcag agaagcctgc tgccgtcagt atgagatggg agaatgcaca cgaggcggct    540

tctgcaactt catgcatttg aagcccattt ccagagagct gcggcgggag ctgtatggcc    600

gccgtcgcaa gaagcataga tcaagatccc gatcccggga gcgtcgttct cggtctagag    660

accgtggtcg tggcggtggc ggtggcggtg gtggaggtgg cggcggacgg gagcgtgaca    720

ggaggcggtc gagagatcgt gaaagatctg ggcgattctg agccatgcca tttttacctt    780

atgtctgcta gaaagtgttg tagttgattg accaaaccag ttcataaggg gaatttttta    840

aaaaacaaca aaaaaaaaac atacaaagat gggtttctga ataaaaattt gtagtgataa    900

cagt                                                                 904
```

<210> SEQ ID NO 140
<211> LENGTH: 2037
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 140

```
cgcccccgag cagcgcccgc gccctccgcg ccttctccgc cgggacctcg agcgaaagac     60

gcccgcccgc cgcccagccc tcgcctccct gcccaccggg cccaccgcgc cgccaccccg    120

accccgctgc gcacggcctg tccgctgcac accagcttgt tggcgtcttc gtcgccgcgc    180

tcgccccggg ctactcctgc gcgccacaat gagctcccgc atcgccaggg cgctcgcctt    240

agtcgtcacc cttctccact tgaccaggct ggcgctctcc acctgccccg ctgcctgcca    300

ctgccccctg gaggcgccca agtgcgcgcc gggagtcggg ctggtccggg acggctgcgg    360

ctgctgtaag gtctgcgcca agcagctcaa cgaggactgc agcaaaacgc agccctgcga    420

ccacaccaag gggctggaat gcaacttcgg cgccagctcc accgctctga aggggatctg    480

cagagctcag tcagagggca gaccctgtga atataactcc agaatctacc aaaacgggga    540
```

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aagtttccag cccaactgta aacatcagtg cacatgtatt gatggcgccg tgggctgcat    600
tcctctgtgt ccccaagaac tatctctccc caacttgggc tgtcccaacc ctcggctggt    660
caaagttacc gggcagtgct gcgaggagtg ggtctgtgac gaggatagta tcaaggaccc    720
catggaggac caggacggcc tccttggcaa ggagctggga ttcgatgcct ccgaggtgga    780
gttgacgaga aacaatgaat tgattgcagt tggaaaaggc agctcactga agcggctccc    840
tgtttttgga atggagcctc gcatcctata caacccttta caaggccaga aatgtattgt    900
tcaaacaact tcatggtccc agtgctcaaa gacctgtgga actggtatct ccacacgagt    960
taccaatgac aaccctgagt gccgccttgt gaaagaaacc cggatttgtg aggtgcggcc   1020
ttgtggacag ccagtgtaca gcagcctgaa aaagggcaag aaatgcagca agaccaagaa   1080
atcccccgaa ccagtcaggt ttacttacgc tggatgtttg agtgtgaaga aataccggcc   1140
caagtactgc ggttcctgcg tggacggccg atgctgcacg ccccagctga ccaggactgt   1200
gaagatgcgg ttccgctgcg aagatgggga gacattttcc aagaacgtca tgatgatcca   1260
gtcctgcaaa tgcaactaca actgcccgca tgccaatgaa gcagcgtttc ccttctacag   1320
gctgttcaat gacattcaca aatttaggga ctaaatgcta cctgggtttc cagggcacac   1380
ctagacaaac aagggagaag agtgtcagaa tcagaatcat ggagaaaatg ggcgggggtg   1440
gtgtgggtga tgggactcat tgtagaaagg aagccttgct cattcttgag gagcattaag   1500
gtatttcgaa actgccaagg gtgctggtgc ggatggacac taatgcagcc acgattggag   1560
aatactttgc ttcatagtat tggagcacat gttactgctt cattttggag cttgtggagt   1620
tgatgacttt ctgttttctg tttgtaaatt atttgctaag catattttct ctaggctttt   1680
ttccttttgg ggttctacag tcgtaaaaga gataataaga ttagttggac agtttaaagc   1740
ttttattcgt cctttgacaa aagtaaatgg gagggcattc catcccttcc tgaaggggga   1800
cactccatga gtgtctgtga gaggcagcta tctgcactct aaactgcaaa cagaaatcag   1860
gtgttttaag actgaatgtt ttatttatca aaatgtagcc tttggggagg gaggggaaat   1920
gtaatactgg aataatttgt aaatgatttt aattttatat tcagtgaaaa gattttattt   1980
atggaattaa ccatttaata aagaaatatt tacctaataa aaaaaaaaaa aaaaaaa      2037
```

<210> SEQ ID NO 141
<211> LENGTH: 3186
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 141

```
ggaactggca gcggggagga ggctctagcg aggcctgaaa ggctgcgtaa ccaggcagga     60
gtaggggttg gggttcgggg ttgggggaca gccagggatc gcgtctgata tgctgttggg    120
gtcgtgaccg tctgggggcc gaggcaggca ctggccagac ccagccaggg atcctcgtat    180
tcgtcgagcc taatttccag cagccgggta ggcctcacca gaggctcctt tccgtgaggc    240
cgcccccaat tcctgcccct attctctgcc tgggagatgg cttccccgag ccccccgccg    300
gagtcgaagg ggttgctgac atttgaggat gtggctgtgt tttttaccca ggaggagtgg    360
gattatctgg acccagctca gagaagcctg tataaagatg tcatgatgga gaattatgga    420
aacctggtct cactggatgt tttgaacaga gataaggatg aggagccaac tgtaaaacaa    480
gagattgaag aaattgagga agaagtggaa ccacagggtg taatagttac aagaatcaaa    540
agtgaaattg accaggatcc tatgggtaga gaaacatttg aacttgttgg taggttagat    600
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aaacaaagag ggatcttcct atgggaaata ccaagggaat ctttgaccca ggaacagaga    660
atgttcagag aaaacactaa cattatccgt aaaagaccaa actcagaaga gaaatgccat    720
aaatgtgaag aatgtggaaa gggttttgtc cgcaaggccc atttcattca acatcaaagg    780
gtccatactg gtgagaaacc ttttcagtgc aatgaatgtg ggaaaagttt tagtcgcagt    840
tcatttgtta ttgaacatca gagaattcac actggggaaa ggccctatga gtgtaattac    900
tgtggaaaaa cctttagtgt gagctcaacc cttattagac atcagagaat ccacactgga    960
gaaagaccct atcagtgtaa tcagtgtaaa cagagcttca gccagagaag gagccttgtt   1020
aaacatcaaa ggattcatac aggtgagaaa ccccataaat gtagtgactg tgggaaagcc   1080
ttcagttgga aatcacacct tattgagcat caaagaactc acactggtga gaaaccttat   1140
cactgtacca aatgtaagaa gagctttagt cgaaattcat tgcttgttga gcatcaaaga   1200
attcacactg gggaaagacc ccataaatgt ggtgaatgtg ggaaagcctt tcgattaagc   1260
acatacctta tacaacacca aaaaattcac actggcgaga agccttttct ttgtattgag   1320
tgtggaaaaa gtttcagtcg gagctcattc cttattgaac atcagaggat ccatactggt   1380
gaaagacctt atcagtgcaa agagtgtggg aaaagtttca gtcagctttg caaccttact   1440
cgtcatcaga gaattcacac aggagacaag ccccataaat gtgaggaatg tggaaaagcc   1500
tttagtagaa gctcaggtct tattcagcat cagagaattc acaccaggga gaagacttat   1560
ccatacaatg aaactaagga aagttttgat ccaaattgca gtcttgttat acagcaggaa   1620
gtctacccta aggagaaatc ttataaatgt gatgaatgtg ggaaaacttt tagtgttagt   1680
gctcatcttg tacaacatca aagaatccac actggtgaaa agccctatct atgtactgtc   1740
tgtgggaaaa gcttcagccg gagctcattt cttattgaac atcagagaat ccacactggt   1800
gagagaccct atctgtgcag acagtgtgga aaaagcttta gtcagctttg taatcttatt   1860
cgacatcagg gtgttcacac aggtaataaa ccccataaat gtgatgaatg tggaaaggcc   1920
tttagccgga actcgggtct tattcagcat cagagaatac acacaggaga gaaaccttat   1980
aagtgtgaga agtgcgacaa aagtttcagt caacagcgca gtcttgtcaa ccatcagaag   2040
atccatgcag aggtgaaaac ccaagaaacc catgaatgtg acgcttgtgg tgaagccttt   2100
aattgccgta tttctcttat tcagcatcag aaattgcaca cagcatggat gcaataaatg   2160
tagagcaata cataagctca atttgatttg agactagtac ccaagtgcag ttttagtatg   2220
gctcaacatg ggtcagattt agtgataaag caaattctcc ttggcctcag gcaaatagtt   2280
tctaaagatt ctgtgaatag tggacaactg cccatgagca tttgacttcc cttactcttt   2340
gatgatcgta gagaaagact tggtaattta tctaagtatc tttaataaat ctttcagcag   2400
agagattaaa cctaggttca gagcatgggt gctctgaggg acaaagttgg attagtataa   2460
gggagctgga gcagctgata gtggaaaaca gaataatgat tcaaagagtc ttctgtcacc   2520
atgtcatatt gtggttcttt cagttccatg atatgtttgg ctctgcatgc caaagtccag   2580
tgattaagca tatataagtt gtcaaggaaa caaagcccaa atgtttttaa aacaagtata   2640
cagtttttgt cattgtttaa gaaagccagt tgtttggcat gtgagttaaa ggcagttcca   2700
atgcctgatg gttcccagat ctatgaaatg agtggaccat taaccttaca tgtaaagatt   2760
atgttagtaa ttaagaaacc taacaaaggt gttaccaagg aacctttggg agtgcctttt   2820
ttgtttttca agatggaccc aaaaaagtgg aggaagatat tgttcttttg tgccctccta   2880
cctgtgagag atatttgtag tcctatgtga atgagcttat ccctccacaa ccaggtgcat   2940
atgaaagtgt acatattatg actgccaagt attggaaatg aaaagacctg gagtctatgc   3000
```

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```
taggaagctg agatattttg gtattgcatt ggtttttatg gtaactaggt tttgcatgca   3060

attaaaaatc cttatttctt gttctagggc ttcccttagt taatggttat tataaaccta   3120

ttaattcatc tgttttaacc attaaaacct gttttgtttt tagctttgaa aaaaaaaaaa   3180

aaaaaa                                                              3186
```

<210> SEQ ID NO 142
<211> LENGTH: 1903
<212> TYPE: DNA
<213> ORGANISM: Homo sapiens

<400> SEQUENCE: 142

```
gggcaacgga ggggaaataa aagggaacgg ctccgaatct gccccagcgg ccgctgcgag     60

acctcggcgc cgacatcgcg acagcgaagc gctttgcacg ccaggaaggt cccctctatg    120

tgctgctgag ccggtcctgg acgcgacgag cccgccctcg gtcttcggag cagaattcgc    180

aaaaacggaa ggactggaaa tggcagacca tatgatggca atgaaccacg ggcgcttccc    240

cgacggcacc aatgggctgc accatcaccc tgcccaccgc atgggcatgg ggcagttccc    300

gagcccccat caccaccagc agcagcagcc ccagcacgcc ttcaacgccc taatgggcga    360

gcacatacac tacggcgcgg gcaacatgaa tgccacgagc ggcatcaggc atgcgatggg    420

gccggggact gtgaacggag ggcacccccc gagcgcgctg gcccccgcgg ccaggtttaa    480

caactcccag ttcatgggtc ccccggtggc cagccaggga ggctccctgc cggccagcat    540

gcagctgcag aagctcaaca accagtattt caaccatcac ccctaccccc acaaccacta    600

catgccggat ttgcaccctg ctgcaggcca ccagatgaac gggacaaacc agcacttccg    660

agattgcaac cccaagcaca gcggcggcag cagcaccccc ggcggctcgg gcggcagcag    720

cacccccggc ggctctggca gcagctcggg cggcggcgcg ggcagcagca acagcggcgg    780

cggcagcggc agcggcaaca tgcccgcctc cgtggcccac gtccccgctg caatgctgcc    840

gcccaatgtc atagacactg atttcatcga cgaggaagtt cttatgtcct tggtgataga    900

aatgggtttg gaccgcatca aggagctgcc cgaactctgg ctggggcaaa acgagtttga    960

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aaaccccggc gaaagaaatc aaacccccaa cttcttcggc gtgaattaaa agaaacattc   1080

ccttagacac agtatctcac ttttcagatc ttgaaaggtt tgagaacttg gaaacaaagt   1140

aaactataaa cttgtacaaa ttggttttaa aaaaaattgc tgccactttt tttcctgttt   1200

ttgtttcgtt tttgtagcct tgacattcac ccacctccct tatgtagttg aaatatctag   1260

ctaacttggt ctttttcgtt gtttgttttt actcctttcc ctcactttct ccagtgctca   1320

actgttagat attaatcttg gcaaactgct taatcttgtg gattttgtag atggtttcaa   1380

atgactgaac tgcattcaga tttacgagtg aaaggaaaaa ttgcattagt tggttgcatg   1440

aacttcgaag ggcagatatt actgcacaaa ctgccatctc gcttcatttt tttaactatg   1500

catttgagta cagactaatt tttaaaatat gctaaactgg aagattaaac agatgtgggc   1560

caaactgttc tggatcagga aagtcatact gttcactttc aagttggctg tcccccccgc   1620

cgcccccccc acccccatat gtacagatga taatagggtg tggaatgtcg tcagtggcaa   1680

acatttcaca gatttttatt ttgtttctgt cttcaacatt tttgacactg tgctaatagt   1740

tatattcagt acatgaaaag atactactgt gttgaaagct ttttaggaaa ttttgacagt   1800
```

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```
atttttgtac aaaacatttt tttgaaaaaa tacttgttaa tttattctat tttaatttgc   1860

caatgtcaat aaaaagttaa gaaaaaaaaa aaaaaaaaaa aaa                     1903
```

What is claimed is:

1. A method for diagnosing colorectal cancer comprising:

contacting a gene consisting of a gene sequence of SEQ ID NO: 76 with a colorectal cancer containing cells; and

detecting molecules of ribonucleic acid released in a peripheral blood by said colorectal cancer containing cells which reacted with SEQ ID NO: 76, thereby diagnosing the colorectal cancer containing cells.

* * * * *